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IMPACT OF HOST COUNTRIES' MACROECONOMIC FACTORS ON RECEIVING COUNTRY'S REMITTANCE INFLOW IN PRESENCE OF ICT PENETRATION: A PANEL DATA ANALYSIS OF BANGLADESH ECONOMY

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Abstract

While the whole world was struggling and stumbling during the global pandemic, the economy of Bangladesh miraculously experienced a comparatively lower stagnation than its contemporaries owing to larger remittance inflow intertwined with the surge of ICT services. This study attempts to find answer to the overwhelming performance considering the macroeconomic factors in host countries that are top in remittance outflow towards Bangladesh. The findings indicate significant positive effects of ICT as well as macroeconomic factors like government expenditure, trade balance and FDI on the remittance inflow of recipient country. Despite being unique in perspective, the paper is confined to the usage of secondary data and limited data availability due to institutional constraints for few countries. The paper concludes with prescribing an ICT friendly infrastructure for both host and recipient country together with emphasis on selected macroeconomic variables.

Keywords: Remittance, ICT, Macroeconomic factors, Receiving country, Host country, Panel Data, Fixed Effects, Random Effects

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1. INTRODUCTION

Income received from migrant workers in form of remittance is one of the most crucial sources of growth factors for many countries, identified from the fact that as many as 70 countries around the world rely on remittance inflow the amount of which accounts for more than 4% of these countries' gross domestic product (GDP) (International Fund for Agricultural Development (IFAD), 2021; Meyer & Shera, 2016). According to a report published by World Bank titling "Migration and Development Brief 36", for Bangladesh remittance inflow has become the most influential factor over the past couple of years for achieving economic growth reflected from Bangladesh's unwavering 7th position among the top 10 remittance receiving countries of the world in the year 2021 (Ratha, Kim, Plaza, Riordan, & Chandra, 2022). Bangladesh has been able to achieve an impressive substantial growth in remittance inflow, even during the COVID-19 pandemic, which accounts for a staggering value of $22 billion (Ratha, Kim, Plaza, Riordan, & Chandra, 2022).

Evidently, remittance inflow in Bangladesh has become one of the leading contributors of Bangladesh's continuous economic growth over the past few years. Bangladesh's steady GDP growth of over 7% is due to its continuous investment in manufacturing & service sector fueled by a large pile of foreign reserve of over $40 billion much of which is the result of high remittance inflow (The Business Standard (TBS), 2022). A soaring remittance inflow is facilitating Bangladesh to minimize & balance its trade deficit as well (Mehedi Hasan, 2020). Remittance inflow helps developing countries like Bangladesh to maintain and hold adequate foreign currency reserve (Khan, Amin, & Ahmed, 2021) and the deficiency of remittance inflow can double the current account deficit (as a percentage of GDP) as reported by World Bank in one of its report (Maimbo & Ratha, 2005).

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Since remittance inflow became a cardinal factor of economic growth, there's growing concern regarding the cost of remittance inflow. Currently the currency conversion fee, transaction fee, etc. accounts for 7% on global average and this can lead to a substantial loss for the remittance receiving country because on average, migrant workers sent only $200 to $300 to their home countries (International Fund for Agricultural Development (IFAD), 2021). United Nations Development Program (UNDP) (2016) describes the sustainable development goals (SDGs) & target 10.c is one of the targets under goal 10 which pledges to reduce the global average cost of remittance by 3% within year 2030. ICT penetration can play a vital role in reduction of remittance cost which is already evident from the high remittance inflow around the globe, thanks to the worldwide digitalization both in terms of mobile and online services that are working as catalysts and resulted in an increase in the amount of remittance sent by staggering 65% or a value of $2.1 trillion in 2020 (Andersson-Manjang & Naghavi, 2021).

Receiving country receives remittance inflow from different corners of the world from their expatriates. Hence, wide range of economic constituents which influence these host countries' economic environment have significant impact on remittance inflow of the receiving country. There are only a handful of studies exploring the impact of host countries' macroeconomic factors on receiving country's remittance inflow and rarely any identifying the impact of these factors in presence of ICT penetration. The purpose of this study is to pinpoint the impact of host countries' macroeconomic factors on receiving country's remittance inflow in presence of ICT penetration for both receiving country & host countries. Therefore, this paper can append a new dimension to the study of remittance inflow & can help to identify how to reduce the global cost of remittance transaction. For the analysis, we have taken Bangladesh as the remittance receiving country, whereas United Arab Emirates (UAE), Bahrain, United Kingdom, Kuwait, Qatar, Oman, Saudi

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Arabia, Malaysia, United States and Singapore are taken as the 10 host countries. These top 10 host countries have been identified based on the remittance inflow reported by the Bangladesh Bank (BB) Quarterly (Bangladesh Bank (BB), 2001-2020) from year 2001-2020. Several macroeconomic factors which can have significant impact on host countries' economic environment were considered together with the level of ICT penetration measured in four different dimensions for both receiving country Bangladesh and ten host countries. In this study, we have employed strongly balanced panel data and for analysis purpose, different modeling techniques like Panel Regression, Fixed Effect & Random Effect model have been used and the robustness of the techniques as well as the acceptance of the models were tested.

In second section of the paper, we discuss existing literature defining the nexus between remittance inflow & macroeconomic factors. The third section of the paper discusses the methodology as well as the empirical framework, data sources & variables. Next, in fourth section we present the findings of our analysis along with discussion & in fifth section we draw conclusion while recommending relevant policies based on our findings.

2. LITERATURE REVIEW

Bangladesh, the 8th largest populous country in the world, supplies more than 400,000 overseas workers each year according to the information of International Labor Organization (ILO) (International Labour Organization (ILO), n.d.). Myriad of reasons exhort labors to migrate from one place to another both internally or internationally, among which better employment system, wage level and more comfortable living conditions for their families are the most significant reasons as identified by researchers (Todaro, 1969; Reubens, 1983; Courgeau, 1995; Engman, 2009; Vadean & Piracha, 2009; Beguy, et al., 2010; Babayan, 2010; Singh, 2010; Kaur, et al.,

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2011; Castles, 2016; Rahman, et al., 2020). The host country is economically benefitted by labor migration as it receives the earning of these expatriated workers in form of remittance. Several economic indicators of the origin country of labor migration positively affect the remittance inflow, whereas the cardinal non-economic indicators of remittance inflow emphasize the altruistic motive of workers as they want to support their families and offer them a better living standard (Schiopu & Siegfried, 2006; Barua, 2007; Erik & Marta, 2008; Rahman & Wadud, 2014; Tabit & Moussir, 2016; Hor & Pheang, 2017; Mustafa & Ali, 2018; Yoshino, Taghizadeh-Hesary, & Otsuka, 2019).

There's a plethora of literature identifying the determinants of remittance inflow which are based on the economic condition of the receiving country, but only a handful numbers of research had been conducted identifying the impact of host countries' economic condition on remittance inflow in receiving countries. It is presumed that receiving country's economic conditions have a positive impact on remittance inflow, but several studies have identified that the amount of remittance received by the receiving country is more sensitive to the monetary states of the host country itself (El-Sakka & McNabb, 1999; Al-Assaf & Al-Malki, 2014; Dilanchiev1 & Sekreter, 2016; Mustafa & Ali, 2018). Among various economic indicators, inflation rate of both receiving country & host countries has contrasting impact on remittance inflow. Receiving country's inflation rate negatively affect the remittance inflow whereas remittance inflow in the receiving country is positively affected by host countries inflation rate (Barua, 2007; Ncube & Brixiova, 2013; Mukoswa, 2016; Abbas, Masood, & Sakhawat, 2017). According to the quarterly report published by Bangladesh Bank (BB), as of December 2021 more than half (52.71%) of the total remittance of Bangladesh's was received from Gulf region (Bangladesh Bank (BB), 2021). Therefore, the impact of oil price on receiving country's remittance inflow is also notable. The economy of

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middle eastern countries is largely dependent on the price of oil, hence, any shock in oil price can deteriorate these countries revenue generation affecting the remittance outflow as well (Naufal & Termos, 2009; Islam & Nasrin, 2015; Umair & Waheed, 2017).

Any financial crisis experienced by the host country due to devastating global economic condition as the world experienced back in 2008-09, has very significant negative impact on home countries remittance inflow. Adamu, (2009) examined the impact of global financial crisis on remittance inflow in Nigeria and found a declining trend in remittance inflow as financial crisis has reduced the foreign direct investment (FDI) inflow in host countries. Similar types of result were exhibited in several papers which indicate a devastating impact on the remittance inflow of home country due to the economic downturn in the host countries (Ratha, Dilip, Mohapatra, & Silwal, 2010; Bayangos & Jansen, 2010; Borja, THE IMPACT OF THE US RECESSION ON IMMIGRANT REMITTANCES IN CENTRAL AMERICA, 2012; Borja, What drives remittances to Latin America? A review of the literature, 2012; Borja, HOME AND HOST COUNTRY BUSINESS CYCLES AND REMITTANCES: THE CASE OF EL SALVADOR AND THE DOMINICAN REPUBLIC, 2013).

Several studies concluded that substantial adoption of ICT and related services induces a significant impact on remittance flows (Mia, Nasrin, Nourani, Naghavi, & Baskaran, 2015; Makun & Jayaraman, 2018; Kumar, Nexus between financial and technology inclusion, remittances and trade openness vis-`a-vis growth: a study of Nepal, 2011; Adejo & Etowa, 2016). Although scholars around the world were concerned about the relationship between ICT and remittance earlier, recent upsurge of the global pandemic as well as emergence of the 4th industrial revolution necessitates to re-evaluate this issue. Not only does the effect of ICT steer directly to remittance inflow but also it is translated through diversified channels indirectly. A study from Sub-Saharan

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Africa suggests that ICT complements remittance flow in easing the access to business and a particular threshold for ICT penetration allows to break through the constraints (Asongu, Biekpe, & Tchamyou, 2019). Mobile banking technology as well as internet related services have been identified as catalytic factors in attracting bulk of remittance flow via reducing one of the most critical constraints— *transaction costs* (Ratha D. , Workers' remittances: an important and stable source of external development finance, 2003; Angelakopoulos & Mihiotis, 2011; David, Dana, & Abel, 2013; Siegel & Fransen, 2013; Kosse & Vermeulen, 2013). Again, ICT services are likely to be concomitant with tourism and remittance flow via financial system that induces a higher growth of income (Kumar, Linking remittances with financial development and ICT: a study of the Philippines, 2013; Siraji, Khalid, & Sobhan, 2009). Kumar and Vu (2014) showed a bidirectional causality between capital per worker and remittance while an unidirectionally causality has been observed between ICT and remittance.

Nevertheless, the extant literature unveils that little attempt has been made to analyze the integrated effect of ICT and macroeconomic variables on remittance inflow while scholars emphasized solely on either one of the criteria. Moreover, ICT penetration in one country only depicts a partial picture of impact on remittance flow since two-way infrastructural development ensures efficient flow of remittances and thus ICT structure in both host countries and receiving country is required to be analyzed which is the primary objective of this study.

3. METHODOLOGY

3.1 MODEL

Let's assume that each individual i remit z amounts of money at time t which can be represented by z_{it}. Therefore, the specification of the model which exhibits the impact of host countries' (h)

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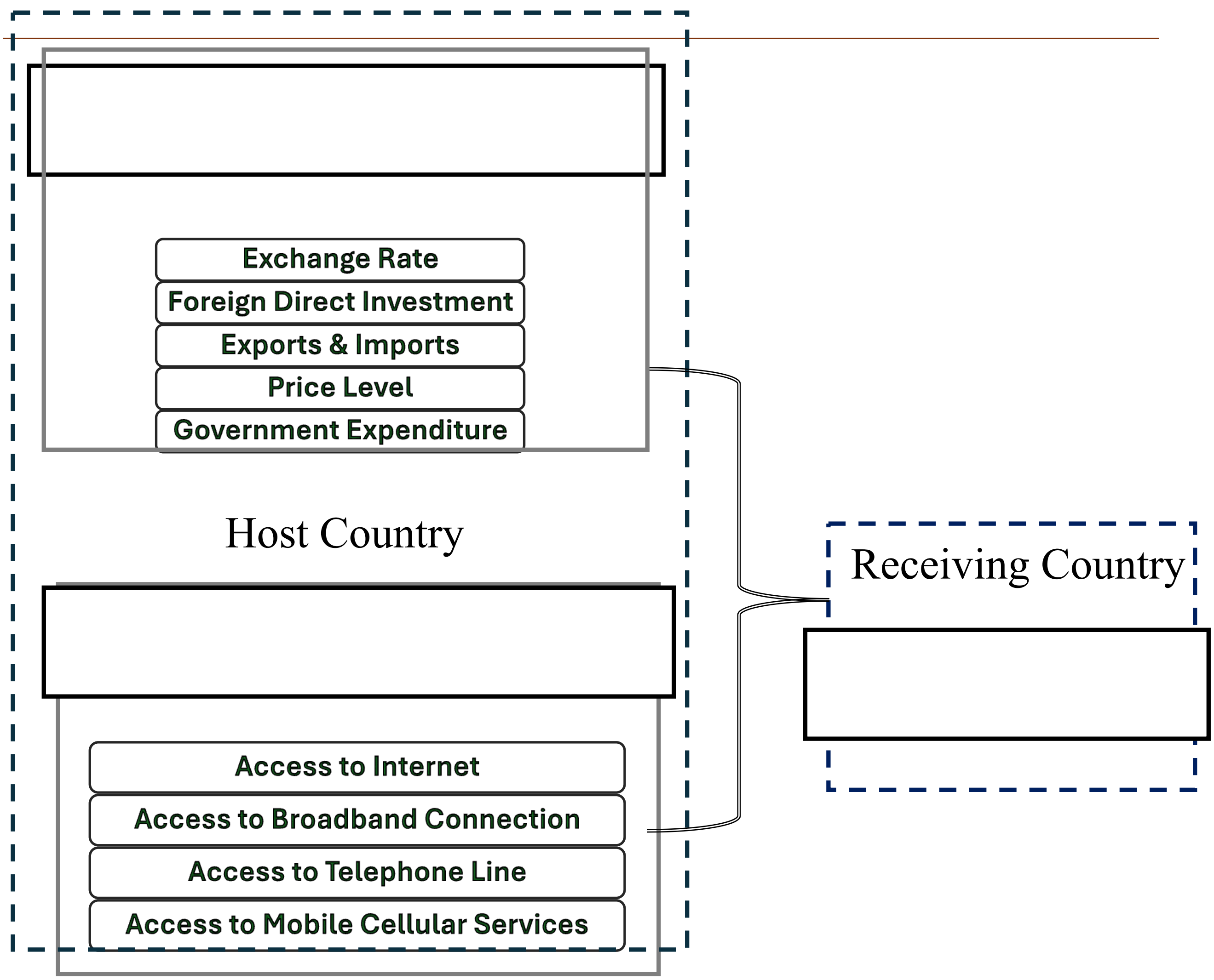
macroeconomic factors on receiving country's (r) total remittance inflow from host countries in presence of both receiving country's & host country's ICT penetration is written as:

$$R_{ht} = \sum z_{it} = f(ex, f, e, m, p, g, ict_{rht}) \quad (1)$$

ict_{rht} is the level of ICT penetration in both receiving country & host countries at time t measured in four different dimensions— (1) percentage of population using internet (int_{rh}), (2) percentage of population using fixed broadband (fbb_{rh}), (3) percentage of population using fixed telephone line (tel_{rh}) & (4) percentage of population using mobile cellular service (mob_{rh})

3.2 THEORETICAL FRAMEWORK



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3.3 EMPIRICAL FRAMEWORK

The focus of this study is to identify the impact of host countries' macroeconomic factors on receiving country's total remittance inflow in presence of both receiving country's & host countries' ICT penetration. In this paper we have used the panel data estimation techniques to solve the problem of endogeneity due to the unobserved heterogeneity. Panel data has been emerging as a popular approach amid scholars around the world since it can grasp more variability and explore more issues than other approaches (Baltagi, 2001; Kennedy, 2008; Hsiao, 2022; Chamberlain, 1984). Panel data has some other advantages over cross-sectional or time-series analysis as panel data can equip us with more observations and can help to remove endogeneity problem (Hsiao, 2007).

The general specification of the panel model used for the model is following:

$$lnremit_{ht} = \beta_0 + \beta_1 \ln exrate_{ht} + \beta_2 \ln fdi_{ht} + \beta_3 \ln export_{ht} + \beta_4 \ln import_{ht} + \beta_5 \ln \mathrm{cpi}_{ht} + \beta_6 \ln govex_{ht} + \beta_8 \ln ict_{rht} \quad where,\ h = 1, 2, 3, \ldots\ldots, H\ and\ t = 1, 2, 3, \ldots\ldots, T \qquad (2)$$

Here, subscript h refers to the cross-sectional dimension for host countries & t refers to the time-series dimension. The error term is denoted by ε_{ht}.

3.4 DATA SOURCE & VARIABLE DESCRIPTION

In this study, *remittance inflow* is deemed as the dependent variable. *Exchange rate* depreciation is likely to exhibit a negative relationship with remittance received (Faini, 1994). This implies to a decrease in remittance inflow to receiving country while currency of host country depreciates i.e., exchange rate increases and vice versa (Rahman & Banerjee, 2011). For a depreciation, host

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countries must spend more to convert local currency into USD and thus, receiving country experiences a lesser inflow. Besides, Singer (2010) argued that policy makers seem to prefer a fixed exchange rate regime to regulate the flow of remittance.

Several studies have been dedicated to comprehending the relation of *Foreign Direct Investment* (FDI) as well as remittance inflow with economic growth while rarely any evidence is found on the relation between FDI and remittance inflow (Wang, Hong, Kafouros, & Wright, 2012). Recent studies unearthed the effect of FDI to be positive in drawing remittances inwards (Piteli, Kafouros, & Pitelis, 2021; Coon & Neumann, 2018; De Simone & Manchin, 2012; Javorcik, Özden, Spatareanu, & Neagu, 2011). FDI can be expected to bring about a drastic shift in growth of the host country which in result, translate into anticipation of higher remittance flow towards the receiving country. Two studies particularly investigating the impact of host countries' macroeconomic factors on Bangladesh's remittance inflow had found negative impact of FDI on Bangladesh's remittance inflow (Alam & Khan, 2021; Hasan & Rubayyat, 2015). Hence, host countries FDI inflow has an ambiguous impact of receiving country's remittance inflow.

Dewan Muktadir-Al-Mukit, A. Z. M. Shafiullah and Anamul Haque Sajib (2013) opined that, imports to receiving country or in essence, exports from host countries exerts a positive shock on remittance flow towards the receiver. On the other hand, exports are positively associated with remittance inflow in particular, remittance used for investment (Saadi, 2020). A trade surplus is supposed to be coherent with lugging remittance while a trade deficit does the opposite.

Earlier literature primarily focuses on the impact of remittance inflow on inflation instead of the impact of inflation on remittance inflow particularly, considering the host countries and receiving country (Ball, Lopez, & Reyes, 2013; Khan & Islam, 2013; Mia, Nasrin, Nourani, Naghavi, &

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Baskaran, 2015). In general, a higher price level or inflation would initially reduce the purchasing power of the migrants, but this would exert pressure on wage demand and consequentially increase their income level in the long run. A percentage of this increased income will then contribute to remittance outflow in host countries i.e., remittance inflow to receiving country. Contrasting result also been found in past literatures regarding the impact of host countries' price level on Bangladesh's remittance inflow. Rahman & Banerjee (2011) looked into the determinants of expatriates' remittance sending trend to Bangladesh from Kingdom of Saudi Arabia & found that there's a negative impact of price level of Kingdom of Saudia Arabia on Bangladesh's remittance inflow though the result was not significant. Contrastly positive impact of price level on Bangladesh remittance inflow had been found in several studies (Alam & Khan, 2021; Hasan & Rubayyat, 2015). Thus the impact of host countries price level on Bnagladesh's remittance inflow is also equivocal.

Akin to the argument of inflation, most researchers inquired about the impact of remittances on government expenditure (Chowdhury & Rabbi, 2014; Ahmed, 2013; Nishat & Bilgrami, 1991; Akayleh, 2011) ignoring influence of government disbursement on remittance inflow. However, Mehmood & Sadiq (2010) confirmed the existence of relationship between government expenditure and poverty along with remittances. Intuitively, remittance flow towards receiving country tends to increase provided that host countries' government budget increases. People in host countries will have better standard of living along with additional spare money to send to their home.

In appendix, we've also provided the descriptive statistics of all the variables used in this analysis along with graphs which delineate the nexus among ICT indicators, remittance inflow in Bangladesh and macroeconomic factors of host countries.

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The data sources of the variables used for the analysis in this paper are mentioned in the following table:

Variables	Description	Expected Sign	Data Source
$remit$	Remittance inflow in receiving/home country (million USD)	N/A	Bangladesh Bank (BB) quarterly publications
$exrate$	Exchange rate of host countries (Local Currency per USD)	-	World Development Indicators (WDI)
fdi	Foreign direct investment inflow in host countries (million USD)	+/-	World Development Indicators (WDI)
$export$	Total export amount of host countries (million USD)	+	World Development Indicators (WDI)
$import$	Total import amount of host countries (million USD)	-	World Development Indicators (WDI)
cpi	Price level of host countries (at constant USD 2010)	+/-	World Development Indicators (WDI)
$govex$	General government final consumption expenditure of host countries (million USD)	+	World Development Indicators (WDI)
ict	Level of ICT penetration for both receiving country & host countries (ICT indicators)	+	International Telecommunication Union (ITU)

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The variables have been selected analyzing previous literature as well as current economic phenomena predominant in majority of countries. Although numerous variables may affect remittance inflow of a particular country, the aforementioned variables coupling with the impact of ICT penetration reflects an archetype of the economy while other variables appear to be trivial. One of the popular concerns about this study might be the setting that has been chosen for analysis including host countries and receiving country. Vargas-Silva & Huang (2018) advocated that macroeconomic alteration in host countries affect the receiving country more than that of its own macroeconomic scenario in terms of remittance flow.

3.5 SAMPLE SIZE

Observations on each variable for 10 host countries & 1 receiving country were collected for the years 2001 to 2020. The timeframe of data collection was decided based on the availability of data for each variable. The data set contains total of 200 observations ($h \times t = 10 \times 20 = 200$).

3.6 HYPOTHESIS

The null hypothesis for the model states that there is statistically significant impact of host countries' macroeconomic factors on receiving country's remittance inflow in presence of both receiving country's & host countries' ICT penetration.

3.7 ESTIMATION STRATEGIES

This paper followed three panel data estimation techniques to confirm the robustness of the result obtained. These three estimation techniques were used to obtain the result of the co-efficient for each variable in case of the model showing the impact of host countries' macroeconomic variables on the remittance inflow to receiving country in presence of both receiving country's and host

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countries' ICT penetration. Pooled Ordinary Least Squares (POLS), Fixed Effect Model (FEM) & Random Effect Model (REM) are the three estimation techniques used for the model.

First, we run the POLS model to obtain the value of the coefficients and then we run the FEM & compare it to the POLS model. Lastly REM was run, and we determined the best model through Hausman test.

3.7.1 POOLED ORDINARY LEAST SQUARED MODEL (POLS)

The POLS model combines both the cross-sectional & time-series aspects of the data used. Let's assume a model as following:

$$y_{it} = \beta x_{it} + \varepsilon_{it} \quad for\ i = 1, 2, 3, \ldots \ldots, N \ \&\ t = 1, 2, 3, \ldots \ldots, T \qquad (3)$$

Here i is the cross-sectional aspect of the data & t is the time-series aspect of the data. In case of this model, we can simply run the OLS regression & obtain the POLS estimators. The assumptions for POLS model are also identical to the OLS model which is estimated for time-series data. The result obtained from POLS model is compared with the result obtained from FEM to show that, it is statistically significant & the best fitted model.

3.7.2 FEM AND REM

In FEM and REM model, we allow for individual specific effects i.e., each cross-sectional unit has a different intercept term in FEM & REM. Both the models take the following functional form:

$$y_{it} = \omega_i + \beta x_{it} + \varepsilon_{it} \quad for\ i = 1, 2, 3, \ldots \ldots, N \ \&\ t = 1, 2, 3, \ldots \ldots, T \qquad (4)$$

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Here ω_i is the individual specific effect which is treated as unobserved random variable correlated with the observed regressors x_{it}. In case of Random effect model ω_i is treated as random variables that are distributed independently of the regressor.

4. RESULT

Table 1: Impact of host countries macroeconomic factors in presence of Internet penetration

Variables	POLS		FE		RE	
2001-2020	Coefficient	P > |t|	Coefficient	P > |t|	Coefficient	P > |z|
lnfdi	-.013	.777	-.047	.234	-.026	.526
lngovex	.884***	0	1.872***	0	.95***	0
lnexport	.91***	0	.585**	.026	.585**	.026
lnimport	-1.612***	0	-1.402***	0	-1.269***	0
lncpi	.125	.928	-1.33	.226	-.88	.436
lnexrate	.134*	.052	-.944	.197	-.086	.562
lnintrh	.32***	0	.278***	.001	.379***	0
Constant	2.568	.674	.45	.937	6.095	.235
Obs.	153		153		153	
R^2	0.774		0.768		0.740	

Hausman (1978) specification test

Chi-square test value	18.795
P-value	.009

*Note: *** p<.01, ** p<.05, * p<.1*

Source: Authors' Calculation

Table 1 shows the impact of host countries' macroeconomic variables on receiving country's remittance inflow when considering both host countries & receiving country's percentage of population using internet. From POLS model host countries' government final consumption

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expenditure, amount of export & import shows a statistically significant result at 1% level of significance where both government final consumption expenditure & amount of export has a positive sign while import has a negative sign.

Table 2: Impact of host countries macroeconomic factors in presence of fixed broadband penetration

Variables	POLS		FE		RE	
2001-2020	Coefficient	P > |t|	Coefficient	P > |t|	Coefficient	P > |z|
lnfdi	.115**	.046	.065	.181	.111**	.05
lngovex	.734***	0	1.382***	.005	.734***	0
lnexport	.408	.145	.308	.239	.393	.158
lnimport	-1.119***	0	-.339	.467	-1.1***	0
lncpi	4.405***	.001	-1.972	.192	4.052***	.002
lnexrate	.161**	.019	.889	.303	.148**	.04
lnfbbrh	-.018	.747	.15**	.028	-.003	.963
Constant	-14.629**	.019	-.164	.98	-13.022**	.034
Obs.	109		109		109	
R^2	0.671		0.559		0.670	
Hausman (1978) specification test						
Chi-square test value						20.822
P-value						.004

*Note: *** p<.01, ** p<.05, * p<.1*

Source: Authors' Calculation

Exchange rate & level of internet penetration for both host countries & receiving country are also statistically significant while exchange rate is significant at 10% level of significance & internet penetration at 1% respectively. Moving to FE & RE model, host countries government final consumption expenditure, amounts of export & amounts import are also statistically significant

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but in FE & RE model amounts of export is significant at 5% level of significance. On the other hand, exchange rate now has a negative coefficient though the value of coefficient is not statistically significant in both FE & RE model. The level of internet penetration is statistically significant in both FE & RE model at 1% level of significance. The result of Hausman Test has a small p-value close to zero indicating that FE model is appropriate for our analysis.

The impact of host countries macroeconomic factors on receiving country's remittance inflow in presence of both host countries & receiving country's percentage of people using fixed broadband is presented in Table 2. In both POLS & RE model, foreign direct investment inflow in host countries has significant impact on receiving country's remittance inflow at 5% level of significance. Government final consumption expenditure, amounts of import & price level of host countries has statistically significant coefficient at 1% level of significance in both POLS & RE model where the coefficient of amounts of import has a negative sign. Both POLS & RE model shows a significant coefficient of exchange rate at 5% level of significance. Moving to FE model, only government final consumption expenditure & fixed broadband penetration for both host countries & receiving country shows a significant coefficient while government final consumption expenditure is significant at 1% & fixed broadband penetration is statistically significant at 5% level of significance. The result of Hausman test gives us a statistically significant output at 1% level of significance leading to the rejection of RE model.

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Table 3: Impact of host countries macroeconomic factors in presence of fixed telephone penetration

Variables	POLS		FE		RE	
2001-2020	Coefficient	P > |t|	Coefficient	P > |t|	Coefficient	P > |z|
lnfdi	.006	.892	-.067	.106	-.035	.431
lngovex	.863***	0	2.278***	0	1.05***	0
lnexport	1.184***	0	.75***	.005	.867***	.002
lnimport	-1.786***	0	-1.229***	.003	-1.396***	0
lncpi	4.751***	0	1.225	.211	4.485***	0
lnexrate	.047	.561	-.399	.586	-.364	.107
lntelrh	-.11	.496	.195	.237	.218	.209
Constant	-17.96***	0	-18.736***	0	-20.125***	0
Obs.	153		153		153	
R^2	0.752		0.758		0.614	
Hausman (1978) specification test						
Chi-square test value						35.209
P-value						.000

*Note: *** p<.01, ** p<.05, * p<.1*

Source: Authors' Calculation

Table 4: Impact of host countries macroeconomic factors in presence of mobile cellular penetration

*Note: *** p<.01, ** p<.05, * p<.1*

Source: Authors' Calculation

The level of fixed telephone usage in both host countries & receiving country don't have any significant impact on receiving country's remittance inflow as represented in Table 3. But government final consumption expenditure, amounts of export & amounts of import all three variables have a statistically significant coefficient at 1% level of significance in all three models. Price level of host countries is significant at 5% in both POLS & RE model. The result of Hausman test is significant at 1% level of significance indicating FE model is more appropriate.

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In Table 4, except the price level of host countries all other variables are statistically significant at different level of significance in POLS model. In both FE & RE model, the foreign direct investment inflow in host countries, government final consumption expenditure & amounts of import are statistically significant at 5%, 1% & 1% level of significance respectively while only amounts of import has a negative impact on remittance inflow in receiving country. The coefficient for mobile user penetration in both host countries & receiving country has a highly significant positive coefficient in all three models. The result obtained from Hausman test leads us to the rejection of RE model in this case as well.

Since the F test allows us to reject the null hypothesis of having no fixed effect among the host countries while the B-P LM test suggests no random effect, the fixed effects model is chosen as the best fitted model for the analysis. Moreover, the Hausman specification test also supports a fixed effect model. All the four tables illustrate that *government expenditure* is highly significant as well as consistent with the expected relationship discussed in section 3.4. The finding goes in line with the extant literature. Regardless of other factors, greater budget and its implementation on host countries attract higher remittances toward Bangladesh. Import and ICT indicators are found to be significant in three of the models while export is significant in two making them the variables of interest while assessing an economy. Import as well as export are consistent with their sign in all the models. Hence, the result obtained from the models showing the impact of host countries' trade balance on receiving country's remittance inflow are also commensurate with existing literatures. At the same time, it is natural to find the ICT indicators significant in all the models except 'fixed telephone users' since telephone has so far been replaced by easier and more compatible technology of mobile cellular service. Bangladesh has also experienced a surge in usage of mobile phones while telephone remained major mode of communication for a shorter

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span. As of December 2020, the number of unique mobile subscribers in Bangladesh was 90 million which is expected to grow further to 127 million by 2030 (Farheen S Rahman, 2021). However, exchange rate and price level have not been found to be significant in any of the models. This does not necessarily mean for these variables to lose importance in the model. Remittance may be affected by the exchange rate and price channel affects but only to a negligible extent. Unless there is any external shock in exchange rate or price level of host countries, a gradual change in these variables will only bring about little changes in remittance inflow. The effect of FDI appears to be ambiguous from the results of the tables. This might happen due to the country-specific policy measure and the use of FDI in particular sectors. Among all the variables of interest, government expenditure of host countries exceeds all others in terms of volume.

5. CONCLUSION

Over the last couple of years, remittance inflow has become one of the most pivotal, deciding & proven determinants of economic growth in Bangladesh. From supporting the families residing in receiving country to minimizing the trade gap, remittance inflow is desideratum which is leaving its imprints in every aspect of Bangladesh's economic arena. For a developing country like Bangladesh, a high remittance inflow is a key factor that can burgeon high level of consumption, demand, investment & the overall level of income. Thus, identifying the key factors which are exhorting a high remittance inflow has been the subject of great interest to researchers. Though most of the research focusing on pinpointing the factors of a high remittance inflow maneuvered around the local economy, the number of research focusing on the economic factors of the countries that are the source of remittance is dearth. The aim of this study was to find out the

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economic factors of the host countries which are out of the control of Bangladesh yet have consequential impact on its remittance inflow.

While observing the impact of host countries macroeconomic factors on Bangladesh's remittance inflow we have also incorporated the level of ICT penetration for both Bangladesh & its top 10 host countries to capture the impact of ongoing 4^{th} Industrial Revolution (4IR). According to the result obtained in our analysis, all the macroeconomic factors of the host countries show significant impact on remittance inflow of Bangladesh in presence of different dimension of ICT penetration. Though it's not possible for a receiving country to control the economic factors of host countries, yet the result has very significant implication for policymakers. Bangladesh is one of the most populous countries in the world & this increasing population is creating a substantial pressure on its resources. Bangladesh is inundated with multifaceted problems due to large population & exporting manpower can be one of the feasible solutions for Bangladesh to tackle these problems. Hence, identifying the optimal host countries that can better serve our workers with handsome wage is crucial while grooming & equipping our workers with knowledge, training & expertise. Bangladesh should focus on sending its workers to those countries that have a better economic outlook & potential countries can be selected based on the result obtained in this analysis. Based on the macroeconomic factors that we have incorporated in our analysis Bangladesh can unravel new markets for its workers & at the same time by managing its own internal factors Bangladesh can bolster its remittance inflow in the long run.

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REFERENCES

Abbas, F., Masood, A., & Sakhawat, A. (2017). What determine remittances to Pakistan? The role of macroeconomic, political and financial factors. *Journal of Policy Modeling, 39*(3), 519-531.

Adamu, A. (2009). The Effects of Global Financial Crisis on Nigerian Economy. *International Journal of Investment and Finance, 1*(1 & 2), 11-21.

Adejo, O., & Etowa, E. (2016). Exploring the Roles of ICTs in Migrant Remittances to Nigerian Rural Areas. Calabar, Nigeria: The international conference on information technology and economic development (ICITED).

Ahmed, F. Z. (2013). Remittances deteriorate governance. *Review of Economics and Statistics, 95*(4), 1166-1182.

Akayleh, F. A. (2011). Labor Migration, Workers' Remittances and Economic Activity: New Instrumental Variables for the Effect of Remittances. *Journal of Social Sciences, 28*(3), 211-224.

Alam, Q. N., & Khan, M. A. (2021). ECONOMIC AND NONECONOMIC FORCES ON REMITTANCE RECEIVING: A PANEL ANALYSIS OF TOP REMITTANCE SENDING COUNTRIES TOWARDS BANGLADESH. *The Economics and Finance Letters, 8*(2), 201-212.

Al-Assaf, G., & Al-Malki, A. M. (2014). Modelling the Macroeconomic Determinants of Workers' Remittances: The Case of Jordan. *International Journal of Economics and Financial Issues, 4*(3), 514-526.

Andersson-Manjang, S. K., & Naghavi, N. (2021). *State of the Industry Report on Mobile Money 2021.* London: GSM Association. Retrieved June 08, 2022, from https://www.gsma.com/newsroom/press-release/mobile-money-accounts-grow-to-1-2-billion-in-2020/

Angelakopoulos, G., & Mihiotis, A. (2011). E-banking: challenges and opportunities in the Greek banking sector. *Electronic Commerce Research, 11*(3), 297-319.

Asongu, S., Biekpe, N., & Tchamyou, V. (2019). Remittances, ICT and doing business in Sub-Saharan Africa. *Journal of Economic Studies*.

Ball, C. P., Lopez, C., & Reyes, J. (2013). Remittances, inflation and exchange rate regimes in small open economies. *The World Economy, 36*(4), 487-507.

Baltagi, B. H. (2001). Why Should We Use Panel Data? Their Benefits and Limitations . In B. H. Baltagi, *Econometric analysis of panel data* (pp. 4-9). Springer.

Bangladesh Bank (BB). (2001-2020). *Bangladesh Bank Quarterly*. Retrieved July 7, 2022, from https://www.bb.org.bd/pub/publictn.php

Bangladesh Bank (BB). (2021). *Bangladesh Bank Quarterly Oct-Dec 2021.* Dhaka: Bangladesh Bank (BB).

Barua, S. (2007, June 30). *Determinants of Workers' Remittances in Bangladesh: An Empirical Study.* (P. A. (PAU), Ed.) Retrieved June 06, 2022, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1398690

Received: 25.07.2022 *Accepted: 04.04.2024* *Published:20.06.2024*

Bayangos, V. B., & Jansen, K. (2010). The Macroeconomics of Remittances In the Philippines. *ISS Working Paper Series / General Series, 470*, 1-45.

Borja, K. (2012). THE IMPACT OF THE US RECESSION ON IMMIGRANT REMITTANCES IN CENTRAL AMERICA. *Journal of International Commerce, Economics and Policy, 3*(3), p. 12500200.

Borja, K. (2012). What drives remittances to Latin America? A review of the literature. *International Journal of Business and Social Science, 3*(17).

Borja, K. (2013). HOME AND HOST COUNTRY BUSINESS CYCLES AND REMITTANCES: THE CASE OF EL SALVADOR AND THE DOMINICAN REPUBLIC. *Applied Econometrics and International Development , 13*(2), 101-118.

Chamberlain, G. (1984). Panel data. *Handbook of Econometrics, 2*, 1247-1318.

Chowdhury, M. B., & Rabbi, F. (2014). Workers' remittances and Dutch disease in Bangladesh. *The Journal of International Trade & Economic Development, 23*(4), 455-475.

Coon, M., & Neumann, R. (2018). Follow the money: Remittance responses to FDI inflows. *Journal of Globalization and Development, 8*(2).

David, B., Dana, D., & Abel, F. (2013). On the effect of mobile phone on migrant remittances: A closer look at international transfers. *Electronic Commerce Research and Applications, 12*(4), 280-288.

De Simone, G., & Manchin, M. (2012). Outward migration and inward FDI: factor mobility between eastern and western Europe. *Review of International Economics, 20*(3), 600-615.

Dilanchiev1, A., & Sekreter, A. (2016). Remittance Inflow and Economic Growth: The Case of Georgia. *Journal of Research in Business, Economics and Management , 6*(2), 868-873.

El-Sakka, M., & McNabb, R. (1999). The Macroeconomic Determinants of Emigrant Remittances. *World Development, 27*(8), 1493-1502.

Erik, L., & Marta, R.-A. (2008). Determinants of Bilateral Remittance Flows. *The B.E. Journal of Macroeconomics, 8*(1), 1-23.

Faini, R. (1994). Workers remittances and the real exchange rate. *Journal of Population Economics, 7*(2), 235-245.

Farheen S Rahman. (2021). *An Inclusive Digital Future: Bangladesh Telecom Sector Outlook in The Fresh Decade.* Dhaka: UCB Asset Research.

Hasan, R. R., & Rubayyat, H. (2015). The Determinants Of Worker Remittance In Terms Of Foreign Factors: The Case Of Bangladesh. *Studies in Business and Economics, 10*(3), 81-93.

Hor, C., & Pheang, P. (2017). Analysis Determinant Factors Effect on Migrant Workers' Remittances Flow to the CLMV Countries. *International Journal of Economics and Financial Issues, 7*(2), 202-207.

Hsiao, C. (2022). Advantages of Panel Data. In C. Hsiao, *Analysis of panel data* (pp. 4-8). Cambridge University Press.

Received: 25.07.2022 *Accepted: 04.04.2024* *Published:20.06.2024*

International Fund for Agricultural Development (IFAD). (2021). *11 reasons why remittances are important*. Retrieved June 08, 2022, from https://www.ifad.org/en/web/latest/-/11-reasons-why-remittances-are-important

International Labour Organization (ILO). (n.d.). *Labour migration in Bangladesh*. Retrieved July 7, 2022, from https://www.ilo.org/dhaka/Areasofwork/labour-migration/lang--en/index.htm

Islam, M. S., & Nasrin, S. (2015). Driving Forces of Remittance Inflow in Bangladesh: An Empirical Study. *International Journal of Economics and Finance, 7*(6), 126-138.

Javorcik, B. S., Özden, Ç., Spatareanu, M., & Neagu, C. (2011). Migrant networks and foreign direct investment. *Journal of development economics, 94*(2), 231-241.

Kennedy, P. (2008). *A guide to econometrics.* Oxford: Blackwell Publishing.

Khan, A. M., Amin, S. B., & Ahmed, A. (2021). NEXUS AMONG FOREIGN EXCHANGE RESERVE, REMITTANCE AND TRADE OPENNESS: AN EMPIRICAL INVESTIGATION IN THE CASE OF BANGLADESHI ECONOMY. *Journal of Empirical Studies, 8*(1), 1-12.

Khan, Z. S., & Islam, S. (2013). The effects of remittances on inflation: evidence from Bangladesh. *Journal of Economics and Business Research, 19*(2), 198-208.

Kosse, A., & Vermeulen, R. (2013). Migrants' choice of remittance channel: do general payment habits play a role? *World Development, 62*, 213-227.

Kumar, R. R. (2011). Nexus between financial and technology inclusion, remittances and trade openness vis-`a-vis growth: a study of Nepal. *The Economic Journal of Nepal, 34*(133), 13-30.

Kumar, R. R. (2013). Linking remittances with financial development and ICT: a study of the Philippines. *International Journal of Economics and Business Research, 5*(4), 379-399.

Kumar, R. R., & Vu, H. T. (2014). Exploring the nexus between ICT, remittances and economic growth: A study of Vietnam. *Journal of Southeast Asian Economies*, 104-120.

Maimbo, S. M., & Ratha, D. (2005). *Remittances: Development Impact and Future Prospects.* Washington, DC: The World Bank.

Makun, K. K., & Jayaraman, T. (2018). Role Of Ict As A Contingency Factor In Financial Sector Development, Remittances, And Economic Growth Nexus: An Empirical Study Of Indonesia. *Bulletin of Monetary Economics and Banking, 23*(3), 365-388.

Mehedi Hasan. (2020). Trade deficit widens to 12.79% in FY20. Dhaka: DhakaTribune. Retrieved June 08, 2022, from https://archive.dhakatribune.com/business/2020/07/28/trade-deficit-widens-to-12-79-in-fy20

Mehmood, R., & Sadiq, S. (2010). The relationship between government expenditure and poverty: A cointegration analysis. *Romanian Journal of Fiscal Policy (RJFP), 1*(1), 29-37.

Meyer, D., & Shera, A. (2016). The impact of remittances on economic growth: An econometric Model. *ECONOMIA*, 1-9.

Mia, M. A., Nasrin, S., Nourani, M., Naghavi, N., & Baskaran, A. (2015). Impact of Information and Communication Technology on Remittance Flow: A Developing Countries' Perspective. *Administration and Business (PCEPAB)*, 180-195.

Received: 25.07.2022 Accepted: 04.04.2024 Published:20.06.2024

Mukoswa, O. R. (2016). MACROECONOMIC VARIABLES AND VARIATIONS IN DIASPORA REMITTANCES IN KENYA. *Journal of Business, Economics and Finance -JBEF, 5*(2), 156-164.

Muktadir-Al-Mukit, D., Shafiullah, A., & Sajib, A. H. (2013). Determination of causality between remittance and import: evidence from Bangladesh. *International Journal of Business and Social Research (IJBSR), 3*(3), 55-62.

Mustafa, K., & Ali, S. R. (2018). The Macroeconomic Determinants of Remittances in Pakistan. *International Journal of Business Management and Finance Research, 1*(1), 1-8.

Naufal, G. S., & Termos, A. (2009). The responsiveness of remittances to price of oil: the case of the GCC. *OPEC Energy Review, 33*(3-4), 184-197.

Ncube, M., & Brixiova, Z. (2013). Remittances and their Macroeocnomic Impact Evidence from Africa. *World Economics, 14*(4), 1-20.

Nishat, M., & Bilgrami, N. (1991). The Impact of migrant worker's remittances on Pakistan economy. *Pakistan Economic and Social Review*, 21-41.

Piteli, E. E., Kafouros, M., & Pitelis, C. N. (2021). Follow the people and the money: Effects of inward FDI on migrant remittances and the contingent role of new firm creation and institutional infrastructure in emerging economies. *Journal of World Business, 56*(2), 101-178.

Rahman, M., & Banerjee, P. K. (2011). Dynamic Empirics of Expatriates' Remittances from Saudi Arabia to Bangladesh. *Southwestern Economic Review, 38*, 1-11.

Rahman, S. A., & Wadud, M. A. (2014). Tax and Spend, Spend and Tax, Fiscal Synchronization or Fiscal Neutrality: Evidence from Bangladesh. *The International Journal of Applied Economics and Finance, 8*(3), 98-108.

Ratha, D. (2003). Workers' remittances: an important and stable source of external development finance. *Global Development Finance*, 9.

Ratha, D., Kim, E. J., Plaza, S., Riordan, E. J., & Chandra, V. (2022). *Migration and Development Brief 36: A War in a Pandemic: Implications of the Russian invasion of Ukraine and the COVID-19 crisis on Global Governance of Migration and Remittance Flows.* Washington, DC: KNOMAD-World Bank.

Ratha, Dilip, Mohapatra, S., & Silwal, A. (2010). *Outlook for Remittance Flows 2010-11: Remittance flows to developing countries remained resilient in 2009, expected to recover during 2010-11.* Washington: WorldBank.

Saadi, M. (2020). Remittance inflows and export complexity: New evidence from developing and emerging countries. *The Journal of Development Studies, 56*(12), 2266-2292.

Schiopu, I. C., & Siegfried, N. (2006). *Determinants of Workers' Remittances: Evidence from the European Neighbouring Region.* ECB Working Paper No. 688.

Siegel, M., & Fransen, S. (2013). New technologies in remittance sending: Opportunities for mobile remittances in Africa. *African Journal of Science, Technology, Innovation and Development, 5*(5), 423-438.

Received: 25.07.2022 *Accepted: 04.04.2024* *Published:20.06.2024*

Singer, D. A. (2010). Migrant remittances and exchange rate regimes in the developing world. *American Political Science Review, 104*(2), 307-323.

Siraji, M., Khalid, M. S., & Sobhan, M. A. (2009). Proposed Solution on E-Banking for Rural Remittance in Bangladesh. Dhaka.

Tabit, S., & Moussir, C. E. (2016). Macroeconomic Determinants of Migrants Remittances: Evidence from a Panel of Developing Countries. *International Journal of Business and Social Research, 6*(7), 1-11.

The Business Standard (TBS). (2022). Bangladesh's forex reserves crosses $44 bln thanks to better inflow. Dhaka: The Business Standard. Retrieved June 08, 2022, from https://www.tbsnews.net/economy/bangladeshs-forex-reserves-crosses-44-bln-thanks-better-inflow-397154

Umair, M., & Waheed, A. (2017). What Drives Remittances from Saudi Arabia to Pakistan? Home Versus Host Country's Economic Conditions. *International Migration, 55*(4), 141-153.

United Nations Development Programme (UNDP). (2016). *Sustaianble Development Goals*. Retrieved June 08, 2022, from https://www.undp.org/sustainable-development-goals

Vargas-Silva, C., & Huang, P. (2018, January 3). Macroeconomic determinants of workers' remittances: Host vs. home country's economic condition. *Home Country's Economic Condition*.

Wang, C., Hong, J., Kafouros, M., & Wright, M. (2012). Exploring the role of government involvement in outward FDI from emerging economies. *Journal of International Business Studies, 43*(7), 655-676.

Yoshino, N., Taghizadeh-Hesary, F., & Otsuka, M. (2019, June 1). *Determinants of International Remittance Inflows in Middle-Income Countries in Asia and the Pacific.* (A. D. Institute, Ed.) Retrieved June 06, 2022, from https://www.adb.org/publications/determinants-international-remittance-inflows-asia-pacific

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APPENDIX

A.1 DESCRIPTIVE STATISTICS

TABLE 1 DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
lnremit	200	6.204	1.293	1.946	8.298
lnfdi	186	8.751	2.433	1.286	13.145
lngovex	197	10.687	1.918	7.346	14.94
lnexport	168	12.039	1.499	8.796	14.747
lnimport	168	11.831	1.688	8.475	14.953
lncpi	194	4.594	.16	4.124	4.862
lnexrate	200	.198	1.01	-1.314	1.459
lnintrh	199	4.964	2.412	-.498	7.816
lnfbbrh	138	2.238	2.284	-3.761	5.504
lntelrh	199	2.709	.576	1.473	3.937
lnmobrh	200	7.772	2.219	1.562	9.948

Source: Authors’ Calculation

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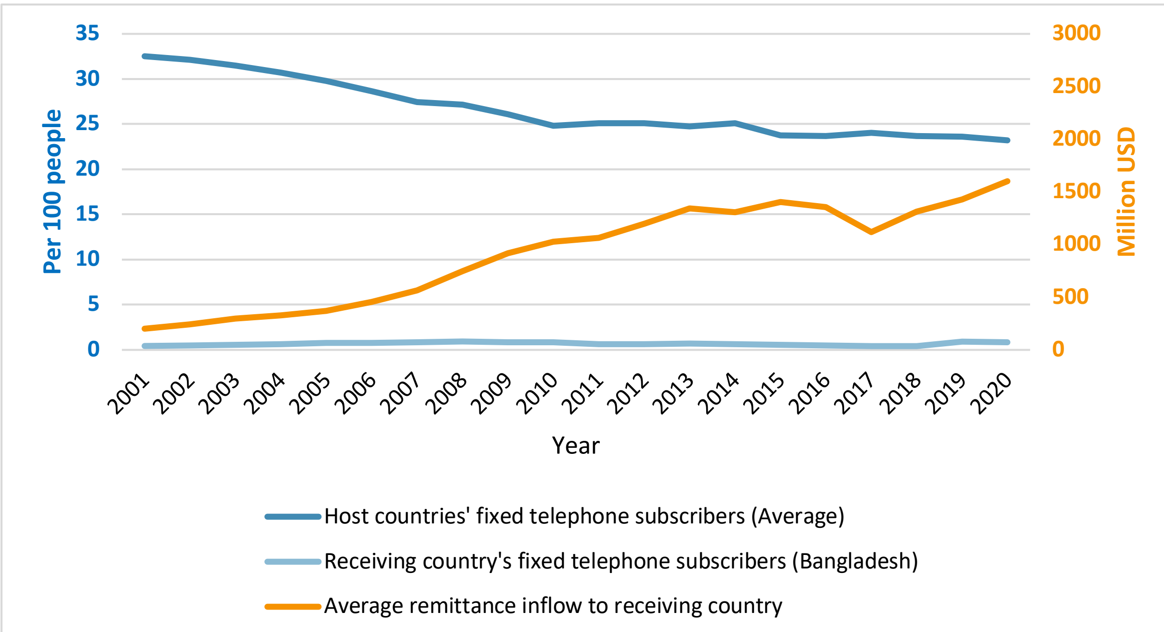
A.2 DATA VISUALIZATION

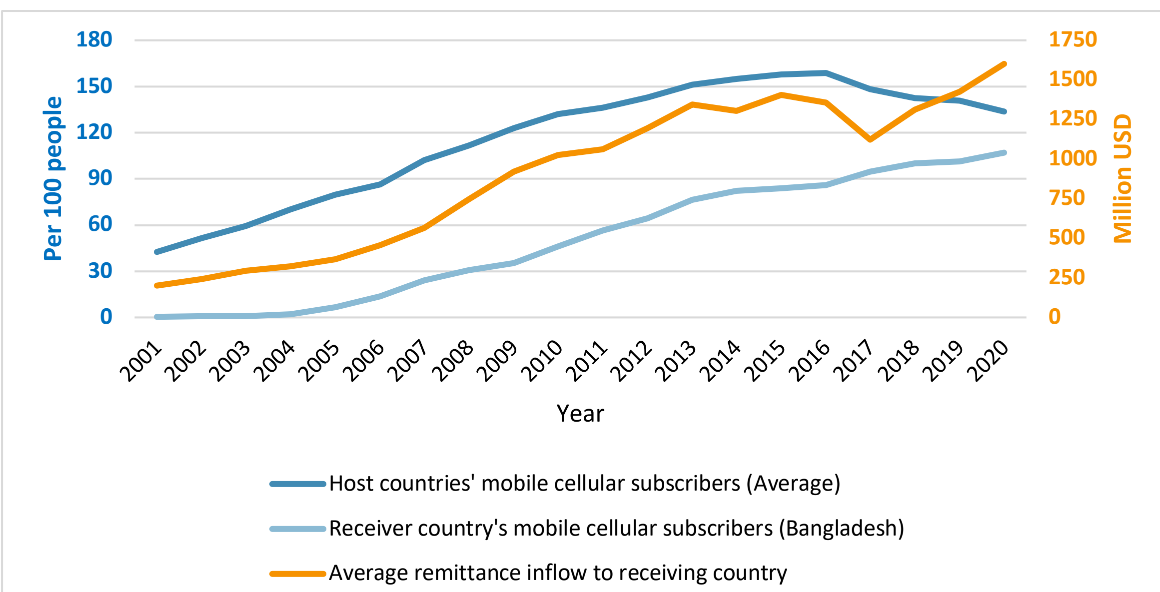
FIGURE 1 REMITTANCE INFLOW AND FIXED TELEPHONE SUBSCRIBERS

A.2.1 Remittance inflow to receiving country and ICT indicators of host countries and receiving country



Source: Authors' Analysis

FIGURE 2 REMITTANCE INFLOW AND MOBILE CELLULAR SUBSCRIBERS



Source: Authors' Analysis

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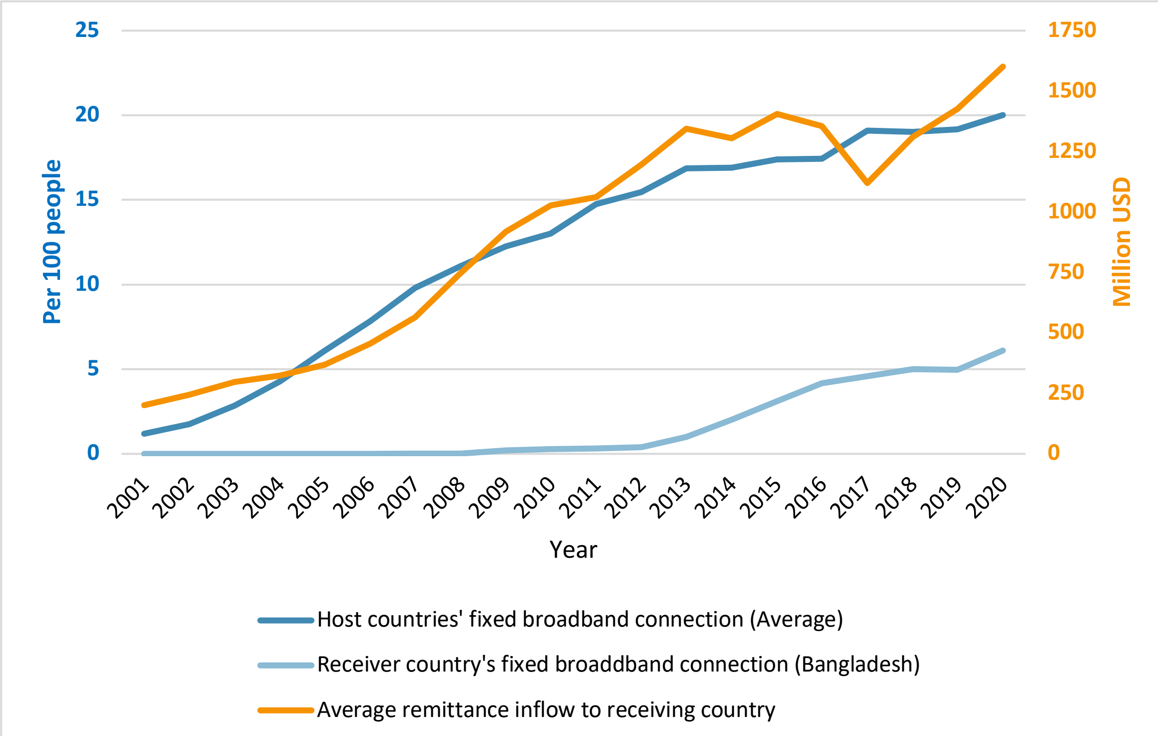
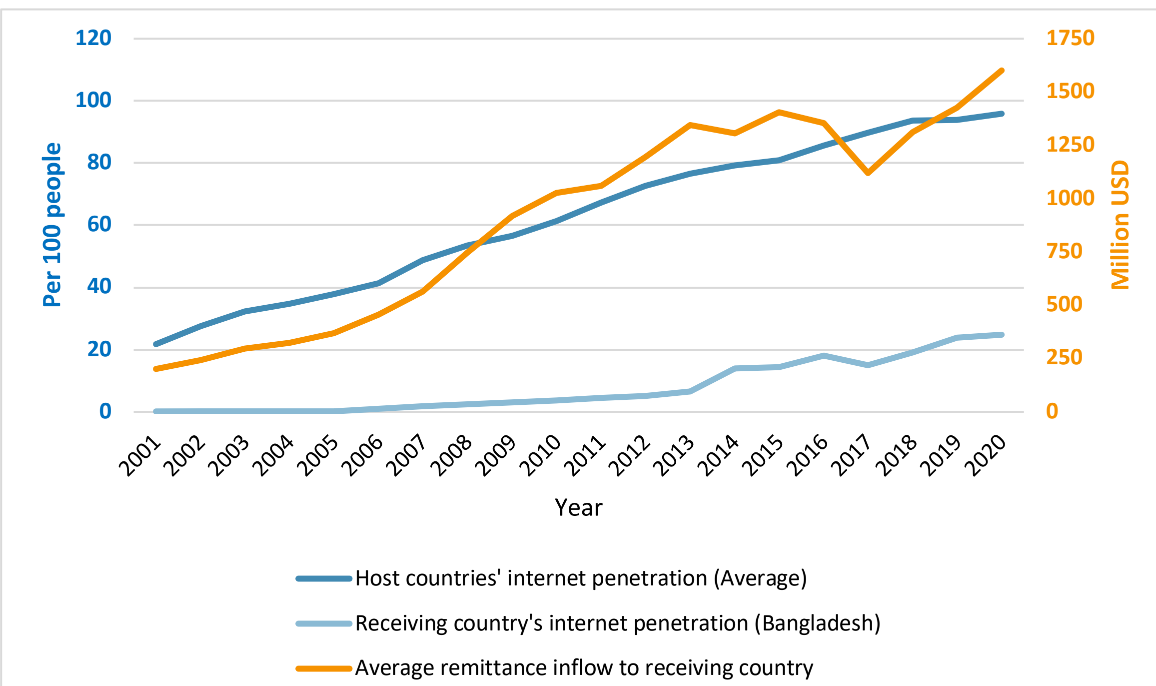
FIGURE 3 REMITTANCE INFLOW AND FIXED BROADBAND CONNECTIONS



Source: Authors' Analysis

FIGURE 4 REMITTANCE INFLOW AND INTERNET ACCESS



Source: Authors' Analysis

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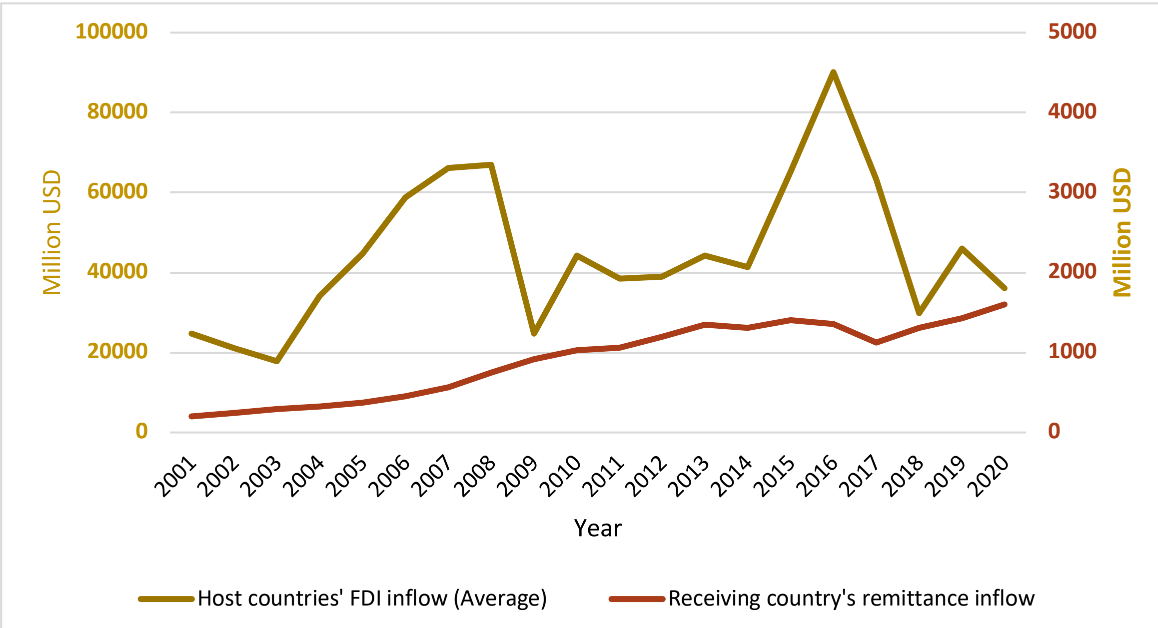
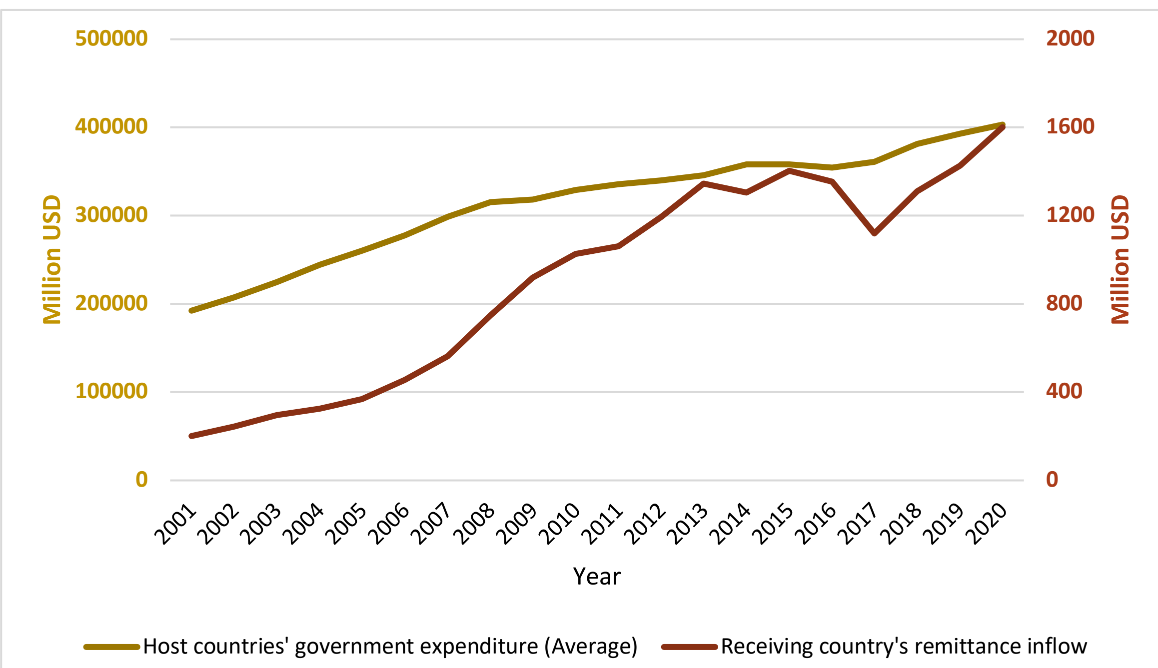
A.2.2 REMITTANCE INFLOW TO RECEIVING COUNTRY AND MACROECONOMIC VARIABLES IN HOST COUNTRIES

FIGURE 5 REMITTANCE INFLOW AND FDI INFLOW



Source: Authors' Analysis

FIGURE 6 REMITTANCE INFLOW AND GOVERNMENT EXPENDITURE



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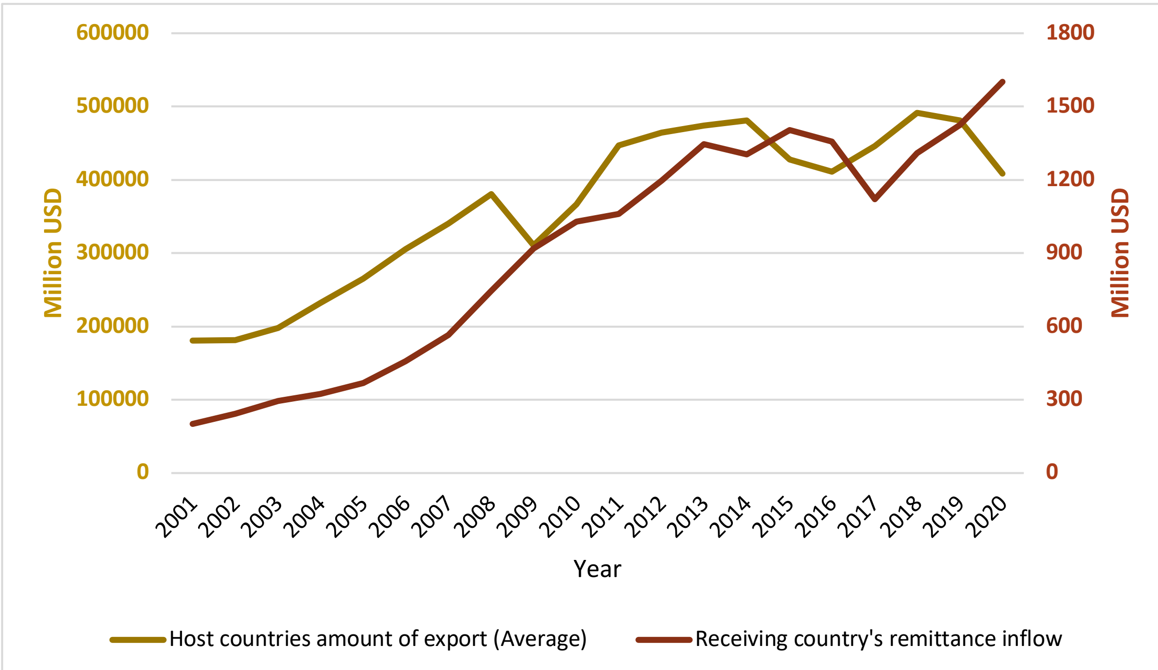
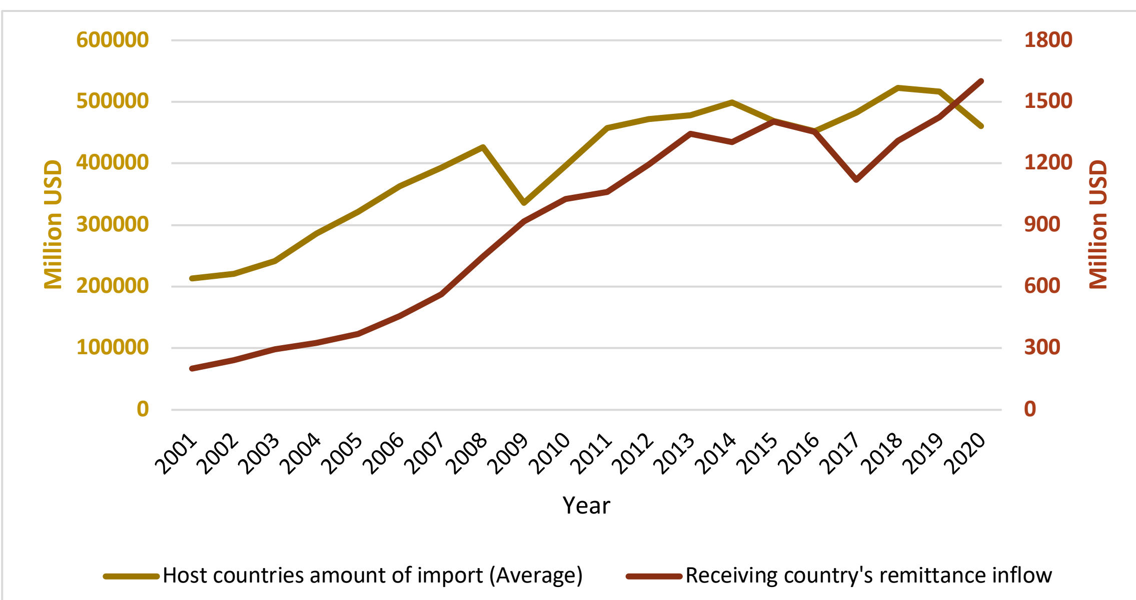
Source: Authors' Analysis

FIGURE 7 REMITTANCE INFLOW AND EXPORTS



Source: Authors' Analysis

FIGURE 8 REMITTANCE INFLOW AND IMPORTS



Source: Authors' Analysis

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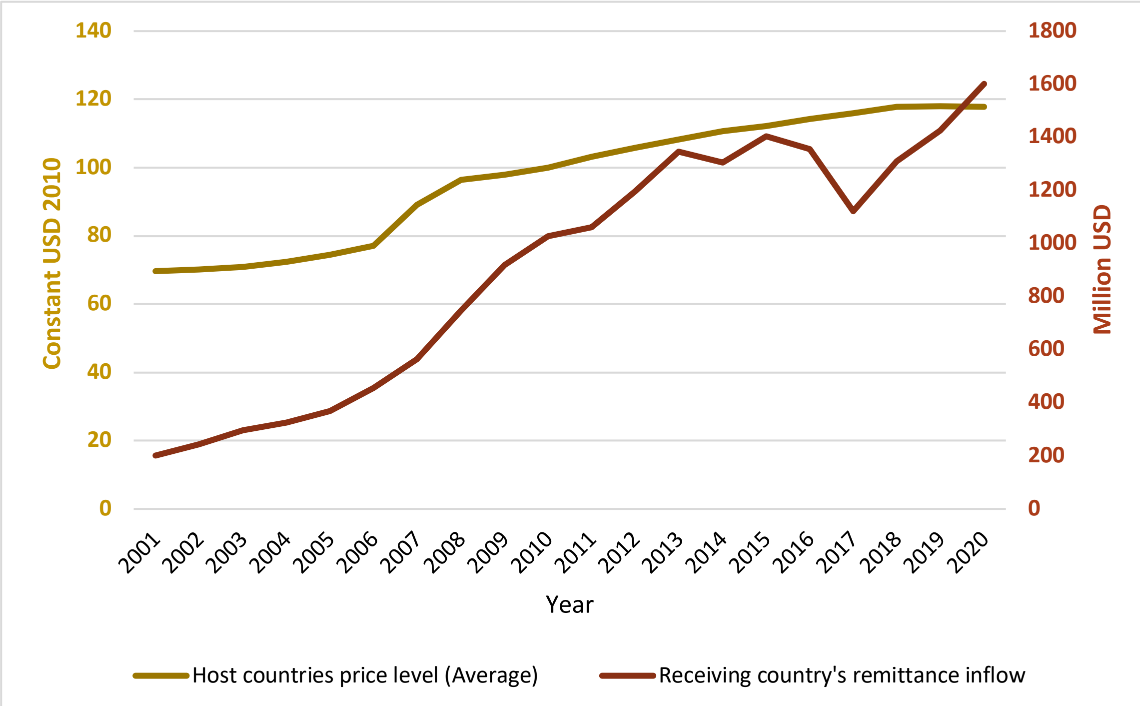
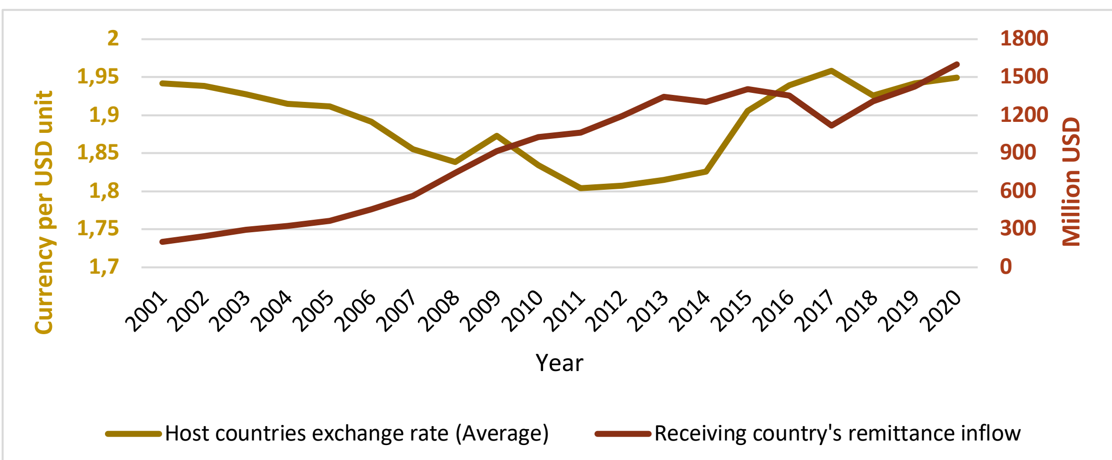
FIGURE 9 REMITTANCE INFLOW AND CONSUMER PRICE INDEX (CPI)



Source: Authors' Analysis

FIGURE 10 REMITTANCE INFLOW AND EXCHANGE RATE



Source: Authors' Analysis

DISCLOSURE OF CONFLICT

The author(s) declare that they have no conflicts of interest.

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FRAUD PREVENTION MEASURES AND INTERNAL CONTROLS TO MITIGATE INTERNAL FRAUD RISK WITHIN SOUTH AFRICAN RETAIL SMMES

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Abstract

SMMEs have been reported to encounter the highest number of fraud instances primarily due to the ineffective use of internal controls within their businesses. Previous research shows that the South African SMMEs are more susceptible to the risk of fraud. It is deemed that there is a lack of effective communication of fraud prevention measures and internal controls, resulting in fraudulent activities. This study sought to evaluate the effectiveness of the communication of fraud prevention measures and internal controls to mitigate the risk of internal fraud within the retail SMMEs located in the Cape Metropole. This study took the form of a cross-sectional survey research, and it recorded the empirical evidence in terms of a quantitative research approach. There is a significant progress in retail SMMEs towards communicating fraud prevention measures and internal controls. The majority of retail SMMEs were aware of the risk of internal fraud and communicated with greater emphasis the importance of prevention measures and internal controls with the intention to combat the risk of internal fraud. However, these businesses evident some internal control deficiencies which led the realisation of various risks including internal fraud. Half of these businesses did not attend any anti-fraud awareness or ethics training. This study served as a basis for future research to improve the communication of fraud prevention measures and internal controls within the South African retail SMMEs to combat internal fraud. This study served of a particular value to policymakers to promote a fraud free environment in retail SMMEs.

Keywords: Fraud prevention, internal controls, internal fraud risk, South African retail

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1. INTRODUCTION

Over the years, the importance of Micro, Small and Medium Enterprises (SMMEs) has increasingly been recognised across the globe since these business entities have become key role players in the development of almost every country's economy (Chimucheka, 2014:783; Akugri, Bagah & Wulifan, 2015; Kalidas, Magwentshu & Agesan Rajagopaul, 2020). SMMEs' contribution to the economy is generally grouped into two main economic indicators namely the Gross Domestic Product (GDP) and the employment opportunity which in turn leads to the poverty alleviation (Bruwer, 2016).

The foregoing has not been of any difference in South Africa as these business entities are playing a vital role in combatting unemployment and in contributing altogether to the economy of the country (Prinsloo, Walker, Botha, Bruwer & Smit, 2015:67; Saah, 2021). The Trade industry, including South African retail SMMEs, contributed 43,2% toward the total national income earned by SMMEs, excluding the agricultural sector (South African Market Insights, 2020). More so, the retail sector is the largest industry contributor to the country's GDP (34%), which has the potential to reduce the high unemployment rate in South Africa and enhance national economic growth (Stats SA, 2018; The Banking Association South Africa, 2019).

Despite the stated and prospective contribution of SMMEs to the country's economic stimulus, they are nonetheless vulnerable to substantial risk exposure, such as loss of key personnel, credit losses, increased (high) competition, theft, shoplifting, bankruptcy, fraud, and so on (Petersen, 2018). In addition, with such risk exposure it becomes then difficult for these business entities to attain their business objectives by the resultant losses caused when the risk materialises (Ramukumba, 2014; Rungani & Potgieter, 2018). The materialisation of risks, such as fraud, unfolds to devastating consequences to SMMEs as they are in most cases unable to easily absorb the losses (Ramukumba, 2014; Sarokin, 2020; Fanews, 2022). Fraud is believed to be one of the most prevailing risks that hinder the attainment of business objectives as well as the smooth business continuation since it carries strategic, legal, financial, and operational consequences (Pickett, 2012:7; Petersen, 2018).

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This study focuses on internal fraud because it is infrequently detected and reported in the context of SMMEs (ACFE, 2020b). Internal fraud can be referred to as any intentional act or omission within the organisation designed to deceive others, resulting in the victim suffering a loss and/or the internal perpetrator (such as an employee, a manager, and a business owner) achieving a gain (Reding, Sobel, Anderson, Head, Ramamoorti, Salamasick & Riddle, 2013). The retail industry is one of the riskiest industries in terms of internal fraud, often because of the easy reach of stock and cash, which are mostly the logical and/or convenient targets of perpetrators (Deloitte, 2015; ACFE, 2020b; Nicasio, 2021). More often than not, the risk of internal fraud is increased by various parties involved in the supply chain, such as employees, packers, and other service providers (Deloitte, 2015; BDO, 2018; KPMG, 2020). It is projected that the fraud losses cause organisations across the globe to lose approximately 4 trillion American dollars (Lappen & McDonough, 2018). Prior research suggests that SMMEs' managers lack knowledge of internal controls and its implementation (Burger, 2016). In order words, this can be seen as these businesses being unable to prevent the occurrence of fraudulent activities within their organisations. Whilst it is known that the best way to prevent internal fraud is through implementing internal controls that can reasonably, effectively and adequately address such risk (Shanmugan, Haat & Ali, 2012:91; COSO, 2017; ACFE, 2020b). The communication of fraud prevention measures and internal controls is crucial in any business since it would allow everyone to be aware of the associated risks as well as to know what it takes to mitigate them (UCSF, 2022)

With this background, it becomes easier to mitigate the risk of internal fraud when there is a clear understanding of its possible causes as well as understanding why it is important to combat it. Therefore, as a solution this study evaluates the communication of fraud prevention measures and internal controls within the retail SMMEs to ascertain whether they are they are effectively addressing the risk of internal fraud. Furthermore, this study also provides insight into South African SMMEs regarding the importance of communicating fraud prevention measures within their organisations to curb the risk of internal fraud which is very inherent to their business operations. External parties would also be beneficial to this research such as individuals and institutions responsible of making policies on SMMEs' fraud risk framework for example, this research would serve as empirical evidence.

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The remaining discussions of this research are expanded upon under the following headings: Overview of South African SMMEs, conceptual framework, research methods and design, ethical consideration, results and discussion, conclusion.

2. THE CONCEPT OF INTERNAL FRAUD

South Africa's retail sector experiences a high degree of economic crime. It is rated third in the world for recorded economic crime (Cape Business News, 2020), with bribery and corruption accounting for 42% of the kind of economic crime. Internal fraud continues to be a crippling impediment to the global economy's progress, resulting in massive losses for enterprises all over the world (ACFE, 2020b). As a result, internal fraud could be one of the most serious ongoing concerns in any organisation, as no organisation is immune to it (Bach, Dumičić, Žmuk, Ćurlin & Zoroja, 2018; ACFE, 2020b). When it comes to internal fraud, the retail business is one of the most vulnerable, owing to the easy access to stock and cash, which are frequently the logical and/or convenient objectives of perpetrators (Deloitte, 2015; ACFE, 2020b; Nicasio, 2021). Internal fraud is frequently exacerbated by the existence of numerous parties in the supply chain, such as employees, packers, and other service providers (Deloitte, 2015). The foregoing is in line with ACFE (2018), which said that internal fraud can be committed by any internal actor (whether an employee, manager, executive, or company owner). Internal fraud is defined as any deliberate act or omission within an organisation that is intended to deceive others, resulting in a loss for the victim and/or a gain for the internal perpetrator (such as an employee, a management, or a business owner) (Reding et al., 2013).

The Covid-19 epidemic exacerbated the issue by increasing the pressure, opportunity, and justification for fraud (PWC, 2020). As a result, companies throughout the world have had to deal with economic changes, supply chain interruptions, remote operations, financial constraints, rigorous lockdowns, a health crisis, a decrease in the number of employees, and other challenges (ACFE, 2020a). Generally, internal fraud is broken into three major categories namely asset misappropriation, corruption, and financial statement fraud (ACFE, 2018; Koivisto, 2019; ACFE, 2022a):

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Asset misappropriation: the act of willfully stealing or exploiting an employer's assets for personal gain, causing financial harm to the company. Asset misappropriation is the most common sort of internal fraud that companies face, and it is also the least expensive. Asset misappropriation can take two forms: cash scheme (when the misappropriation is centered on cash) and non-cash scheme (where the misappropriation is not centered on cash) (meaning the misappropriation revolves around anything else than cash).

Corruption: Internal fraudsters wrongfully utilise their authority in a corporate transaction to purposefully exploit and/or get some type of benefit to their personal advantage, even if such benefit is counter to their job duties or other parties' rights. Dishonesty cannot be separated from corruption in most cases since everybody who commits corruption develops a sense of dishonesty. In the case of South Africa, the country is considered one of the most corrupt in the world. As a result, corruption is regarded as one of the most serious forms of internal fraud in South Africa.

Financial statement fraud: The intentional falsification or misrepresentation of the employer's financial statements by the actors (whether employee, management, executive, or business owner) by intentionally overstating revenues and understating liabilities and costs is referred to as financial statement fraud. This deception is conducted in order to deceive persons (such as investors, shareholders, lenders, or creditors) with whom the employing firm may have a commercial transaction. Financial statement fraud is the least prevalent sort of internal fraud, yet it does the most damage to the victim firms, as seen by Enron's demise in 2001.

Given the intrinsic nature of internal fraud, it is likely to occur in any type of business. Internal fraud is eventually ubiquitous in each business, regardless of its geographic location (ACFE, 2020b). Prior research studies in the context of South African SMMEs reveal that internal fraud continues to have negative impacts (such as bankruptcy, major financial loss, and client loss) on such organizations (Sarokin, 2020; Fanews, 2022). As with any risk, there might be a variety of reasons that contribute to its occurrence. Some of the reasons why SMMEs are vulnerable to internal fraud include, among other things, management putting too much reliance in employees, management not being sufficiently trained to develop a good control system, and management lacking adequate capabilities to address the risk of fraud (Bruwer, 2015; Ekegbo, Quede, Mienahata, Siwangaza, Smit & Bruwer, 2018). Internal controls and/or anti-fraud measures

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continue to be the most effective instruments for combating fraud since they assist in assessing internal fraud risks and enacting suitable proactive steps to mitigate such risks (ACFE, 2020b). Despite the fact that internal controls are the best strategy to deal with the risk of internal fraud, SMMEs sometimes encounter obstacles such as limited resources and, as a result, view internal controls as costly (Mohd & Norhusnaida, 2015). Furthermore, these control methods would be ineffective in preventing and/or detecting fraud on their own; management must also be dedicated to the culture of controls, demonstrate zero tolerance for fraud, develop a strong controls and fraud prevention measures and communicate these measures to everyone in the organisation to create awareness and consciousness of fraud (Myemane, 2019).

3. INTERNAL CONTROL AND FRAUD PREVENTION MEASURES

Some decades ago, Sawyer (1988:84) opined that internal control enhances the probability that management's wishes will be achieved. This sentiment has since remained topically relevant in a sense that internal controls are designed to ensure they address or limit the potential risks and ultimately enhance the business abilities to achieve their goals (Bruwer, Coetze & Meiring, 2019). Even though internal controls may be established and executed for a variety of causes and functions, internal controls are widely classified into three types: preventive (or preventative), detective, and corrective controls, which are briefly addressed below (ODU, 2019):

a) **Preventive controls**: These are adopted to avoid unfavorable consequences from occurring. They were also expected to be more cost effective than the others since unwanted consequences would not need notice or repair.
b) **Detective controls**: These are intended to detect undesirable consequences as they occur.
c) **Corrective controls**: They aim to reverse unfavorable results.

It is concerning that the literature reveals SMMEs have a greater failure rate because they do not manage their resources properly and efficiently, implying that they apply poor internal controls with little fraud prevention measures (ACFE, 2016; Petersen, 2018). According to the literature, an internal control system helps with: improving the effectiveness, efficiency, and economy of

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business operations; promoting compliance with applicable rules, regulations, policies, and procedures; safeguarding relevant assets; and fortifying the integrity of both financial and nonfinancial information (Bruwer, et al., 2019).

To strengthen internal control systems to fulfill both applicable adequacy and effectiveness requirements, many professional bodies around the world established internal control frameworks (Bruwer, et al., 2019). According to Reding et al. (2013) the need for developing internal control frameworks arose from past events experienced most of which being undesirable causing corporate issues such as fraud scandals. Various internal control frameworks exist in the world, however for the purpose of this research, focus is placed on the COSO Integrated Internal Control Framework as it is perceived to be the most extensively used framework in the world since it is one of the earliest created internal control frameworks (Martin, Sanders & Scalan, 2014).

The COSO framework includes five components of internal control which are namely: control environment, risk assessment, control activities, information and communication, and monitoring activities (COSO, 2013). These five components of internal control are briefly explained below:

Control environment

This internal control component is concerned with how risks are seen and treated, as well as influencing management philosophy in terms of risk management (COSO, 1992; COSO, 2013; Gordon, Baatjies, Johannes, Samaai, Sonto, Smit & Bruwer, 2014). It is concerned with the entire management attitude toward proactive implementation and evaluation of internal control operations (Bruwer, 2016). Moreover, it has an impact on managerial leadership and attention to honesty, integrity, and ethical behavior (Myemane, 2019). In turn, it triggers people's consciousness to be proponents of internal controls (COSO, 1992).

Risk assessment

This internal control component is concerned with identifying and analysing risks (including the risk of fraudulent activities) that the business may face as well as developing and analysing methods to mitigate such risks in order to achieve the objectives effectively (Van Wyk, 2015).

Control activities

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Control activities are defined as selected and planned actions carried out in accordance with existing company policies and procedures (both manual and automated) to assist management in limiting risks and enhancing the possibility of attaining their business objectives (Salin, 2018). These activities are implemented with the intention of providing a reasonable assurance that business objectives will be attained by effectively and efficiently reducing risks from materialising.

Information and communication

This internal control component is focused with effectively managing the company's information and interacting with stakeholders, both internal and external (Salin, 2018). This component assists the other internal control components by raising awareness of internal controls among diverse stakeholders (Salin, 2018). One way to do this is to clearly define rules, processes, and internal control needs for workers to comprehend. Internal controls should be highlighted in SMMEs so that all workers may comprehend the use of internal controls objectively. Consequently, the possibility of employees rationalising illegal behavior would be minimised.

Monitoring activities

Monitoring activities include continuous assessments, separate evaluations, or a mix of the two to determine if each of the five components of internal control is present, effective, and operating. Furthermore, these activities assist the organisation in evaluating and communicating weaknesses. For example, management might examine the efficacy and efficiency of regulations and processes on a regular basis.

4. RESEARCH METHODS AND PROCEDURE

A survey was conducted to gather information from various SMME owners and managers. Although the adequacy of communication of internal controls and fraud prevention measures could not be measured due to limited reporting structures and information available, the perceptions that management of SMMEs should communicate to employees about internal controls and fraud prevention measures to ensure that they engage in combating fraud and irregularities within their respective business entities. In the scope of this research study, a survey design was employed.

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The study used a quantitative research methodology since the research assumed the form of descriptive research. The survey design allowed the collection and processing of substantial amounts of data from selected retail SMMEs (n=100). Despite the population size of this research being unknown to the researcher, the population of this study was simply made of all the formal and informal South African retail SMMEs in Cape Metropole (Prinsloo et al., 2015).

These data were further analysed with a statistical tool to make applicable inferences and conclusions. To get rich data from 100 SMMEs, non-probability sampling approaches, notably purposive sampling and convenience sampling, were used. Due to time and financial limitations, the scope of this study was confined to SMMEs in the Cape Metropole. The questionnaires were distributed to these owners and managers to respond to the questions posed. The use of a questionnaire was deemed appropriate since it allows for the collection of data from a large number of respondents, resulting in complete conclusions capable of addressing the study topic (Sifumba, Mothibi, Ezeowuka, Qeke & Matsoso, 2017). The responses from respondents were recorded in an Excel spreadsheet and then the Excel data file was then imported into Statistical Analysis System (SAS) for analysis. The analysis served to bring order, structure and meaning to the large data gathered (De Vos, 2002:339).

5. DATA ANALYSIS AND DISCUSSION OF RESULTS

Demographical information

As for the results obtained through this survey with respect to the demographic properties of the survey; the following analogies describe the demographic information of sample for this study. These businesses are located mainly in the City Bowl (40,6%), Southern suburbs (25,0%), Northern suburbs (15,6%), and Western suburbs (11,5%) of the Cape Metropole. More than half of the businesses exist (54,2%) for more than 10 years, 29,2% exist for 2-5 years and 16,7% exist for 6-10 years. Most of the respondents to this survey are managers of these businesses (91,7%) and 8,3% are the owners of these businesses. The respondents are mostly in their position for 2-5 years (53,1%), with 15.6% in their position for 0-1 years, 15,6% for 6-10 years, and 15,6% for more than 10 years. The majority of the respondents have Grade 12 (45,8%), or an Undergraduate

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diploma/degree (35,4%). Sixty-two point five per cent of these businesses have 0-10 employees in their business, 28,1% have 11-50 employees, and 9,4% have 51-250 employees. Fifty-three point one per cent of these businesses were micro businesses, 30,2% were small businesses, and 16,7% were medium businesses.

Construct validity and reliability of measures

Respondents were primarily requested to provide answers using a four-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = highly agree) and a yes/no scale to assess variables. These variables were subject to content and construct validity. Content and construct validity were applied to these variables. Content validity is concerned with the representativeness or sampling adequacy of a measuring instrument's content (e.g., subject or items) (De Vos, 2002:84). The extent to which a measuring instrument can be proved to measure a certain hypothetical construct is referred to as construct validity (Rose & Sullivan, 1996:19). The construct validation, on the other hand, can only be carried out when the questionnaire measures what it is designed to measure. Construct validation should be addressed during the survey's design and questionnaire development phases. The reliability of the data will be addressed at the data analysis phase (information). Reliability relates to the consistency, stability, and repetition of outcomes; for example, a researcher's results are regarded dependable if consistent results have been produced in identical but distinct contexts (Twycross & Shields, 2004:36). A Cronbach's alpha of 0.700 or above is considered adequate for a factor's dependability (Tavakol & Dennick, 2011). The research study made use of the following inferential statistics on the data: Chi-square, Chi-square goodness of fit test, Cronbach Alpha test, and Fisher’s exact test. A reliability test (Cronbach’s Alpha Coefficient) was done on the statements in the survey pertaining to the communication of the fraud prevention measures and internal controls to mitigate internal fraud in retail SMMEs. The Cronbach Alpha Coefficient analysis shows the correlation between the respective item (statement) and the total sum score (without the respective item) and the internal consistency of the scale (coefficient alpha) if the respective item were to be deleted. According to the Cronbach’s Alpha Coefficients (in Table 2) for all the items entered to the test (with 2 reversed coded variables): 0.9312 for raw variables and 0.9410 for standardized variables, which is more than the acceptable level of 0.70, thus these items proves to be internally consistent.

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Table 2. Cronbach's Alpha Coefficients

Variable name	Statements for measurement scale	Correlation with total	Cronbach's Alpha Coefficient
	MEASURING INSTRUMENT - Communication of fraud prevention measures and internal controls		
S01	Fraud is any intentional act or omission designed to deceive others, resulting in the victim suffering a loss and/or the perpetrator achieving a gain.	0.3048	0.9309
S02	Your staff are sufficiently familiar with the business's policies and procedures.	0.5371	0.9294
S03	Staff meeting and briefings are the medium for learning about internal controls.	0.4252	0.9301
S04	Your business maintains a fraud whistle-blower programme.	0.2824	0.8619
S05	You deal with confidentiality the information about the person who exposes any fraud act happening in the business.	0.4379	0.9103
S06	Red flags (such as employees experiencing financial pressures) are normally the indicators of the risk of fraud.	0.4467	0.8307
S07	There is a channel to report the occurrence of fraudulent acts or control weaknesses.	0.6295	0.9284
Cronbach's Coefficient Alpha for raw variables			**0.9312**
Cronbach's Coefficient Alpha for Standardised variable			**0.9410**

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Since the data was obtained from the respondents, ethical considerations were maintained to seek informed consent from respondents, protection of respondents from harm, protection of the privacy of respondents, adequate level of confidentiality, respect of dignity of respondents and respondents had the right to withdraw from the research without any consequence.

Chi-square tests

The chi-square test for goodness of fit is used for a single population and is a test used when you have one categorical variable. This test determines how well the observed frequency distribution from that sample fits the expected frequency distribution (Cooper & Schindler, 2001:499). The following Hypotheses are going to be tested:

Hypothesis A

- H0 = the proportion of respondents who selected the different categories is equal. ($p1= p2= p3$)
- H1 = the proportion of respondents who selected the different categories is not equal. ($p1\neq p2\neq p3$)

Only the statistically significantly different statistics are discussed in the following paragraphs.

Table 3: Statistically significant Chi-Square tests

Variable name	Statements for measurement scale	Sample Size	Chi-Square	DF	P-Value
	Communication of fraud prevention measures and internal controls				
S01	Fraud is any intentional act or omission designed to deceive others, resulting in the victim suffering a loss and/or the perpetrator achieving a gain.	95	42.7789	2	<0.0001***
S02	Your staff are sufficiently familiar with the business's policies and procedures.	95	45.2421	2	<0.0001***

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Variable name	Statements for measurement scale	Sample Size	Chi-Square	DF	P-Value
S03	Staff meeting and briefings are the medium for learning about internal controls.	95	30.6526	2	<0.0001***
S04	Your business maintains a fraud whistle-blower programme.	95	19.8211	3	0.0002***
S05	You deal with confidentiality the information about the person who exposes any fraud act happening in the business.	95	25.3474	2	<0.0001***
S06	Red flags (such as employees experiencing financial pressures) are normally the indicators of the risk of fraud.	95	28.1579	3	<0.0001***
S07	There is a channel to report the occurrence of fraudulent acts or control weaknesses.	95	31.0947	2	<0.0001***
S08	Do you participate in any anti-fraud awareness programme or company ethics training?	95	0.0105	1	0.9183
S09	Do you transmit a message to the new employee about the company's values, culture, and operating style?	95	83.3789	1	<0.0001***
S10	Are you familiar with your business code(s) of conduct?	95	87.1684	1	<0.0001***
S11	Do you explain to your staff the consequences of non-compliance with the business's values?	95	87.1684	1	<0.0001***

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Variable name	Statements for measurement scale	Sample Size	Chi-Square	DF	P-Value
S12	Would you be reluctant to report a violation or fraud if it was committed by a colleague who is dear to you?	94	10.8936	1	0.0010**
S13	Does every staff have access to the company policies and procedures?	93	60.4839	1	<0.0001***
S14	Do you give a chance to your staff to give their opinions (improvement suggestions) on the controls implemented?	94	64.7234	1	<0.0001***
S15	What channel of communication is used by management to communicate the implementation of internal controls?	95	164.3263	3	<0.0001***
S16	Internal fraud is likely to be committed by the:	95	131.7368	3	<0.0001***

The following is a discussion on where these statistically significant differences lie for communication of fraud prevention measures and internal controls variables relevant to Table 3:

a) *For statements S01 to S07* there is a statistically significant difference in the proportions of respondents for all the communication of fraud prevention measures and internal controls. These differences lie in that more respondents agree to strongly agree than who disagree to strongly disagree, except for statement S04 and S06. The difference for statements S04 (Your business maintains a fraud whistle-blower programme) and S06 (Red flags (such as employees experiencing financial pressures) are normally the indicators of the risk of fraud) lies in that there are more respondents who disagree, agree and strongly agree than who strongly disagree with this statement.

b) *For statements S08 to S14* there is a statistically significant difference in the proportions of respondents who answered yes or no on these statements, except for statement S08 which is not statistically significant. The H0-hypothesis for equal proportions could not be rejected for

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statement S08 (Do you participate in any anti-fraud awareness programme or company ethics training?), where 50,5% of the respondents indicated yes and 49,5% of the respondents indicated not. The difference for statements S8, S10, S11, S13, and S14 lies in that there are more respondents who indicated "Yes" than who indicated "No" for these statements. The difference for statement S12 (Would you be reluctant to report a violation or fraud if it was committed by a colleague who is dear to you?) lies in that there are more respondents who indicated "No" than who indicated "Yes".

c) *The difference for statement S15* (What channel of communication is used by management to communicate the implementation of internal controls?) lies in that there are more respondents indicated "Staff meeting" than who indicated any of the other options

d) *The difference for statement S16* (Internal fraud is likely to be committed by the:) lies in that there are more respondents who indicated "Anyone within the business" than who indicated any of the other options.

The Chi-square test was used to test whether the demographic groups differed with respect to their responses on the measuring variables. Due to too many categories for the demographic variables there are more than 20% of the expected frequencies less than 5 in the cells of the contingency tables. Take note that only the statistically significantly different statistics for the Chi-Square and for Fisher-Exact tests are discussed in the following paragraphs. In the cases where Chi-Square test is statistically significant and the Fisher-Exact are not, or vice versa the statistics will be deemed as not statistically significant:

a) *There is a statistically significant difference* between period that business is in existence with respect to the statement "Staff meeting and briefings are the medium for learning about internal controls" (P-value=0.0064 (Fisher-Exact test)). The proportion of respondents from businesses who are in existence for less and equal to 10 years who disagree to strongly disagree is greater than that of the respondents from businesses who are in existence for more than 10 years.

b) *There is a statistically significant difference* between period that business is in existence with respect to the statement "Do you participate in any anti-fraud awareness programme or company ethics training?" (P-value=0.0251 (Fisher-Exact test)). The proportion of respondents from businesses who are in existence for less and equal to 10 years who indicated

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no is greater than that of the respondents from businesses who are in existence for more than 10 years.

c) *There is a statistically significant difference* between period that business is in existence with respect to the statement "Does every staff have access to the company policies and procedures?" (P-value=0.0075 (Fisher-Exact test)). The proportion of respondents from businesses who are in existence for less and equal to 10 years who indicated no is greater than that of the respondents from businesses who are in existence for more than 10 years.

d) *There is a statistically significant difference* between positions in business with respect to the statement "CCTV camera footage is used in your business" (P-value=0.0469 (Fisher-Exact test)). The proportion of owners who disagree to strongly disagree is greater than that of the managers.

e) *There is a statistically significant difference between period* in position with respect to the statement "Do you transmit a message to the new employee about the company's values, culture, and operating style?" (P-value=0.0349). The proportion of respondents who are 0-1 years in their position who indicated no is greater than that of the respondents who are in their position for 2-5 years or more than 5 years.

Descriptive statistics

The communication of fraud prevention measures and internal controls listed; are sorted according to the responses from where the respondents agreed the most with to where they agreed the least with, by giving the response "Strongly agree" the highest weight and "Strongly disagree" the lowest weight and then calculate the sum of the product of the weight and the frequency of respondents who selected that option. After sorting the communication of fraud prevention measures and internal controls from the highest sum calculated to the lowest sum calculated the 7 communication of fraud prevention measures and internal controls are represented in the following graph.

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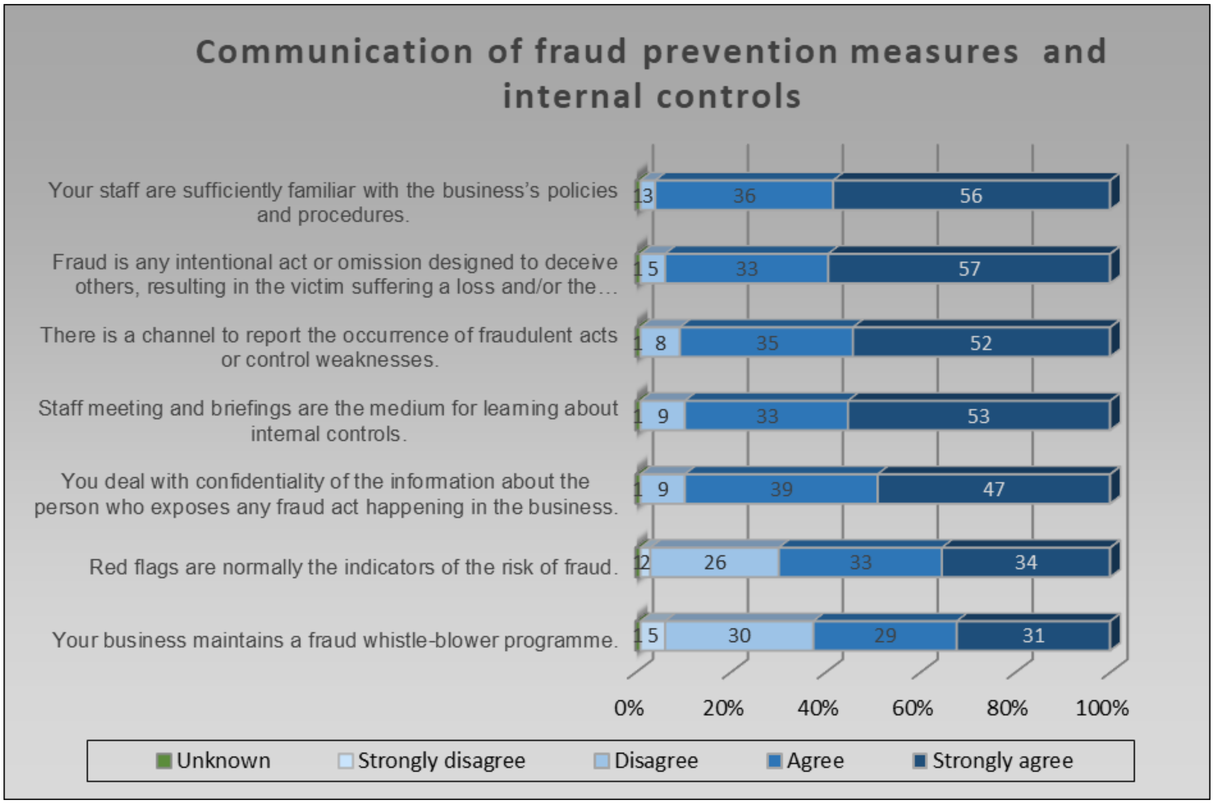

FIGURE 1: COMMUNICATION OF FRAUD PREVENTION MEASURES AND INTERNAL CONTROLS

Most of the respondents agree to strongly agree with the communication of fraud prevention measures and internal controls listed above. More particularly the results are as follows:

a) Fifty-eight point three per cent of the respondents strongly agree, 37,5% agree and 3,1% disagree that their staff are sufficiently familiar with the business's policies and procedures. Unfortunately, 1,0% of the respondents did not respond.
b) Fifty-nine point four per cent of the respondents strongly agree, 34,4% agree, and 5,2% disagree that fraud is an intentional act or omission designed to deceive others, resulting in the victim suffering a loss and/or the perpetrator achieving a gain. Unfortunately, 1,0% of the respondents did not respond.
c) Fifty-four point two per cent of the respondents strongly agree, 36,5% agree, and 8,3% disagree that there is a channel to report fraudulent acts or control weaknesses. Unfortunately, 1,0% of the respondents did not respond.

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d) Fifty-five point two per cent of the respondents strongly agree, 34,4% agree, and 9,4% disagree that staff meetings and briefings are the medium for learning about internal controls. Unfortunately, 1,0% of the respondents did not respond.

e) Forty-nine per cent of the respondents strongly agree, 40,6% agree, and 9,4% disagree that they deal with confidentiality of the information about the person who exposes any fraud act happening in the business. However, 1,0% of the respondents did not respond.

f) Thirty-five point four per cent of the respondents strongly agree, 34,4% agree, 27,1% disagree, and 2,1% strongly disagree that red flags are normally the indicators of risk of fraud (such as employees experiencing financial pressures). Unfortunately, 1,0% of the respondents did not respond.

g) Thirty-two point three per cent of the respondents strongly agree, 30,2% agree, 31,3% disagree, and 5,2% strongly disagree that their business maintains a fraud whistle-blower programme. Unfortunately, 1,0% of the respondents did not respond.

Based on the above results, there seemed to be effective communication on the risk of fraud and its mitigation initiatives, which empowered employees to fight internal fraud. These businesses were known to draw little to no attention to internal controls and their promotion (Siwangaza, Smit & Bruwer, 2014; BER, 2016; Blackburn & Schaper, 2016). However, the results obtained, in terms of these businesses' communication of fraud prevention measures and internal controls, indicate that these businesses are proactively communicating and promoting fraud prevention measures and internal controls within their respective businesses to mitigate the risk of internal fraud and other risks at large.

As previously mentioned, during the Covid-19 crisis, SMMEs became more vulnerable to the risk of fraud. The assumption was drawn that this situation attracted their attention to internal controls and fraud prevention measures. Therefore, following the Covid-19 incident, SMMEs have become more sensitive and prone to the risk of fraud. Thus, these business entities will likely improve their internal controls and communication to avoid being consumed by the risk of internal fraud. As a result, there was enhanced responsiveness to the risk of internal fraud risk.

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Furthermore, as for the comprehensive results obtained through this survey with respect to the communication of fraud prevention measures and internal controls; the following analogies can be drawn from this research:

a) The majority of respondents agree to strongly agree with the following communication of fraud prevention measures and internal controls statements:
   - *The staff are sufficiently familiar with the business's policies and procedures,*
   - *Fraud is any intentional act or omission designed to deceive others, resulting in the victim suffering a loss and/or the perpetrator achieving a gain,*
   - *There is a channel to report the occurrence of fraudulent acts or control weaknesses,*
   - *Staff meeting and briefings are the medium for learning about internal controls,*
   - *Business deals with confidentiality of the information about the person who exposes any fraud act happening in the business,*
   - *Red flags (such as employees experiencing financial pressures), and*
   - *The business maintains a fraud whistle-blower programme.*

b) Half of the respondents participate in an anti-fraud awareness programme or company ethics training. This training contributes to creating and fostering a sound control environment to combat irregularities (including internal fraud).

c) Almost all the respondents transmit a message to the new employee about the company's values, culture, and operating style. This helps to emphasize on awareness to avoid non-compliance or irregularity from happening due to lack of knowledge. To reduce the likelihood of internal fraud or any other non-compliance to business values, policies and procedures.

d) Almost all the respondents are familiar with the business code(s) of conduct for their business.

e) Almost all the respondents explain to their staff the consequences of non-compliance with the business's values.

f) A third of the respondents are reluctant to report a violation or fraud if it was committed by a colleague who is dear to them. This question was asked to ascertain whether the management of the sampled retail SMMEs had a zero-tolerance attitude on internal fraud.

g) Most of the respondent's staff have access to the company policies and procedures.

h) Most of the respondent's give a chance to their staff to give their opinions (improvement suggestions) on the controls implemented.

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i) The channel of communication to communicate the implementation of internal controls mostly used is staff meetings.
j) Nearly three quarters of the respondents think that internal fraud is likely to be committed by anyone within the business. In order for the management to attribute accountability on issues pertaining to internal controls as well as internal fraud, respondents were asked to provide their perceptions as to who can commit fraud within their business entities. This question was critical because it shows who the target is in terms of the overall implemented internal control of their businesses.

Recommendations

To address some of the shortfalls and increase the effectiveness of the communication of fraud prevention measures and internal controls. The management of South African retail SMMEs should demonstrate a positive attitude towards internal control and have zero tolerance to fraud. They should proactively communicate with their staff the importance of the fraud prevention measures and internal controls to mitigate the risk of internal. This includes undergoing anti-fraud awareness programmes and business management training workshops, to mention but a few. The management of South African retail SMMEs should also establish counter-fraud initiatives within their businesses and have staff to participate in ethical or anti-fraud training to enhance their consciousness and abilities to combat internal fraud.

6. CONCLUSION

Despite the rich literature on internal control activities and internal control systems, there is a gap in the relevancy, appropriateness, and efficacy of these mechanisms within an SMME to establish a fraud aware environment especially regarding the combatting of internal fraud. Recent research, such as those done by Lappen and McDonough (2018); Petersen, Bruwer, Le Roux (2018); and Fatoki (2020) revealed the presence of fraudulent activities among SMMEs. Therefore, it was worthy of study to establish whether these businesses are aware of fraud (particularly internal fraud) and whether they exist initiatives to create awareness in terms of mitigating internal fraud within their respective business entity. Communication of the company’s values, culture, and

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operating style plays an essential role in the business control environment in the sense that personnel are likely to develop the same attitudes about what is good and wrong as communicated by management (Coetzee, Du Bruyn, Fourie & Plant, 2017). In essence, it is important for management to demonstrate an attitude of promoting the control environment; the lack thereof might filter down to staff, generating internal control problems and potential for fraud (Cereni, 2016). The results indicated that the sampled retail SMMEs were aware of the risk of internal fraud and made use of customised fraud prevention measures and internal control as a way of combatting the risk of internal fraud. There seemed to be effective communication on the risk of fraud and its mitigation initiatives which resulted in empowering employees to engage in fighting internal fraud. It might also be related to the need for increased fraud knowledge or vigilance as a result of the chaos produced by the Covid-19 issue. These SMMEs have become more sensitive and prone to the risk of fraud. Their management portrayed a good tone in terms of establishing counter fraud initiatives and positive attitude to ethical behaviour. Portraying such tone promotes a conducive business environment in which violations of internal control or internal fraudulent activities are avoided. The management of the sampled SMMEs also demonstrated a commitment to some extent to improve their competence through various ethical trainings or anti-fraud awareness programme. However, it was found that although most of the sampled retail SMMEs seemed to have a sound control environment, they experienced challenges in having effective internal controls as more than 50% of the respondents had evident internal control deficiencies, which led to the realisation of various risks including the risk of internal fraud. This situation could be a result of reduced participation to anti-fraud awareness or ethics trainings as it was found that almost half of the respondents do not attend fraud related trainings. Retail SMMEs should consider attending these trainings as they help to continually create and foster a sound control environment to combat internal fraud.

REFERENCES

Akugri, M.S., Bagah, D.A. & Wulifan, J.K. 2015. The contributions of small and medium scale enterprises to economic growth: a cross-sectional study of Zebilla in the Bawku West District of Northern Ghana. *European Journal of Business and Management*, 7(9):262-274.

Received: 23.01.2023 *Accepted: 14.05.2024* *Published:20.06.2024*

Association of Certified Fraud Examiners (ACFE). *2016. Report to the nations on occupational fraud and abuse:*
2016 global fraud study. Austin, TX: ACFE. [Online]. Available at: https://www.acfe.com/rttn2016/docs/2016-report-to-the-nations.pdf [Accessed: 12 October 2018].

Association of certified Fraud Examiners (ACFE). 2018. *Fraud in small businesses*. [Online]. Available at:
http://www.acfe.com/uploadedFiles/ACFE_Website/Content/rttn/2018/Fraud-in-Small-Business.pdf [Accessed: 12 October 2018].

Association of certified Fraud Examiners (ACFE). 2020a. *Fraud in the wake of Covid-19: benchmarking report.*
Austin, TX: ACFE. [Online]. Available at: https://www.acfe.com/covidreport.aspx [Accessed: 21 March 2021].

Association of certified Fraud Examiners (ACFE). 2020b. *Report to the nations on occupational fraud and abuse:*
2020 global fraud study. Austin, TX: ACFE. [Online]. Available at: https://acfepublic.s3-us-west-2.amazonaws.com/2020-Report-to-the-Nations.pdf [Accessed: 5 March 2021].

Association of Certified Fraud Examiners (ACFE). 2022a. *Auditing for internal fraud*. [Online]. Available at:
https://www.acfe.com/Auditing-for-Internal-Fraud/ [Accessed: 4 January 2022].

Bach, M.P., Dumičić, K., Žmuk, B., Ćurlin, T. & Zoroja, J. 2018. Internal fraud in a project-based organization:
CHAID decision tree analysis. *Procedia computer science*, 138:680-687.

BDO. 2018. *Supply chain fraud: Risk management for retail companies.* [Online]. Available at: https://www.bdo.com/insights/industries/retail-consumer-products/supply-chain-fraud-risk-management-for-retail-comp [Accessed: 5 January 2022].

Blackburn, R.A. & Schaper, M.T. 2016. *Government, SMEs and entrepreneurship development: Policy, practice*
and challenges. New York: Routledge.

Bruwer, J.P. 2015. The influence of the control environment on the sustainability of fast food micro and very
small enterprises operating in the northern surburbs. *Journal of Leadership and Management*, 2(1):50-63.

Bruwer, J.P. & Coetzee, P. 2016. A literature review of the sustainability, the managerial conduct of management
and the internal control systems evident in South African small, medium and micro enterprises. *Problems and Perspectives in Management*, 14(2-1):201-211.

Bruwer, J.P., Coetzee, P. & Meiring, J. 2019. The perceived adequacy and effectiveness of internal control activities in South African small, medium and micro enterprises. *The South African Journal of Entrepreneurship and Small Business Management,* 11(1):1-11.

Bureau for Economic Research (BER). 2016. The small, medium and micro enterprise sector of South Africa.
Research Note, Stellenbosch University.

Burger, T. 2016. *The failure rate of business in South Africa is no joke. JTB Consulting*. [Online]. Available at:

Received: 23.01.2023 *Accepted: 14.05.2024* *Published:20.06.2024*

https://jtbconsulting.co.za/the-failure-rate-of-businesses-in-south-africa-is-no-joke/ [Accessed: 5 May 2019].

Cape Business News. 2020. *Identity fraud costs SA over R1 billion during Covid-19*. [Online]. Available at:
https://www.cbn.co.za/featured/identity-fraud-costs-sa-over-r1-billion-during-covid-19/
[Accessed: 21 March 2021].

Cereni, K.R. 2016. *Key components of internal controls*. [Online]. Available at:
https://ceriniandassociates.com/news-feed/2016/02/29/key-components-of-internal-controls/
[Accessed: 10 April 2022].

Chimucheka, T. 2014. Overview and performance of the SMMEs sector in South Africa. *Mediterranean Journal*
of Social Sciences, 4(14):783-795.

Coetzee, G.P., Du Bruyn, R., Fourie, H. & Plant, K. 2017. *Performing internal audit engagements*. 6th ed. South
Africa: LexisNexis.

Committee of Sponsoring Organizations of the Treadway Commission (COSO). 2017. *Enterprise risk management – integrating with strategy and performance: Executive summary*. [Online]. Available at: https://www.coso.org/Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf [Accessed: 15 March 2020].

Cooper, D.R. & Schindler, P.S. 2001. *Business Research Methods*. 7th ed. NY: McGraw-Hill.

De Vos, A.S. 2002. Scientific theory and professional research. In de Vos, A.S., Strydom, H., Fouché, C.S.L. & Delport, C.S.L. (eds), *Research at grass roots: For the social sciences and human service professions*. 2nd ed.
Pretoria: Van Schaik.

Deloitte. 2015. *Fraud risks in the consumer products and retail sector*. [Online]. Available at:
https://www2.deloitte.com/content/dam/Deloitte/in/Documents/finance/in-fa-fraud-risk-in-consumer-products-and-retail-noexp.pdf [Accessed: 5 December 2021].

Dubihlela, J. & Gwaka, T. Disruptive Changes and Emerging Risks withinInternal Auditing Profession: A Review
from South Africa. Financial Economics, 16 (3), pp. 143-154

Ekegbo, T., Quede, B., Mienahata, C., Siwangaza, L., Smit, Y. & Bruwer, J.P. 2018. Shrinkage Risk Management
Initiatives in Retail SMMEs Operating in the Cape Town City Bowl. International Conference on Business and Management Dynamics, Somerset West, South Africa, 29 – 31 August:52-63.

Fanews. 2022. South African SMEs face biggest risk of fraud losses. [Online]. Available at:
https://www.fanews.co.za/article/smmes/1399/general/1400/south-african-smes-face-biggest-risk-of-fraud-losses/34152 [Accessed: 27 August 2022].

Fatoki, O. 2020. Ethical leadership and sustainable performance of small and medium enterprises in South Africa.
Journal of Global Business and Technology, 16(1):62–79.

Gordon, C., Baatjies, V., Johannes, L., Samaai, S., Sonto, J., Smit, Y. & Bruwer, J.P. 2014. The control environment
of fast food micro and very small entities in the Cape Metropole. *Topclass Journal of Business Management, 1*(2):37-46.

Received: 23.01.2023 *Accepted: 14.05.2024* *Published:20.06.2024*

Kalidas, S., Magwentshu, N. & Rajagopaul, A. 2020. *Here's how the public and private sector can provide the right support to enable SME growth in South Africa, now and beyond the crisis*. [Online]. Available at: https://www.mckinsey.com/featured-insights/middle-east-and-africa/how-south-african-smes-can-survive-and-thrive-post-covid-19 [Accessed: 23 February 2022].

KPMG. 2020. *The supply chain fraud pandemic.* [Online]. Available at: https://home.kpmg/xx/en/blogs/home/posts/2020/05/supply-chain-fraud-pandemic.html [Accessed: 5 January 2022].

Koivisto, N. 2019. Preventing fraud through internal control. Unpublished Master of Accounting research report, Åbo Akademi University, Turku, Finland.

Lappen, B. & McDonough, E. 2018. *Mitigating fraud risk with fraud risk assessment*. Alvarez & Marsal. [Online]. Available at: https://www.alvarezandmarsal.com/insights/mitigating-fraud-risk-fraud-risk-assessment [Accessed: 21 March 2021].

Martin, K., Sanders, E. & Scalan, G. 2014. The potential impact of COSO internal control integrated framework revision on internal audit structured SOX work programs. *Research in Accounting Regulation*, 26(1):110–117.

Mohd, D. A. B. T & Norhusnaida, B. C. H. 2015. The Importance of Internal Control in SMEs: Fraud prevention & detection*. Proceedings. International Conference on Business, Accounting, Finance, and Economics (BAFE 2015). Universiti Tunku Abdul Rahman, Kampar, Perak, Malaysia,* 9 – 9 October 2015:1-13.

Myemane, S. K. 2019. *Adequate and effective internal controls*. [Online]. Available at: https://www.derebus.org.za/adequate-and-effective-internal-controls/ [Accessed: 5 December 2021].

Nicasio, F. 2021. *Understanding retail fraud: types, causes, and preventative steps to take*. [Online]. Available at: https://www.vendhq.com/blog/retail-fraud/#dropdown [Accessed: 5 December 2021].

Old Dominion University (ODU). 2019. *Internal controls*. [Online]. Available at: https://www.odu.edu/about/compliance/internal-auditing/internal-controls [Accessed: 13 April 2020].

Petersen, A. 2018. The effectiveness of internal control activities to combat occupational fraud risk in fast-moving consumer goods small, medium and micro enterprises (SMMEs) in the Cape Metropole. Dissertation submitted for the fulfilment for a MTech: Internal Auditing. Cape Peninsula University of Technology.

Petersen, A., Bruwer, P. & Le Roux, S. 2018. Occupational fraud risk, internal control initiatives and the sustainability of small, medium and micro enterprises in developing countries: A literature review. *Acta Universitatis Danubius: Oeconomica*, 14(4):567–580.

Pickett, K.H.S. 2012. *Fraud smart*. Hoboken: John Wiley & Sons.

PricewaterhouseCoopers (PWC). 2020. *The potential of increased fraud and economic crime*. [Online]. Available

Received: 23.01.2023 Accepted: 14.05.2024 Published:20.06.2024
at: https://www.pwc.com/gx/en/issues/crisis-solutions/covid-19/increased-fraud-economic-crime.html [21 March 2021].

Prinsloo, S., Walker, C., Botha, L., Bruwer, J. P. & Smit, Y. 2015. The influence of combined assurance initiatives on the efficiency of risk management in retail small and very small enterprises in Bellville, South Africa. *Expert Journal of Business and Management*, 3(2):63-81.

Ramukumba, T. 2014. Overcoming SMEs challenges through critical success factors: A case of SMEs in the Western Cape Province, *South Africa. Economic and Business Review*, 16(1):19-38.

Reding, K. F., Sobel, P. J., Anderson, U. L., Head, M. J., Ramamoorti, S., Salamasick, S. & Riddle, C. 2013. *Internal Auditing: Assurance & Advisory Services*. 3rd ed. Florida: The Institute of Internal Auditors Research Foundation.

Rose, D. & Sullivan, O. 1996: *Introducing Data Analysis for Social Scientists*. 2nd ed. Buckingham: Open University Press.

Rungani, E.C. & Potgieter, M. 2018. The impact of financial support on the success of small, medium and micro enterprises in the Eastern Cape province. *Acta Commercii,* 18(1):1-12.

Saah, P. 2021. The impact of small and medium-sized enterprises on economic development of South Africa. *Technium Social Sciences Journal*, 24(1):549-561. [Online]. Available at: https://techniumscience.com/index.php/socialsciences/article/view/3734 [Accessed: 23 February 2022].

Salin, A. S. A. P. 2018. The impact of weak internal controls on fraud. *Proceedings. Insight 2018 1st International Conference on Religion, Social Science, and Technological Education, Universiti Sains Islam Malaysia, Malaysia,* 96 – 105 September:25-26.

Sarokin, D. 2020. *How fraud hurts you and your organisation*. [Online]. Available at: https://smallbusiness.chron.com/fraud-hurts-organization-58563.html [Accessed: 25 August 2022].

Sawyer, L. 1988. *Sawyer's Internal Auditing: The Practice of Modern Internal Auditing.* 3rd ed. United States of America*:* The Institute of Internal Auditors.

Shanmugan, J.K., Haat, M. H. C. & Ali, A. 2012. An exploratory study of internal control and fraud prevention measures in SMEs. *International Journal of Business Research Management,* 3(2):91-99.

Sifumba, C. M. Mothibi, Ezeowuka, K. B., Qeke, S. & Matsoso, L. M. 2017.The risk management practices in the manufacturing SMEs in Cape Town. *Problems and Perspectives in Management*, 15(2):386-403.

Siwangaza, L., Smit, L. & Bruwer, J.P. 2014. The status of internal controls in fast moving small medium and micro consumer goods enterprises within the Cape Peninsula. *Mediterranean Journal of Social Sciences*, 5(10):163–175.

Received: 23.01.2023 *Accepted: 14.05.2024* *Published:20.06.2024*

South Africa. 2019. National Small Enterprise Act No. 102 of 1991. Pretoria: Government Printer.

South African Market Insights. 2020. *South Africa's SMME's Page*. [Online]. Available at: https://bit.ly/349q0AQ [Accessed: 3 December 2020].

Statistics South Africa (Stats SA). 2018. *Quarterly Labour Force Survey*: 2018. Pretoria: Stats SA.

Tavakol, M. & Dennick. R. 2011. Making sense of Cronbach's alpha. *International journal of Medical Education*, 2:53-55.

Twycross, A. & Shields, L. 2004. Validity and reliability – What's it all about? Part 2 Reliability in quantitative studies. *Paediatric Nursing*, 16(10):36.

University of California San Francisco (UCSF). 2022. *Internal controls*. [Online]. Available at: https://audit.ucsf.edu/internal-controls [Accessed: 23 February 2022].

Van Wyk, J. 2015. Benefits of controls frameworks - putting COSO into action. *Proceedings. Sopac 2015 Conference, Hilton Sydney Hotel, Australia*, 15 – 18 March:1-23.

DISCLOSURE OF CONFLICT

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IMPACT OF FRENCH CULTURAL TRAITS ON CONSUMER LUXURY PREFERENCES

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Abstract

This research adopts a mixed-methods approach to explore the intricate impact of French culture on luxury consumer behavior. Integrating qualitative and quantitative methodologies, it aims to comprehensively comprehend the complex interconnections among cultural elements, luxury consumption, and consumer preferences. The study encompasses a diverse participant pool, including French luxury consumers and international counterparts, ensuring a broad range of perspectives. Quantitative data collection involves an online survey probing into consumer perceptions, preferences, and purchasing behaviors concerning French luxury brands and cultural influences. Meanwhile, qualitative insights stem from in-depth interviews, delving into personal experiences, emotions, and perceptions linked to how French culture shapes luxury consumption. The findings illuminate the pivotal role of French culture in molding luxury consumer behavior. Regression analysis underscores a robust correlation between exposure to French cultural facets and consumer behavior, underscoring the substantial impact of cultural immersion on choices. This study enriches the landscape of luxury consumer behavior by offering invaluable insights into the nexus between culture and consumption, with French culture serving as a compelling focal point. These insights carry implications for luxury brand managers, marketers, and researchers, facilitating a deeper understanding of the intricate determinants steering consumer choices in the luxury domain.

Keywords: Luxury Consumer Behavior, French Culture, Cultural Influence, Luxury Brands, Marketing Strategies. Cultural Elements, Consumer Perceptions

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1. INTRODUCTION

The fundamental principles of society are significantly influenced by the cultural context, and cultural norms play a crucial role in shaping daily life, human behavior, and the pursuit of luxury goods. When introducing and marketing new products and services in the luxury market, as well as retaining their target audience, it is essential to consider cultural developments, particularly during economic downturns. To understand the impact of culture on the behavior of luxury consumers in a specific nation, both theoretical and empirical investigations using surveys and interviews have been conducted (Bian & Forsythe, 2012; Sarma, 2018). Luxury organizations aim to comprehend why consumers purchase luxury items, how they define luxury, and how their perception of luxury influences their consumption behavior. The selection of the most effective marketing strategies should be based on the cross-cultural peculiarities of each specific nation.

Using the well-known Hofstede model of cultural dimensions, researchers have examined the influence of culture on consumers' perceptions of luxury value and behavior among various nationalities, including British and Indian consumers (Shukla & Purani, 2012), French and Norwegian consumers (Grange, 2015), Chinese young consumers living in the UK (Zhang, 2017), Iranian consumers (Teimourpour & Heidarzadeh Hanzaee, 2011), and Chinese, French, Arab, and American consumers (Lavastrou, 2016).

1.1 Defining Luxury

Numerous definitions of luxury often rely on empirical descriptors, typically listing industries, which can lead to challenging delineation issues. For instance, when considering the fashion industry, what portion of it qualifies as luxury when brands like Zara and H&M mass-produce affordable clothing? Even when attempting to create empirical specifications, a theoretical definition of luxury is still necessary. In the economics and management literature, there is no consensus on what constitutes luxury. Many scholars adopt naturalistic definitions of luxury, categorizing it as possessing one or more specific attributes (Scholze & Wierzba, 2015). However, there are instances where these attributes or properties may be absent.

1.2. The French Haute Couture

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The French Haute Couture industry was the second industry to make luxury accessible to a broader audience. This industry created highly intricate designs using expensive materials and labor-intensive production methods for a select elite. However, the profitability of this approach was hindered by the Baumol effect, leading to substantial price increases. Consequently, the need for expanding outlets arose (Jones & Pouillard, 2009). Paul Poiret pioneered the practice of extending the prestige of Haute Couture to accessories and fragrances, which could be marketed to affluent consumers at lower costs than Haute Couture. These outlets were larger, and industrial production allowed for economies of scale and scope. This model remained profitable until the 1950s, but as the economic landscape of the fashion industry evolved, the costs of producing Haute Couture escalated, leading to the disappearance of many Maisons (by 1967, there were only 19 Maisons de Couture in Paris, and today there are fewer than ten). Those that managed to transition to mass production survived.

Following World War II, Christian Dior established a connection between Haute Couture and ready-to-wear by creating high-end ready-to-wear lines (Donzé & Wubs, 2019). This gave rise to prêt-à-porter des couturiers et créateurs, another form of luxury ready-to-wear, allowing Maisons to expand their market. They used their prestige to sell high-end, fashionable clothing, paving the way for the expansion of the accessory business, particularly in fragrances, due to the increasing semiotic value of top brands. While Haute Couture itself may not be profitable, ready-to-wear and accessories are, and strong links have been established between mass-produced items, the innovation laboratory, and the prestige of the high-end segment.

1.3. The French Model of Luxury

The history of French luxury can be traced back to the Court society of the 17th and 18th centuries. France's cultural environment encouraged the development of luxury while hindering its European rivals. During the reign of King Louis XIV, the Grand Siècle, grandeur and luxury were promoted, contrasting with the puritanism and austerity prevalent in the Spanish and English Courts. This aristocratic luxury of the Court society evolved into elite luxury with the rise of the bourgeoisie. Consequently, France emerged as the nation of luxury toward the end of the 19th century, with Paris at its epicenter for luxury, taste, and the art of living. Advances in technology enabled luxury businesses to adapt to the globalized markets of the late 19th and early 20th centuries. Financial

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groups responsible for their development established a unique manufacturing and marketing strategy starting in the 1980s. They created a new supply model, inspired by the initial breakthroughs in the Champagne and fashion sectors, which bridged the gap between mass production and luxury, capitalizing on the new opportunities presented by globalization and increased wealth. They succeeded in doing so due to their industry's scale, which allowed for effective management of intellectual property, the implementation of creative management, and the execution of large-scale marketing and distribution campaigns. This approach effectively resolved the tension between mass manufacturing and luxury.

1.4. Cross-Cultural Perspectives on Luxury Product Perceptions

Today, the luxury goods market holds substantial economic power, contributes significantly to GDP, and serves as a source of competitive advantage, particularly for European nations. This market is continuously expanding, and it is projected that by 2024, there will be approximately 496 million luxury consumers worldwide. These consumers tend to favor experiential luxury items such as furnishings, food and wine, accommodations, and vacations over personal luxury items like accessories, clothing, watches and jewelry, fragrances, and cosmetics. The global luxury goods industry is vast, with total sales reaching US$71,810 million from various countries.

The desire to acquire luxury goods is seemingly influenced by four key attributes or aspects: social value, personal value, functional value, and economic value, as highlighted by numerous scholars (Chattalas and Shukla, 2015; Herrings et al., 2017). According to this concept, an individual encounters a luxury product and decides whether to make a purchase by consciously or unconsciously considering these four criteria.

Individuals do not live in isolation; they exist within a societal framework and engage in social relationships, which form the basis of the social value associated with a luxury product. The desire to attain status or social distinction through the acquisition of goods is a fundamental factor influencing consumer behavior in this context. For example, someone driving a Rolls Royce is perceived to have a higher social status than someone driving a Panda, and how others perceive us impacts our purchasing decisions. An increasing proportion of consumers obtain luxury items as an expression of personal identity and the desire for a hedonistic experience, in addition to the social value they already possess or aspire to. Every product serves a purpose and has functional

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value intended to meet a consumer's needs. This value refers to the fundamental features and characteristics of a product, such as quality, reliability, and durability. Last but not least, economic value pertains to the financial worth of a product that consumers are willing to pay to acquire it. It concerns economic factors such as price, resale value, discounts, and investment potential. Depending on an individual's lifestyle, these four values influence the behavior of those who consume luxury goods to varying degrees.

2. LITERATURE REVIEW

(Jain & Rathi, 2023) examined the values of consumers and their willingness to participate in secondhand luxury consumption, which is a form of pro-environmental behavior. To assess the role of various factors in motivating Gen Z individuals to purchase used luxury items, they proposed an integrative conceptual model based on goal-framed theory. They employed structural equation modeling and the PROCESS Macro to analyze cross-sectional data from 246 Indian buyers of secondhand luxury goods. The results revealed that secondhand luxury purchase intention is influenced by both egoistic and altruistic value frameworks, mediated through attitude and subjective norms (SNs). Notably, although readiness did not directly impact purchase intention, attitude significantly influenced customers' perceptions of readiness. Furthermore, the influence of preparedness and SNs was found to be moderated by risk perceptions.

(Wright et al., 2023) evaluated and organized interdisciplinary literature on the consumption of luxury wine. They addressed scientific issues, consumer markets, and common patterns in luxury wine consumption. Leximancer and content analysis were utilized to analyze 85 articles related to fine wine consumption. The research identified six major themes within the literature: product perception, wine pricing, wine information, consumption behavior, collecting, and the Chinese market. The study indicated a trend in luxury consumption shifting towards middle-class, younger, more affordable, and predominantly Asian markets.

In their (Teimourpour and Heidarzadeh Hanzaee, 2011) examined the cultural and religious factors influencing the behavior of Iranian consumers when evaluating dimensions of luxury value. They conducted research to understand how Iranian consumers behaved in relation to luxury purchases, taking into account the influence of religion on consumer behavior and Hofstede's concept of

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national culture. The results supported the idea that consumers' assessments of luxury value aspects varied depending on their cultural background. The study also explored the impact of religion on consumer behavior, focusing on Iranian Muslims as consumers. These findings are valuable for both local and foreign marketers seeking to understand Iranian consumers' perceptions of luxury value based on cultural factors.

According to (Naumova et al. 2019), there were similarities and variations in how consumers in different regions of the world perceived luxury, were motivated to purchase luxury items, and selected appropriate marketing strategies. The study was based on an assessment of cultural values in two countries using Hofstede's national culture framework and an analysis of academic publications on the consumption patterns of luxury items in various countries. The research found that consumers from countries with high power distance, collectivism, masculinity, long-term orientation, and low indulgence primarily perceived social values in purchasing luxury items and were sensitive to conspicuous luxury-status. In contrast, consumers living in societies characterized by high levels of individualism, masculinity, indulgence, and low power distance tended to emphasize personal and functional values and were responsive to "deep epicurean luxury." Notably, the Asian region placed greater emphasis on social values and status consumption in the acquisition of luxury items. For European Union consumers, the primary drivers of luxury consumption were the pursuit of self-fulfillment and self-realization.

(De Barnier and Valette-Florence, 2013) extensively explored the uniqueness of luxury consumption within various cultural contexts in their book "Luxury Marketing: A Challenge for Theory and Practice." This influential work serves as a key reference for future research in the field of luxury marketing (Wiedmann and Hennigs, 2013).

(Hennigs et al. 2012) conducted a comprehensive study examining both the similarities and differences associated with economic and cultural factors in the luxury market across different countries. They employed a cluster segmentation approach using the k-method, which led to the identification of four distinct types of luxury consumers:

Group 1: The Luxury Enthusiasts, including consumers primarily from the US (25.9%), India (16.6%), Hungary (10.4%), and Brazil (10.1%). These individuals exhibited strong preferences for luxury goods and highly valued the sense of exclusivity, uniqueness, and distinctiveness.

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Group 2: The Status-Seeking Hedonists, consisting of consumers from the US (22.5%), India (16.1%), Japan (13.3%), and Brazil (10.4%). This group associated luxury consumption with pleasure, egocentrism, and socioeconomic status. They emphasized both the social and personal aspects of luxury goods as significant factors.

Group 3: The Satisfied Moderates, primarily composed of consumers from Spain (17.9%), Hungary (13.2%), and Slovakia (12.9%). Members of this group strongly linked luxury with exclusivity and uniqueness, perceiving it as accessible only to a privileged minority.

Group 4: The Practical Minimalists, made up primarily of consumers from the US (36.2%) and Germany (14.8%). This group placed greater importance on the fundamental features and exceptional quality of luxury goods over the prestige associated with them. Their satisfaction with luxury primarily occurred in private settings.

The findings from (Hennigs et al. 2012) study yielded several significant conclusions. Firstly, they revealed that the fundamental motivations of luxury consumers were generally consistent across the studied countries, encompassing economic, functional, personal, and social facets of luxury value perception. The differences observed mainly revolved around the overall importance attributed to these value dimensions. Secondly, for luxury brand managers to succeed, it was crucial to comprehensively address all value dimensions, ensuring that their products were perceived as luxury brands in the minds of consumers. This necessitated a focus on both the psychological needs and emotional desires of customers. In conclusion, a deeper exploration of individual preferences among target consumers was essential to truly cater to their unique assessments of luxury.

2.1. Research Objectives

- To identify key elements of French culture that have a significant influence on luxury consumer behavior, such as art, fashion, gastronomy, and lifestyle.
- To explore the impact of French luxury brands and their marketing strategies on consumer perceptions and purchasing decisions.

2.2. Research hypothesis

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Null Hypothesis (H0A): Exposure to French cultural elements (art, fashion, gastronomy, and lifestyle) does not significantly influence luxury consumer behavior.

Alternate Hypothesis (H1A): Exposure to French cultural elements (art, fashion, gastronomy, and lifestyle) significantly influences luxury consumer behavior.

Null Hypothesis (H0B): French luxury brands' marketing strategies do not significantly impact consumer perceptions and purchasing decisions.

Alternate Hypothesis (H1B): French luxury brands' marketing strategies significantly impact consumer perceptions and purchasing decisions.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study utilized a mixed-methods research approach, combining both qualitative and quantitative research methods to comprehensively investigate the research objectives. The mixed-methods approach allowed for a holistic understanding of the influence of French culture on luxury consumer behavior.

3.2 Sample population

The sample population of the study on "The Influence of French Culture on Luxury Consumer Behavior" consisted of a diverse group of individuals, including French luxury consumers and international luxury consumers from various cultural backgrounds. It encompassed participants of different ages, income levels, genders, educational backgrounds, and geographic locations, ensuring a broad representation of perspectives.

3.3 Sample Size

The study aimed to collect data from a sample size of 200 participants, comprising both qualitative interviewees and respondents for the online survey.

3.4 Sample Technique

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The study employed a dual approach to sampling, utilizing purposive sampling for qualitative interviews and stratified random sampling for the online survey. Purposive sampling enabled the intentional selection of survey respondents who demonstrated rich experiences and insights relevant to French culture's influence on luxury consumption, ensuring diversity in backgrounds and perspectives. In contrast, stratified random sampling divided the survey population into demographic strata, including age, income, gender, and cultural backgrounds, followed by the random selection of participants within each stratum.

3.5 Data Collection

3.5.1 Primary Data Collection

Qualitative Interviews: Primary data were collected through in-depth qualitative interviews with selected participants. These interviews allowed for the exploration of personal experiences, emotions, and perceptions related to French culture and luxury consumer behavior. Participants were purposefully selected based on their survey responses to ensure diversity in their cultural backgrounds, luxury consumption habits, and demographic characteristics.

Online Survey: Primary data were also gathered through an online survey administered to a sample of 200 participants. The survey included structured questions designed to collect quantitative data on consumer perceptions, preferences, and purchasing behaviors related to french luxury brands and cultural influences.

3.5.2 Secondary Data Collection:

Literature Review: Secondary data were obtained through an extensive review of existing academic literature, research articles, books, and reports related to luxury consumer behavior and the influence of culture, particularly French culture, on consumer choices. This literature review provided a theoretical framework for the study and helped identify key cultural elements to explore.

Expert Interviews: Secondary data were derived from semi-structured interviews with experts in French culture, luxury industry professionals, and scholars. These interviews contributed valuable insights into the cultural elements that historically influenced luxury consumption, and they served as secondary data sources to complement the primary interview data.

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3.6 Measurement of the collection of Data

Qualitative data from in-depth interviews were collected using open-ended questions, allowing participants to express their thoughts and experiences freely without predefined response options. Responses were then coded and categorized into themes for analysis. In the online survey, Likert-type scales were commonly employed to measure participants' attitudes, perceptions, and preferences related to French luxury brands and culture. For example, participants might have been asked to rate their agreement with statements using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

3.7 Tools used for Data Analysis

For the data analysis in the study on "The Influence of French Culture on Luxury Consumer Behavior," quantitative data obtained from the online survey, including consumer perceptions and preferences, were processed using statistical software like SPSS (Statistical Package for the Social Sciences) or similar tools. We utilized several tools for data analysis including:

- Descriptive statistics, such as mean, standard deviation, and variance, were likely used to summarize and describe key characteristics of your data, including demographic information and survey responses.
- Reliability Analysis: To assess the internal consistency of your measurement scales, we employed reliability analysis. This analysis often includes Cronbach's Alpha coefficient.
- Regression: Regression is a statistical method for simulating the connection between one or more independent variables (also known as predictors or explanatory variables) and a dependent variable (also known as the response or outcome variable).
- Independent Samples t-tests: we utilized autonomous examples t-tests to analyze implies between two gatherings. These tests decide if there are measurably massive contrasts between the gatherings.

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4. DATA ANALYSIS AND INTERPRETATION

Table 1 presents the survey respondents' characteristics in terms of gender, age, income, educational background, and nationality. The mean and standard deviation (S.D) for each category are also provided.

Table 1: Demographic Profile

Variables	Sub-category	F	Percentage	Mean	S.D
Age	18-24	27	13.5%	2.30	0.991
	25-34	103	51.5%		
	35- 44	52	26%		
	45 and above	18	9%		
Gender	Male	96	48%	4.02	1.023
	Female	104	52%		
Education	High School	24	12%	3.12	0.945
	10+2	48	24%		
	Graduate	94	47%		
	Post graduate	34	17%		
Annual Income	Upto30,000	84	42%	4.01	1.023
	30,001-40,000	76	38%		
	40,001-50,000	14	7%		
	50,001 and above	26	13%		

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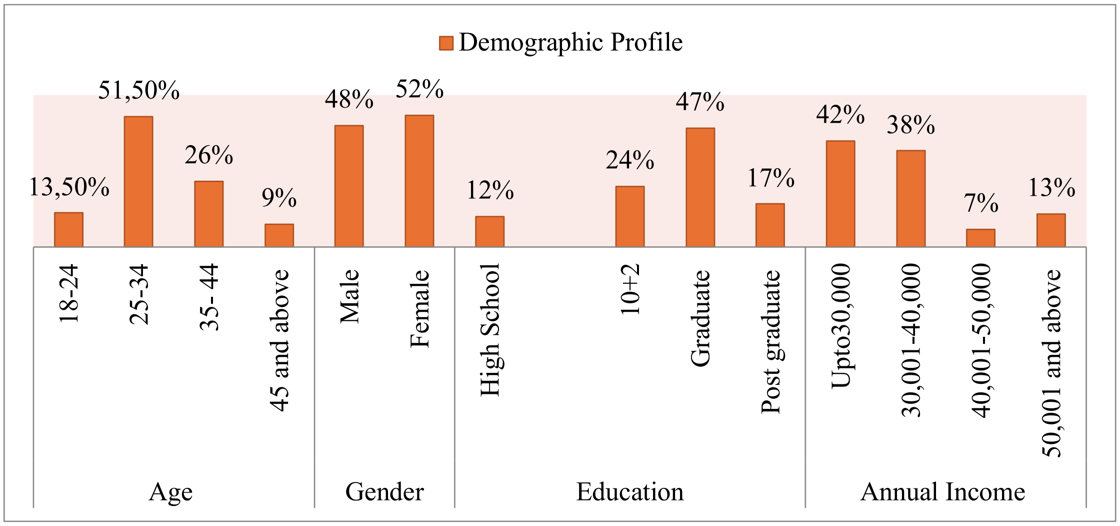

Figure 1: Demographic Profile

The demographic breakdown of the survey participants, including age, gender, educational attainment, and yearly income, is shown in Table 1. The responses are broken down by age, with the majority (51.5%) being between the ages of 25 and 34. The standard deviation is 0.991, while the average age is 2.30. According to the respondents' gender breakdown, 52% of them are female and 48% are male. This suggests that the poll had a fairly equal representation of the genders. The biggest percentage of respondents (47%) is graduates, with respondents having a range of educational backgrounds. With a standard deviation of 0.945 and a mean educational level of 3.12, there significant variation in educational backgrounds. According to the income distribution, 42% of respondents earn up to $30,000 annually, while 38% are in the $30,000–$40,000 earning range. There appears to be a broad variety of income levels among participants, as indicated by the mean income of 4.01 and standard deviation of 1.023.

The reliability analysis findings for three construct—luxury consumption and preferences, French culture and luxury, and perception of French luxury brands—are shown in Table 2. Indicators of the scales' internal consistency and dependability are the Cronbach's Alpha values.

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Table 2: Reliability Analysis

Variables	No. of items	Cronbach's Alpha value
Luxury Consumption and Preferences	5	0.711
French Culture and Luxury	5	0.812
Perception of French Luxury Brands	5	0.715

Luxury Consumption and Preferences consists of 5 items, and its Cronbach's Alpha value is 0.711. A value above 0.7 generally indicates good internal consistency, suggesting that the items within this construct are reliable measures of luxury consumption and preferences. With 5 items, this construct has a Cronbach's Alpha value of 0.812, indicating even higher internal consistency. The items within this construct are highly reliable in measuring the relationship between French culture and luxury. This construct, comprising 5 items, has a Cronbach's Alpha value of 0.715, indicating good internal consistency. It suggests that the items reliably measure respondents' perceptions of French luxury brands

Table 3 displays the outcomes of an exploratory factor analysis (EFA) with a rotated component matrix. EFA is used to uncover underlying factors or dimensions within a set of variables. In this case, it appears that the analysis was conducted on items related to Luxury Consumption (LC), French Culture (FC), and French Lifestyle (FL).

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Table 3: EFA exploratory factor analysis outcomes

	Rotated Component Matrix[a]		
	1	2	3
LC1	0.791		
LC2	0.833		
LC3	0.806		
LC4	0.82		
LC5	0.8		
FC1		0.82	
FC2		0.84	
FC3		0.85	
FC4		0.86	
FC5		0.86	
FL1			0.812
FL2			0.820
FL3			0.867
FL4			0.866
FL5			0.846

The table presents the factor loadings for each item (e.g., LC1, LC2, FC1, FL1, etc.) across five components (1 to 3). For example, items FC1, FC2, FC3, FC4, and FC5 all load significantly on Component 2, suggesting that these items are closely related and may represent a common underlying factor related to French Culture. Items LC1, LC2, LC3, LC4, and LC5 load highly on Component 1, indicating that these items share common variance and may represent a distinct factor related to Luxury Consumption. Items FL1, FL2, FL3, FL4, and FL5 also load significantly on Component 3, suggesting that they are associated with a common factor related to French Lifestyle.

The first hypothesis (H0A) posits that exposure to French cultural elements (art, fashion, gastronomy, and lifestyle) does not significantly influence luxury consumer behavior, while the alternate hypothesis (H1A) suggests that it does have a significant impact.

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Table 4: Model Summary

Model Summary			
Model	R	R Square	Adjusted R Square
1	.764[a]	0.584	0.582
a. Predictors: (Constant), Luxury_Consumer_Behavior			

Using the results of the regression analysis, the model summary offers insightful information. The exposure to French cultural features can account for around 58.4% of the variance in luxury consumer behaviour, according to the R-squared value of 0.584. This high rating implies that there is a close connection between these cultural components and the behaviour of luxury consumers. This view is supported by the adjusted R-squared value of 0.582, which takes into account the number of predictors in the model.

Table 5: Anova

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	163.493	1	163.493	277.864	.000[b]
	Residual	116.502	198	.588		
	Total	279.995	199			
a. Dependent Variable: Exposure_to_French_Culture						
b. Predictors: (Constant), Luxury_Consumer_Behavior						

The ANOVA (Analysis of Variance) table further supports the alternate hypothesis (H1A). The p-value associated with the regression model is less than 0.05 ($p < 0.05$), indicating that the relationship between exposure to French cultural elements and luxury consumer behavior is statistically significant. This means that there is strong evidence to reject the null hypothesis (H0A), in favor of the alternate hypothesis (H1A). In other words, exposure to French cultural elements does significantly influence luxury consumer behavior.

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Table 6: Coefficient

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.505	.145		3.483	.001
	Luxury_Consumer_Behavior	.807	.048	.764	16.669	.000
a. Dependent Variable: Exposure_to_French_Culture						

The coefficients table provides additional details about the strength and direction of this relationship. The coefficient for "Luxury_Consumer_Behavior" is 0.807, which is positive, indicating that as luxury consumer behavior increases, exposure to French cultural elements also increases. This coefficient is highly statistically significant ($p < 0.001$), reinforcing the idea that luxury consumer behavior is positively associated with exposure to French cultural elements.

The second set of hypotheses (H0B and H1B) examines the impact of French luxury brands' marketing strategies on consumer perceptions and purchasing decisions.

Table 7: Mean and S.D

Group Statistics				
	Group	N	Mean	Std. Deviation
Consumer perceptions and purchasing decisions	exposed_group	100	2.3353	0.85938
	not_exposed_group	100	2.2991	0.85753

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Table 8: Independent Samples Test

Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Consumer perceptions and purchasing decisions	Equal variances assumed	0.016	0.899	0.298	198	0.766	0.04	0.1214
	Equal variances not assumed			0.298	197.999	0.766	0.04	0.1214

The results of the t-test reveal that the p-value (p = 0.766) is greater than the significance level of 0.05 (alpha). Because of this, we are unable to rule out the null hypothesis (H0B), indicating that there is insufficient data to draw the conclusion that the marketing techniques of French luxury businesses have a major influence on customer perceptions and purchase choices.

5. DISCUSSION

The discussion section offers a deeper exploration and interpretation of our research findings within the broader context of luxury consumer behavior and cultural influence. Firstly, our study substantiates the substantial impact of French culture on luxury consumer behavior, affirming the notion that culture is not merely a backdrop but an active and compelling force in shaping consumers' preferences within the luxury market. This aligns with existing literature that underscores the critical role culture plays in shaping consumer choices, especially in the context of luxury consumption. French culture, renowned for its rich artistic heritage, iconic fashion, exquisite gastronomy, and unique lifestyle, exerts a profound influence that extends beyond

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geographical borders. Our findings highlight that luxury consumers are drawn not only to the products themselves but also to the cultural narratives and experiences they offer.

Within this cultural framework, specific cultural elements emerged as key drivers of luxury consumer behavior. Art, fashion, gastronomy, and lifestyle were identified as pivotal components that significantly shape consumer perceptions of luxury. This insight suggests that luxury brands seeking to resonate with consumers should not merely sell products but craft immersive cultural experiences. By incorporating these elements authentically into their branding and marketing strategies, luxury brands can establish a deeper and more resonant connection with their target audience.

Interestingly, our study did not find a statistically significant impact of French luxury brands' marketing strategies on consumer perceptions and purchasing decisions. This outcome, while initially counterintuitive, underscores a critical aspect of luxury consumption – the pursuit of authenticity and heritage. Luxury consumers are discerning and seek genuine cultural experiences. They are often less responsive to conventional marketing tactics that lack cultural depth. As such, luxury brands must recognize that authenticity holds more sway than promotional campaigns and should focus on embodying and promoting their cultural heritage in meaningful and substantive ways.

The implications of our findings extend to luxury brand management and marketing practices. It is imperative for luxury brands to align their identity with their cultural heritage, emphasizing authenticity and heritage in their branding narratives. Collaborations with artists, designers, and cultural institutions can further enrich these narratives, creating a more profound connection with consumers

6. CONCLUSION

Using a mixed-methods research strategy that included both qualitative and quantitative analysis, this study has shed light on how French culture affects luxury consumer behaviour. Our research findings highlight the pivotal role played by French cultural elements in shaping the preferences and choices of luxury consumers, underscoring the significant impact of cultural immersion on

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consumer behavior. Quantitative analysis revealed a robust relationship between exposure to French cultural elements and luxury consumer behavior, affirming our hypothesis that cultural factors such as art, fashion, gastronomy, and lifestyle significantly influence consumer choices in the luxury market. The regression analysis demonstrated that as luxury consumer behavior increased, so did exposure to French cultural elements. This outcome underscores the importance of considering cultural factors when examining consumer preferences and behaviors in the luxury industry.

However, our investigation into the impact of French luxury brands' marketing strategies on consumer perceptions and purchasing decisions did not yield statistically significant results. The study found insufficient evidence to support the hypothesis that marketing strategies alone significantly influence consumer choices in the luxury market.

The implications of these findings are twofold. Firstly, luxury brand managers and marketers should recognize the pivotal role of culture in shaping consumer preferences and tailor their strategies accordingly. Secondly, researchers in the field of luxury consumer behavior should continue to explore the multifaceted interplay between culture and consumption, recognizing that culture is not a uniform entity but a dynamic and influential force in the luxury market.

As consumer behavior continues to evolve in an increasingly globalized world, understanding the impact of culture on luxury consumption remains crucial for both academia and industry. This study contributes to this ongoing dialogue and underscores the need for continued research into the intricate relationship between culture, luxury, and consumer choices.

REFERENCES

1. Bian, Q., & Forsythe, S. (2012). The impact of culture on luxury consumption: A cross-cultural study of Chinese consumers in the United States and China. Journal of Business Research, 65(9), 1312-1320.
2. Chattalas, M., & Shukla, P. (2015). The impact of social and individual values on luxury consumption: A cross-cultural study. International Journal of Retail & Distribution Management, 43(8), 782-802.
3. De Barnier, V., & Valette-Florence, P. (2013). Culture and luxury: An analysis of luxury perceptions across frontiers. In K. P. Wiedmann & N. Hennigs (Eds.), Luxury marketing (pp. 37-56). Wiesbaden: Springer Gabler. https://doi.org/10.1007/978-3-8349-4399-6_3

Received: 18.12.2023 Accepted: 01.06.2024 Published:20.06.2024

4. Donzé, P. Y., & Wubs, B. (2019). Storytelling and the making of a global luxury fashion brand: Christian Dior. International Journal of Fashion Studies, 6(1), 83-102.
5. Grange, S. (2015). A cross-cultural study of luxury consumption: French versus Norwegian consumers. Journal of International Consumer Marketing, 27(4), 326-340.
6. Hennigs, N., Wiedmann, K. P., Klarmann, C., Strehlau, S., Godey, B., Pederzoli, D., Neulinger, A., Dave, K., Aiello, G., Donvito, R., Taro, K., Táborecká ‐ Petrovičová, J., Santos, C. R., Jung, J., & Oh, H. (2012). What is the value of luxury? A cross ‐ cultural consumer perspective. Psychology & Marketing, 29(12), 1018-1034. https://doi.org/10.1002/mar.20583
7. Herrings, N., Wiedmann, K. P., & Hennigs, N. (2017). The role of social, individual, and functional values in luxury consumption: A meta-analysis. Journal of Business Research, 77, 1-14.
8. Hofstede, G. (2011). Culture and organizations: Software of the mind: Intercultural cooperation and its importance for survival. McGraw-Hill.
9. Jain, S., & Rathi, R. (2023). Do consumer values and perceived readiness impact secondhand luxury consumption? A goal-framing theory approach. Journal of Product & Brand Management.
10. Jones, G. G., & Pouillard, V. (2009). Christian Dior: A New Look for haute couture. HBS Case, (809-159).
11. Lavastrou, M. (2016). Luxury consumption behavior of Chinese, French, Arab, and American consumers: A cross-cultural study. Journal of International Business and Management, 11(3), 07.
12. Naumova, O., Bilan, S., & Naumova, M. (2019). Luxury consumers' behavior: A cross-cultural aspect. Innovative Marketing, 15(4), 1.
13. Sarma, A. (2018). The impact of culture on luxury consumption: A review and synthesis of the literature. Journal of Global Marketing, 31(1), 2-21.
14. Scholze, J., & Wierzba, L. (2015). Defining luxury. Crafts, 254, 6-13.
15. Shukla, P., & Purani, M. (2012). A cross-cultural study of luxury value dimensions: British versus Indian consumers. Journal of Marketing Management, 28(13-14), 1420-1444.
16. Steele, V. (2017). Paris fashion: A cultural history. Bloomsbury Publishing.
17. Teimourpour, B., & Heidarzadeh Hanzaee, K. (2011). The impact of culture on luxury consumption behaviour among Iranian consumers. Journal of Islamic Marketing, 2(3), 309-328.
18. Wright, D. K., Yoon, H., Morrison, A. M., & Šegota, T. (2023). Drinking in style? Literature review of luxury wine consumption. British Food Journal, 125(2), 679-695.
19. Zhang, S. (2017). A study of Chinese young consumers in the UK's luxury market. International Journal of Retail & Distribution Management, 45(3), 262-282.

DISCLOSURE OF CONFLICT

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TURKEY AS A HEALTH TOURISM DESTINATION: AN ANALYSIS OF ONLINE SEARCH BEHAVIOR AND MARKET INSIGHTS

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Abstract

Health tourism is a type of tourism that refers to individuals traveling from their home country to another country to receive healthcare services. This type of tourism encompasses areas such as medical treatment, cosmetic surgery, dental care, rehabilitation, thermal health services, alternative medicine practices, or elderly and disabled care. Turkey, with its extensive resources and capabilities, has significant potential in health tourism.

This study aims to analyze Turkey's position in internet searches related to health, considering its significant market share in global health tourism. In this context, searches conducted through search engines on the internet were examined. Health-related searches associated with Turkey were explored on a global scale. Searches from the past five years were analyzed, and the geographical distribution of searches targeting Turkey was presented. Furthermore, the searches conducted by users within the scope of health tourism were analyzed based on specific topics. Through this approach, data on target markets and focus areas of treatment were obtained.

Keywords: Health tourism, online search behavior, hair transplant, dental treatment, Turkey health tourism

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1. INTRODUCTION

Health tourism is a rapidly growing sector driven by globalization, increased health awareness, and improvements in transportation opportunities in recent years. The fundamental definition of health tourism involves individuals traveling to different regions to receive healthcare services. Activities in this field encompass various services such as medical treatment, cosmetic surgery, dental procedures, wellness therapies, and rehabilitation. Additionally, they integrate touristic experiences that align with individuals' efforts to improve their health (Connell, 2006). The growing global significance of health tourism is reshaping both the healthcare and tourism industries.

Several key factors contribute to the rapid development of health tourism. Firstly, advancements in the quality of medical services and the diversification of treatment methods play a crucial role. Modern healthcare infrastructures and specialized clinics in many countries offer high-quality services at globally competitive prices. This has encouraged more people to seek treatment outside their home countries (Lunt et al., 2011). Furthermore, with the influence of advancing digital media and globalization, access to information about health tourism has become more accessible, laying the groundwork for individuals to prefer healthcare services abroad.

Economic factors also play a significant role in the growth of health tourism. Due to the availability of high-quality healthcare services at lower costs, health tourism has become a substantial source of revenue for healthcare institutions, especially in developing countries (Crooks et al., 2010). For instance, countries such as Turkey, India, Thailand, and South Korea have emerged as major global destinations in the health tourism sector. This new industry significantly contributes to national economies (Glinos et al., 2010).

Another aspect of health tourism is the desire of patients not only to undergo treatment but also to relax, rejuvenate, and gain cultural experiences. This factor has expanded health tourism into a broader concept beyond traditional medical services (Cheng, 2013). Health tourism offers an experience that extends beyond medical interventions, combining wellness, aesthetics, and psychological comfort for individuals.

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This article will address the fundamental dynamics of health tourism, the key players in the sector, and the demand for health tourism to Turkey. Additionally, it will focus on potential trends in health tourism directed toward Turkey. By evaluating data on Turkey's target markets and preferred treatment types in health tourism, strategic recommendations for the sector will be presented.

2. THE CONCEPT OF HEALTH TOURISM AND ITS TYPES

The emergence of health tourism, a specialized form of tourism, stems from individuals traveling and staying outside their place of residence with the aim of receiving treatment. While there are numerous definitions of the concept of health tourism, they generally share common elements such as the purpose of travel and the duration of the stay. Planned travel undertaken to receive healthcare services in a location other than one's residence is referred to as "health tourism," and those undertaking such travel are called "health tourists" (Cohen, 2008: 25).

Another definition describes health tourism as traveling to a different location to preserve, enhance, or treat health conditions, staying at least 24 hours, and benefiting from both health and tourism services during this period. The growth of the world population, improvements in quality of life, and rising healthcare costs in certain countries have led patients to seek treatment in countries that offer more affordable and high-quality healthcare services. This has resulted in the establishment of the health tourism sector (Kantar & Işık, 2014).

Throughout its historical development, the tourism sector has expanded beyond its traditional sub-sectors such as accommodation, food and beverage, travel, sports activities, and entertainment. Over time, it has also started to provide services in many other sub-sectors. While supply and demand are key determinants of these services, the development of economic, socio-cultural factors, and tourism awareness also play a significant role in the formation and delivery of these services. In the health sector, factors such as the number of hospitals and physicians in a country, the cost of services, and social facilities have contributed to the development of health tourism (Buyrukoğlu & Mercan, 2023).

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Various classifications have been proposed for the types of health tourism. Generally, it is categorized into four main types: medical tourism, thermal/spa/wellness tourism, elderly tourism, and disabled tourism (Cohen, 2008: 25-26). In another classification, health tourism is similarly divided into four groups: medical tourism, thermal tourism, disabled tourism, and elderly tourism (Kantar & Işık, 2014).

Medical tourism refers to the tourism movements where individuals travel to foreign countries, often distant ones, to undergo medical treatments or surgeries at lower costs due to high treatment expenses in their home countries (İçok, 2009). Thermal tourism, a concept that has been used by humans since ancient times, is defined as "tourism resulting from various treatment methods, such as thermomineral water baths, drinking, inhalation, mud baths, and other supportive therapies like climate therapy, physical therapy, rehabilitation, exercise, psychotherapy, and diet, in addition to the use of thermal waters for recreational and leisure purposes" (Şengül & Bulut, 2019).

There are various definitions related to the concept of disability, and similar diverse definitions exist for disabled tourism. Recently, terms such as "accessible tourism" or "barrier-free tourism" have been increasingly used. In brief, disabled tourism refers to tourism activities carried out by people with disabilities (Buhalis & Darcy, 2011: 2). Elderly tourism, on the other hand, refers to the travel of elderly individuals who require care to other countries in order to meet their needs (Çetinkaya & Zengin, 2009: 172). While elderly tourism shares similarities with the concept of "third-age tourism," it is distinct from third-age tourism because it is specifically focused on healthcare and health preservation (Gençay, 2007: 175). The services provided for elderly care include rehabilitation services, physical activities, and social services (Denizli, 2023: 61).

3. TURKEY'S POSITION AND IMPORTANCE IN HEALTH TOURISM

Both general tourism and health tourism revenues are significant sources of income for Turkey. The country's geopolitical location, its unique natural and cultural wealth, the affordable treatment costs offered in medical tourism, short waiting times, skilled and trained workforce, the number of accredited hospitals, high-quality healthcare services, and world-renowned doctors have made Turkey one of the leading destinations in international health tourism (Şengel & Şeyho, 2023).

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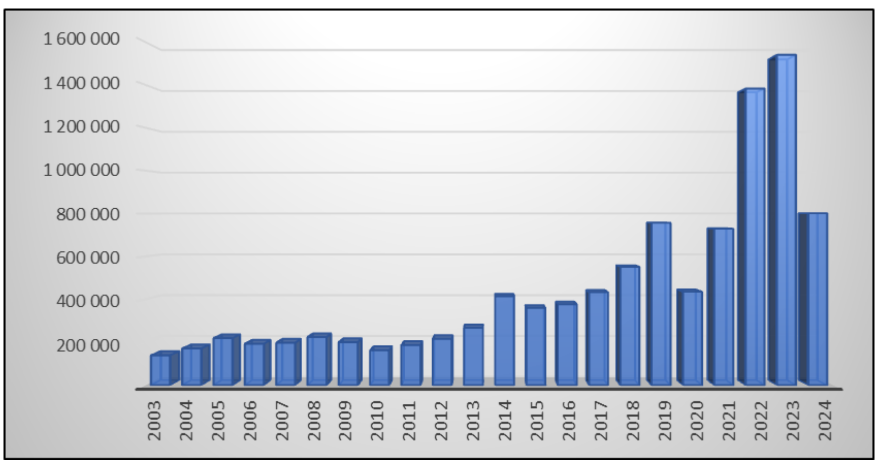
Between 2005 and 2010, awareness of health tourism began to emerge within civil society organizations, the public sector, and the private sector in Turkey. From 2010 to 2014, health tourism was included in the Strategic Action Plan. In 2010, the Health Tourism Unit was established to manage health tourism services under a single authority, and in 2011, the first regulatory changes related to health tourism were published. Health tourism became part of the Ministry of Health's 2023 vision, and it has been included in government policies and programs (Bulut & Şengül, 2019).

Turkey ranks 7th among all countries in the field of health tourism, with 40 healthcare institutions accredited internationally, which positively contributes to the preferences of medical tourists. Countries such as those in the Middle East, as well as Germany, the United Kingdom, Russia, Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, and Afghanistan, are the leading countries that send the most health tourists to Turkey (Ministry of Trade, 2024).

Graph 1. Number of Health Tourists by Year (Turkey)



Source: TUIK, 2024

International patients coming to Turkey for health tourism have a wide range of treatment options. The most preferred clinics and specialties by international patients in Turkey include gynecology, internal medicine, ophthalmology, medical biochemistry, general surgery, dentistry, orthopedics and traumatology, infectious diseases, and ear, nose, and throat (ENT) (USHAŞ, 2022).

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4. LITERATURE REVIEW

There is a significant amount of research on the topic of health tourism in the literature. These studies can be grouped into international studies focused on the Turkey destination, medical tourism, thermal tourism, and elderly care. In this study, the topics related to health tourism found in the literature are examined, with a particular focus on Turkey from an international perspective. Studies that treat Turkey as a health destination are presented in sequence.

Özsarı and Karatana (2013) note in their study that significant progress has been made in the field of health tourism in Turkey. However, they argue that Turkey has not yet achieved the desired position in the global market for health tourism across its various sectors, given its potential. Turkey has both strengths and weaknesses in this competitive environment. Barca, Akdeve, and Balay (2013) emphasize that for Turkey to capture a larger share of the growing health tourism market, new visions and approaches are needed.

Health tourism can serve as a catalyst and accelerator in Turkey's transition from a low-value-added economic model to a high-value-added knowledge economy. As a country that has not yet made significant strides in the knowledge economy, Turkey could become one of the leading nations by declaring health tourism as a strategic sector and increasing efforts in this direction. Turkey is recognized as one of the few countries in the world with competence in both the healthcare and tourism sectors, and it appears to have the potential to become a leader in health tourism, which integrates these two sectors.

Yılmaz, Sarıaydın, and Sönal (2020) point out that Turkey offers year-round vacation opportunities with its underground and surface diversity. They highlight the country’s natural beauty, historical richness, and central geographic location between the Middle East and Europe as significant advantages. Furthermore, they mention that Turkey is one of the key attraction centers for health tourism worldwide due to its ability to provide affordable and high-quality healthcare services.

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Özkan (2019) argues that if the Turkish Ministry of Health, the tourism sector, and private healthcare organizations coordinate their health plans, policies, and investments, Turkey will achieve its deserved position in both health and medical tourism.

Altın et al. (2013) state in their study that for the development of health tourism, which contributes to Turkey's economy in various ways, hospitals aiming to focus on health tourism must select target markets carefully in order to gain a share of the international tourism market. In this regard, competitors' marketing strategies should be reviewed, and Turkey should develop marketing strategies that highlight its distinct advantages over its competitors.

Aktepe (2013) emphasizes in his study that Turkey needs to clearly define its target markets within health tourism. From this perspective, European countries will be the main focus of health tourism demand. Additionally, Gulf countries, with their high income levels and the absence of established social security systems, are also important countries to consider.

In his study, Kılavuz (2018) notes that improvements have been made in the physical infrastructure and medical competence in both public and private hospitals in Turkey's medical tourism sector. Measures have also been taken to facilitate the process for health tourists, leading to the conclusion that Turkey aims to become a leading country in the sector (Kılavuz, 2018:58).

Bulgan et al. (2016) identify the advantages and disadvantages of Turkey in the medical tourism sector. Disadvantages include insufficient service quality, lack of adequate infrastructure in sub-sectors, a shortage of specialized doctors, and limited accommodation options (Bulgan, Öksay & Korucu, 2016:45). According to the findings of this study, patient satisfaction in Turkey will increase, leading to a competitive advantage, development of international relations, increased economic prosperity, and an extended tourism season.

In this study, unlike the studies found in the literature, the international tourism demand directed towards Turkey will be examined. In this regard, internet searches related to Turkey provide realistic data. By offering useful data for forecasting target markets and understanding target treatment types, this study will contribute to the literature.

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5. RESEARCH METHOD AND METHODOLOGY

In this study, search engine trends related to health tourism topics directed towards Turkey are examined. In this context, searches made by people worldwide regarding health topics related to Turkey have been analyzed. To this end, data from Google Trends, which shows the frequency of searches by entering different keywords within a specific time frame, developed by Google, has been used. Research has been conducted based on data covering the last five years (2019-2024).

In this study, secondary data obtained through Google Trends was used. Google Trends is a database that provides search data from Google search engine, images, YouTube, news, and shopping channels for a specific region across 25 different categories. The data is presented in time intervals such as hour, day, week, month, and year. The data provided for the searched terms includes interest graphs, showing information on where, when, and how frequently a term has been searched. However, the data shown in the graph does not represent the absolute number of searches performed. The data is presented on a scale of 0 to 100, where 100 represents the highest popularity, 50 represents half of the popularity, and 0 indicates insufficient data for the term (Search Trends Help, 2024).

Global Health-Related Searches Directed Toward Turkey

In the analysis, the searches related to Turkey within the health topic group were examined first. The geographical density of searches for Turkey and the frequency of searches over time are presented in Figure 1.

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Figure 1: Health-Related Internet Searches for Turkey Worldwide, 2019-2023

Source: Google Trends

When examining the distribution of health-related searches by country, it is observed that neighboring countries of Turkey are ranked at the top. According to search engine statistics, Cyprus, Azerbaijan, Iran, Bulgaria, and Georgia occupy the top 5 positions. The top 20 countries using the keyword "Turkey" for health-related searches are presented in Table 1.

Table 1. Top 20 Countries Using the Keyword "Turkey" for Health-Related Searches

1-5	6-10	11-15	16-20
Cyprus	Libya	Bosnia and Herzegovina	Iraq
Azerbaijan	Kuwait	Qatar	Netherlands
Iran	Syria	Jordan	Ireland
Bulgaria	United Kingdom	Germany	United Arab Emirates
Georgia	Lebanon	Kyrgyzstan	Kazakhstan

Source: Google Trends

It can be stated that the top 20 countries include nations from Asia, Africa, and Europe. From the European continent, the United Kingdom, Germany, the Netherlands, Bulgaria, and Bosnia and Herzegovina are included. From Asia, countries such as Iran, Georgia, Syria, the United Arab

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Emirates, Qatar, Jordan, and Kuwait are represented. The continent with the highest interest is Asia.

Table 2. Increasing Health Tourism Searches for Turkey Worldwide

sleeve gastrectomy	+%600	Hair Transplant	%10
cosmetic surgery	+%120	Teeth Turkey	%7
abdominaplasty	+%90	Turkey Dental	%7
Hair Transplantation	+%60	Rhinoplasty	%5
Organ transplantation	+%40	Dental Implants Turkey	%5

Source: Google Trends

The increasing and most relevant subtopics related to health-related searches for Turkey are shown in Table 3. Sleeve gastrectomy, cosmetic surgery, and abdominoplasty are the most increasing search topics. Among the most relevant topics, hair transplant ranks first. Dental treatments are also among the most relevant topics. Additionally, rhinoplasty is one of the most frequently matched searches.

Figure 2. Searches for Sleeve Gastrectomy Related to Turkey

Source: Google Trends

The search topic with the highest increase over the last five years is sleeve gastrectomy, with a significant rise of 600%. Turkey is emerging as one of the leading countries in this area. The top five countries for searches related to Turkey in this field are Kuwait, Saudi Arabia, Bahrain, Cyprus, and Jordan.

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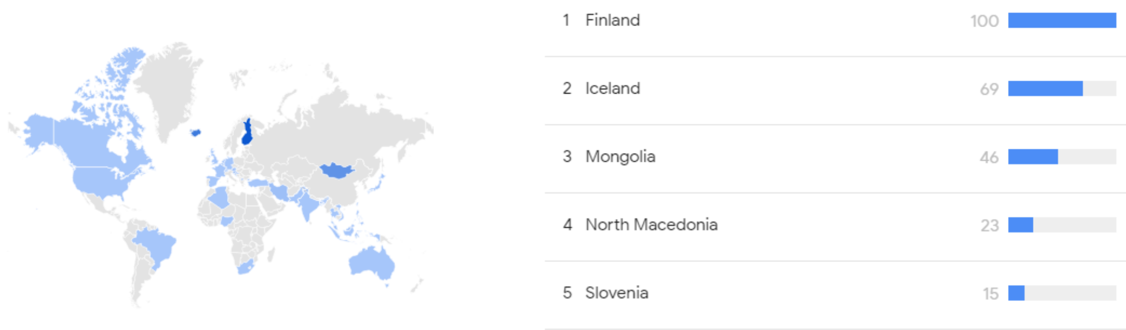
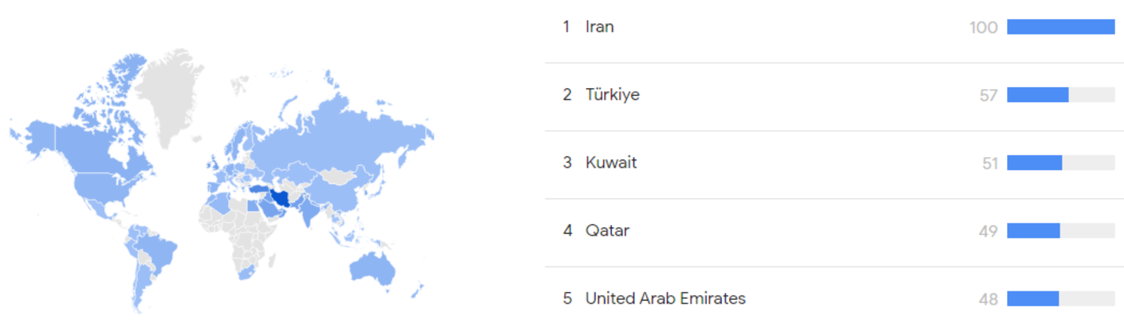
Figure 3. Search Queries for Cosmetic Surgery Related to Turkey



Source: Google Trends

The second most significant increase in search topics over the past five years is cosmetic surgery, with a substantial rise of 120%. Turkey is emerging as one of the leading countries in this field. The top five countries conducting searches related to this topic are Finland, Iceland, Mongolia, North Macedonia, and Slovenia. The countries searching for this topic are different from those searching for other topics, with European countries showing more interest in this area.

Figure 4. Hair Transplant Searches Related to Turkey



Source: Google Trends

Another relevant search topic in the last five years is hair transplant. Turkey is one of the countries recognized globally in this field, with a 60% increase. Turkey is advancing toward becoming one of the leading countries in this area. The top five countries conducting searches related to this topic in Turkey are Iran, Kuwait, Qatar, the United Arab Emirates, and Turkey itself, due to searches

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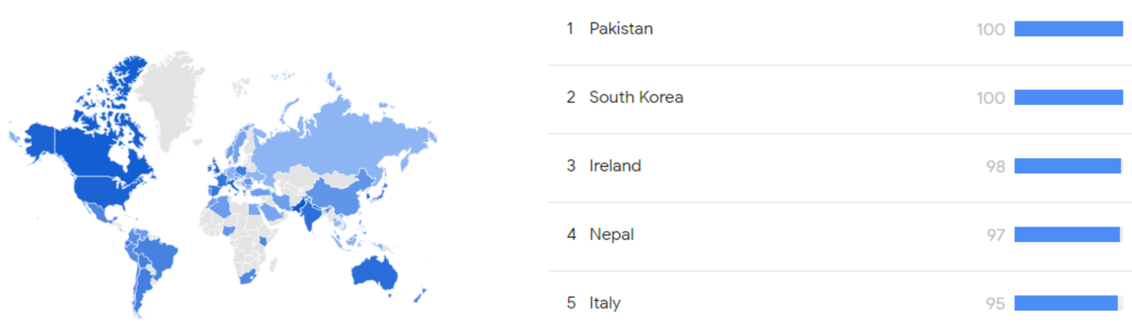
made by its own citizens. It is observed that the countries searching for this topic are primarily Asian countries.

Figure 5. Organ Transplantation Searches Related to Turkey



Source: Google Trends

Another highly relevant search topic in the past five years is organ transplantation. The top five countries searching for this topic related to Turkey are Pakistan, South Korea, Ireland, Nepal, and Italy. The countries searching for information about Turkey in this area are notably different from others, with Asia, Europe, and Africa represented together.

Figure 6. Dental Implant Searches Related to Turkey

Source: Google Trends

Another area where Turkey leads is dental treatments. One of the most relevant search topics in the past five years is dental implants. The top five countries searching for this topic related to Turkey are Romania, the United States, Mexico, the United Kingdom, and Ecuador. The countries

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searching for information about Turkey in this area are notably different from others, with the Americas being more dominant in this topic.

6. CONCLUSION

This study examines the topic of health tourism. Turkey is a country with a significant position in global health tourism. Especially in recent years, thanks to investments made by both the government and the private sector, Turkey has gained considerable momentum in health tourism.

With the new data sources provided by the digital world, we had the opportunity to analyze the interest in health tourism directed towards Turkey. We examined Google search data and tried to understand which countries around the world are showing interest in Turkey. We gained insights into the areas where Turkey has advantages. This allows Turkey to more effectively identify target markets in health tourism marketing. It also enables predictions regarding the types of treatments that are in demand in different countries.

Through this research, it was found that the interest in Turkey comes primarily from neighboring countries. There is a clear interest in treatments such as sleeve gastrectomy, cosmetic surgery, and abdominoplasty. Furthermore, the topics of Hair Transplantation and Dental treatments frequently appear in searches related to Turkey.

Turkey stands out in the field of health tourism due to its geographical location, cost advantages, high-quality healthcare services, and tourism infrastructure. However, in order to gain a larger market share in this sector, Turkey needs to take strategic and comprehensive steps. This study provides statistical information to help Turkey clearly identify its target markets. The following recommendations could assist Turkey in becoming one of the leading countries in health tourism:

• Identify Focus Markets**:** Based on the collected data, regions such as Europe, the Middle East, Africa, and North America should be selected as target markets.

• Determine Focus Key Treatment Types**:** Search engine data indicates that Turkey excels in areas such as sleeve gastrectomy, cosmetic surgery, abdominoplasty, hair transplantation, rhinoplasty,

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and dental treatments. Marketing efforts targeting these treatment types could lead to greater efficiency.

Additionally, focusing on customer satisfaction and offering package deals could help Turkey rise further in health tourism. For example, packages that combine treatments with tourism, such as a hair transplant followed by a tour of Cappadocia, could provide both healthcare and tourism services. Patients could be offered a comfortable experience with services such as transfers, accommodation, and private tour guides. By promoting thermal facilities and spa centers, the scope of health tourism could be expanded.

REFERENCES

1. Aktepe, C. (2013). Sağlık turizminde yeni fırsatlar ve Türkiye'de yerleşik sağlık işletmelerinin pazarlama çabaları. *İşletme Araştırmaları Dergisi, 5*(1), 170-188.

Received: 09.02.2024 Accepted: 09.06.2024 Published:20.06.2024

2. Altın, U., Bektaş, G., Antep, Z., & İrban, A. (2012). Sağlık turizmi ve uluslararası hastalar için Türkiye pazarı. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, (3)*, 157-163.
3. Arama Trendleri Yardım. (2024). Google Trend verileri hakkında SSS. Erişim adresi: https://support.google.com/trends/answer/4365533?hl=tr&ref_topic=6248052
4. Barca, M., Akdeve, E., & Balay, İ. G. (2013). Türkiye sağlık turizm sektörünün analizi ve strateji önerileri. *İşletme Araştırmaları Dergisi, 5*(3), 64-92.
5. Buhalis, D., & Darcy, S. (2011). Introduction: From disabled tourists to accessible tourism. In D. Buhalis & S. Darcy (Eds.), *Accessible tourism: Concepts and issues* (pp. 1-42). Channel View Publications.
6. Bulgan, G., Öksay, A., & Körücü, S. K. (2016). The evaluation of medical tourism perspective of health management and tourism management students. *Journal of Emerging Economies and Policy, 1*, December 2016.
7. Bulut, A., & Şengül, H. (2019). Dünyada ve Türkiye'de sağlık turizmi. *Yönetim, Ekonomi ve Pazarlama Araştırmaları Dergisi*.
8. Buyrukoğlu, S., & Mercan, Ş. A. (2023). Türkiye'deki sağlık turizminin ekonomik büyüme üzerine etkisi. *Cumhuriyet Üniversitesi Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi, 47*(2), 227-234.
9. Cheng, M. (2013). HEALTH TOURISM: AN OVERVIEW. ANNALS OF TOURISM RESEARCH, 40, 13-32.
10. Cohen, E. (2008). Medical tourism in Thailand. *AU-GSB e-Journal, 1*(1), 24-37.
11. Connell, J. (2006). MEDICAL TOURISM: SEA, SUN, SAND AND SURGERY. TOURISM MANAGEMENT, 27(6), 1093-1100.
12. Crooks, V. A., Johnston, R., & Snyder, J. (2010). PROMOTING MEDICAL TOURISM IN THE DEVELOPING WORLD: A CRITICAL ANALYSIS OF THE GLOBALIZATION OF HEALTHCARE. INTERNATIONAL JOURNAL OF HEALTH SERVICES, 40(4), 659-681.
13. Çetinkaya, T., & Zengin, B. (2009). Yaşlı bakımı ve turizm. Panel Bildiri Kitapçığı; Sakarya: 172-181.
14. Denizli, F. (2023). Yaşlı ve engelli bakım turizm potansiyelinin değerlendirilmesi: Fırsatlar ve tehditler - Kayseri ili örneği. *Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 46*, 59-75.
15. Gençay, C. (2007). Sağlık turizmi. In M. Bulu & İ. H. Eraslan (Eds.), *Sürdürülebilir rekabet avantajı elde etmede turizm sektörü* (pp. 175-180).
16. Glinos, I. A., Baeten, R., & Cingolani, M. (2010). *The influence of cross-border healthcare in Europe: Trends and challenges*. *European Journal of Public Health, 20*(5), 555-559.
17. İçöz, O. (2009). Sağlık turizmi kapsamında medikal (tıbbi) turizm ve Türkiye'nin olanakları. *Yaşar Üniversitesi E-Dergisi, 4*(14), 2257-2279.
18. Kantar, G., & Işık, E. (2014). Türkiye'de sağlık turizmi. *Sağlık Akademisyenleri Dergisi, 1*(1), 15-20.
19. Kılavuz, E. (2018). Medical tourism competition: The case of Turkey. *International Journal of Health Management and Tourism, 3*(1), 42-58.

Received: 09.02.2024 *Accepted: 09.06.2024* *Published:20.06.2024*

20. Kuzhan, K., & Gönen, S. (2024). Türkiye'de sağlık turizmi ve pazarı üzerine bir değerlendirme. *Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 14*(1), 27-50.
21. Lunt, N., Mannion, R., & Exworthy, M. (2011). Medical tourism: Assessing the evidence on treatment abroad. *Maturitas, 70*(1), 16-23.
22. Özkan, M. E. (2019). Sağlık turizmi kapsamında Türkiye'nin medikal turizm potansiyeline yönelik bir değerlendirme. *Turizm Ekonomi ve İşletme Araştırmaları Dergisi, 1*(1), 50-64.
23. Özsarı, S. H., & Karatana, Ö. (2013). Sağlık turizmi açısından Türkiye'nin durumu. *Journal of Kartal Training & Research Hospital/Kartal Eğitim ve Araştırma Hastanesi Tıp Dergisi, 24*(2).
24. Şengül, H., & Bulut, A. (2019). Sağlık turizmi çerçevesinde Türkiye'de termal turizm: Bir SWOT analizi çalışması. *ESTÜDAM Halk Sağlığı Dergisi, 4*(1), 55-70.
25. Şeyho, U., & Şengel, Ü. (2023). Sağlık turistlerinin Türkiye'yi seçme motivasyonları üzerine bir araştırma: Arap turist perspektifi. *Sivas Interdisipliner Turizm Araştırmaları Dergisi, 6*(2), 94-115.
26. Ticaret Bakanlığı. (2024). Sağlık turizminde küresel merkez Türkiye. Erişim adresi: https://ticaret.gov.tr/haberler/saglik-turizminde-kuresel-merkez-turkiye, 15.12.2024.
27. Yılmaz, S., Sarıaydın, İ., & Sönal, T. (2020). İngiltere özelinde Türkiye'nin sağlık turizmi fırsatları. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, 7*(1), 74-85.
28. Zhöng, L., Deng, B., & Mörrişön, A. M. (2021). Medical, health and wellness tourism research—A review of the literature (1970–2020) and research agenda. *International Journal of Environmental Research and Public Health*.

DISCLOSURE OF CONFLICT

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CREDIT RISK ECONOMIC PERFORMANCE AND MONETARY POLICY EFFICACY CONTRASTING PREVALENCE OF AN ARDL MODEL AND A MARKOV SWITCHING REGIME FOR THE CASE OF TUNISIA

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Abstract

The historical swings between periods of excess credit risk and phase shifts of tranquil periods with relatively easier banking credit conditions stimulating investment up to a certain limit raised the debate of the prevalence of credit risk switching regimes of the type of Markov regime switching models for credit risk exerting a lagged effect on economic performance and drained by monetary policy efficacy breakpoint shifts. From another perspective, it is well documented in the literature that most applied finance models stand as ARDLs autoregressive distributed lag models for auto-regression is a feature displayed by most financial aggregates.

This instance of modeling credit risk is proven to exhibit both patterns although compromisingly contrasting apparently, but with beakpoints in unit root of monetary policy will herald obvious and fathoming key features of recent economic events driven by financial shocks in Tunisia.

The main purpose of the research is to scrutinize the impact of banking sector related effects on economic performance depending on credit to the public sector monetary policy efficacy and economic growth, in order to elucidate the relationship between financial shocks and economic performance and to forecast future short run evolution of economic situation starting from an ARDL model exhibiting the main determinants of credit risk then passing to the diagnostic of a Markov model with jump effect applied to credit risk in a time series. The first model shows a positive auto-correlation of credit risk signaling plausible self sustaining exacerbation, a positive correlation with credit to the public sector as a proportion of GDP, a lagged negative correlation with GDP growth and a negative correlation with monetary policy efficacy. Granger causality

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shows that credit risk granger causes GDP growth with a lag of three years. Empirical data and regression results for the case of Tunisia show prevalence of a Markov switching regime for credit risk validating the jump effect hypothesis corresponding with a lag to collapsing of economic performance and heralding a sharp decline in economic performance caused by a phase shift in monetary policy efficacy.

Keywords: Credit Risk, Markov Regime Switching, Monetary Policy Efficacy, Economic Performance

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1. INTRODUCTION

Escalating international and European concern is raised about the necessity of contributing with a financial package to help Tunisia out of its debt crisis.

These concerns are motivated by the prominent role political stability in Tunisia plays in safeguarding regional security and immigration matters that are closely bound to the economic situation of Tunisia facing a debt crisis. These concerns find their roots in the effects of the debt crisis on the borrowing creditworthiness and the credit ranking of Tunisia that help it overcome unemployment and inflation disdain and might trigger events of paramount relevance for regional political and security instability or what we might call the onslaught of a second phase shift of the regional meltdowns of 2011.

The main hindrances that exacerbated the social unrest at that time were mass bankruptcies of enterprises that was due to their inability to borrow from the banking sector with skyrocketed credit risk that picked up to an unprecedented margin in 2008 and ended up with the regional spread political unrests of fall 2011 throughout the Arab world.

2. LITTERATURE REVIEW

In the literature on credit risk the usually adopted Credit Risk composition is about idiosyncratic risk and systemic risk. We assume with reference to Frei (2017) that Credit Risk comprises three main components.

-The point in time component which involves subjection to cyclicality and autocorrelation

-The stable component or through the cycle component which involves innovation due to industrial specificities

-The uncertainty component which is exclusively tributary to uncertainty and is neither subject to cyclicality nor to industry specificities and is distinguished by asymptotic un-correlation and asymptotic neglectibility of innovations.

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In credit risk modeling this specific feature as long as it is subjected to uncertainty comprises the Markov switching that is discussed under the scope of this article.

This composition displays the feature of disentangling the aspects depict able through prudential restrictions from those subject able to probabilistic assessments and those retraceable with business cycle related analyses,

As a matter of fact uncertainty should be subjected to probabilistic assessments or Markov switching type modeling and testing whereas through the cycle aspects should be targeted through prudential restrictions and point in time risk can be traced back by comparing its pattern to that of OG within the framework of business cycle analyses.

2.1 Credit risk expression and descriptive statistics

The risk parameters of the banking sector, in this case related to credit, should not be calculated in ratios but in sensitivities.For example, it is virtually impossible to trace the sources of non-recovery of loans due to the staggering of maturities. Credits produced may well be subject to non-recovery at t+1 or t+2 or even t+5, depending on the maturity and term of the credit. So it makes no sense to measure credit risk, for example, by a ratio such as unrecovered loans/credit production. This is because there is no direct relationship between unrecovered loans on a given date and loan production on the same date, since unrecovered loans are the result of risks incurred at earlier dates. But the increase in the ratio of unrecovered loans to loan production is inversely correlated with credit risk. In other words, an upward trend in unrecovered loans signals to bank management an a priori ex-ante rising credit risk, which they react to by contracting the volume of loan production in the same year, resulting in a decrease in ex-post loan production. So, to put it briefly, when the ratio of unrecovered loans to loan production at time t increases, the credit risk decreases, contrary to what one might think. This is stated for the new variables, i.e. new unrecovered loans and new loan production. However, for cumulative variables, the use of the ratio in itself does not allow us to detect diminishing returns to scale, for example.

In other words, what appears to be a bad sign of an increase in unrecovered credit could turn out to be the result of a smaller marginal increase and be interpreted as a good sign. What we need to do for cumulative aggregates is to use elasticities to detect the dynamism of impacts and deduce

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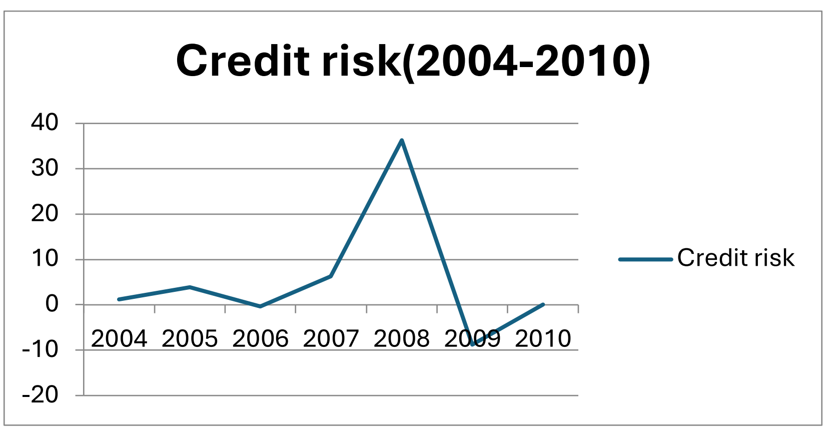
the notion of upward or downward risk variability. The choice of the expression of credit risk: The risk parameters of the banking sector, in this case related to credit, should not be calculated in ratios but in elasticities. In fact, because of the spreading of maturities, it is for example almost impossible to trace the sources of non-recovery of credits and henceforth make use of the expression NPL/CP. Indeed, in this case, the credits produced may very well be subject to non-recovery at t+1 or t+2 or even t+5 depending on the maturity dates and the term of the credit.

Thus, it is absurd to measure the credit risk, for example, by a ratio such as unrecovered credits/credit production. This is because there is no direct relationship between uncollected credits on a date and credit production on the same date since uncollected credits result from a risk incurred at earlier dates. But the increase in the ratio of unrecovered loans to loan production is inversely correlated to the credit risk. In other words, an upward trend in unrecovered loans signals to bank management an ex ante credit risk that is on the rise. This is why the banks' management reacts with a contraction in the volume of credit production in the same year, which results in a decrease in ex-post credit production. So to be brief, when the ratio of uncollected loans to loan production at time t increases, the credit risk decreases, contrary to what one might think. This is stated for the new variables, i.e. the new unrecovered credits and the new credit production.

2.2 Descriptive statistics : A brief history of credit risk in Tunisia

Figure 1.1: Credit risk as a sensitivity of new credit to the private sector to money market rates



Author's computations Souce : Reuters Excell Datastream

Figure 1.2: Credit risk as a sensitivity of new credit to the private sector to money market rates

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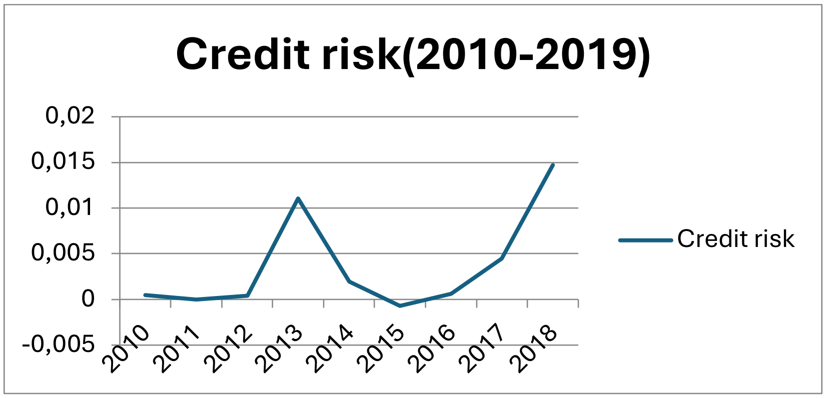

Author's computations Souce : Reuters Excell Datastream

The two charts 1.1 and 1.2 show a pike in credit risk in 2008 and a lot of adjustments since end of 2010 pertaining to prudential matters such as hindrances to resilience from financial instability depicted from 2010 to 2013 then benefits of prudential intervention depicted from 2013 to 2016 and problems pertaining to the banking system about circumvention of prudential restrictions heralding from 2016 on.

Usually there is restrictive monetary policy in austerity where monetary policy fights inflation by increases in MMR. But there are cases of Expansionary policy in austerity. When monetary policy is restrictive MMR tends to increase relatively more than NCPS as economic policy is assumed to fight inflation. It follows that NCPS does not increase proportionately due to the economic slowdown which makes e(NCPS/MMR) decrease to tend to zero. Therefore the pike in credit risk occurs when monetary policy is expansionary within the framework of austerity. This is assumed to have occurred at end 2021 13.4 years after 2008 and verifies the jump up hypothesis of the Markov switch regime. As a matter of fact, this coincided with the Invest 2020 government package of incitement to investment that called the urge to slowdown the increase in MMR in a period of austerity where MMR is assumed to increase and has led to a relatively more important boost in NCPS compared to the increase in MMR which led to a tremendous increase in credit risk and the second pike of credit risk in 2021.

The 2020 investment healing package further deteriorated the willingness of the banking system to bear excessive risk and exacerbated after one year credit risk in a noticeable way which verified the Markov switch period of excessive credit risk and resulted in a deteriorating situation for SMEs

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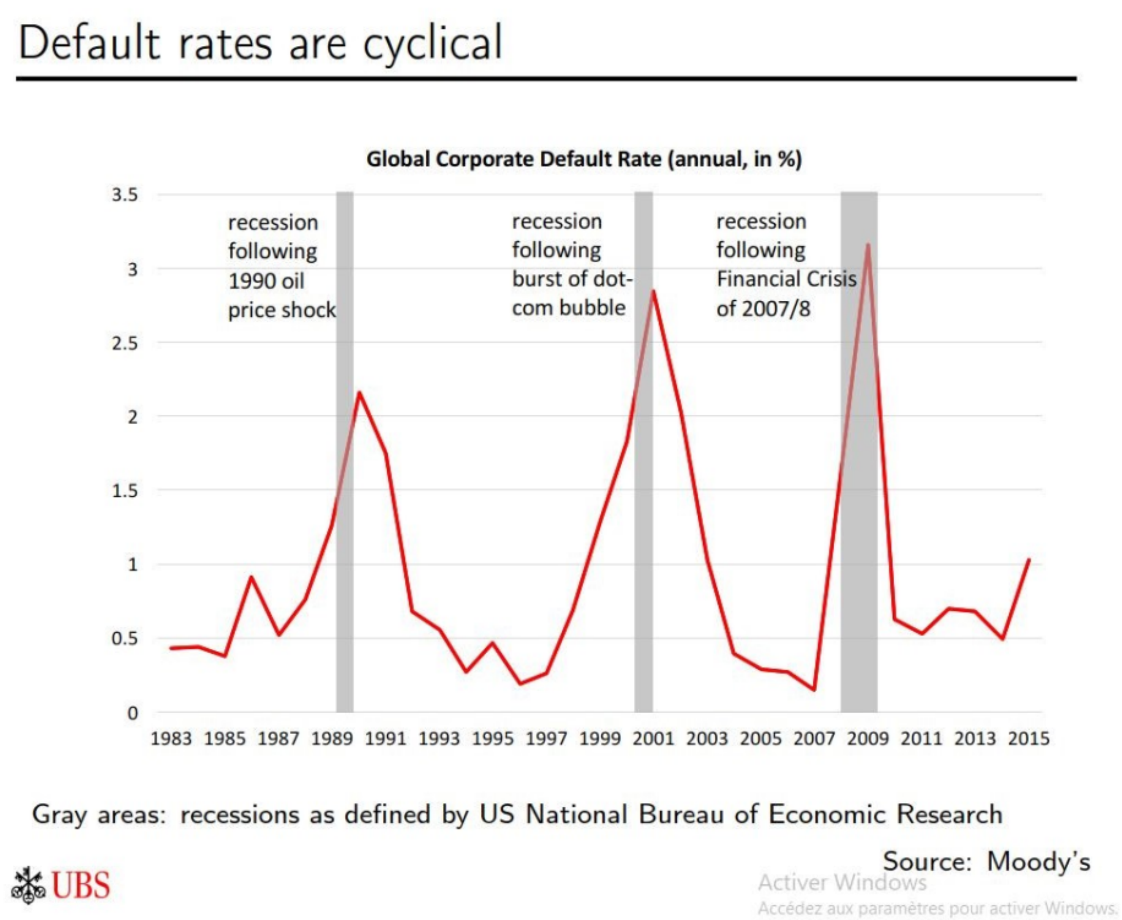
in terms of borrowing capabilities which is leading to massive defaults of borrowing due to excessive borrowing rates and will soon end up in a several economic slowdown which is on the way until the forecasted repercussions of the regime switch in credit risk herald within the time span of one more year until borrowing conditions for SMEs and the ensuing joblessness and economic slowdown will herald in a fathomable way and result in riots and socioeconomic problems comparable to the turbulence that occurred at the outburst of the turbulence period of end 2010. In all references of the relevant literature the relationship between financial stability and economic performance as well as corporations' earnings and economic performance are stylized and valid for all economies. There is no single instance exhibiting differences among countries. This is mainly due to the fact that the mechanisms channeling the impact effect of financial matters to economic performance as expressed by the super-multiplier effect are the same and result in correlations that are valid for all economies.

Figure 2. Cyclicality of default rates



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Source: Moody's database

The chart 2 is plotting default rates that are at their maximum during recessions.
Credit risk is at its maximum during recessions because of the increase in the likelihood of non repayment of loan as investments perform bad in terms of profitability. Credit risk is assessed in terms of risk premiums that encompass the historical effect credit performance exerts on the banking assessment board of credit worthiness. Past excesses in credit risk signal the predisposition of further likelihood of systemic risk that makes expectations with respect to credit worthiness even worse. This makes credit risk positively auto-correlated. Because of free riding which is an information asymmetry Mishkin 1998 the bank has the tendency not to invest money in credit screening based on project assessment but rather collects affordable historical data that are already available to save money. Therefore the historical performance of credit worthiness will lead to a positive bias as in order for credit assessment to change sign credit screening should be deployed disrespectfully of past performance if ever there are reasons for the bank to believe the credit ought to perform well and its rating should shift accordingly. The expression of monetary policy efficacy or elasticity of ΔOG/MMR expresses monetary policy efficacy as the celerity of output stabilization following a stimulation in money market rates. As output gap stabilizes fasts or approaches zero fast monetary policy efficacy improves. This means that during periods of recession output stabilization occurs at a slow pace.Indeed during recessions credit risk is at its highest because credit to the private sector is at its slowest production. As credit produced decreases there is a cost push on borrowing rates which explodes additional credit produced and hence incremental increases in credit to the private sector in response to money market rate MMR additional increase. This indeed increases credit risk. Hence during recessions monetary policy efficacy is at its lowest and credit risk is at its highest. This can also be interpreted as an increase in the probability of non performing loans as during recessions sales are at their lowest and corporations cannot repay their loans. So for increases in probability of default corresponds increases in credit risk. As monetary policy efficacy improves given that it is transmitted through the credit transmission mechanism the improvement is translated into an accelerated output gap stabilization which requires an acceleration of credit production. This indeed relaxes the average borrowing rate thereby decelerating additional increases in credit production. For an initial increase in money market rate credit to the private sector is decelerated which turns credit risk to

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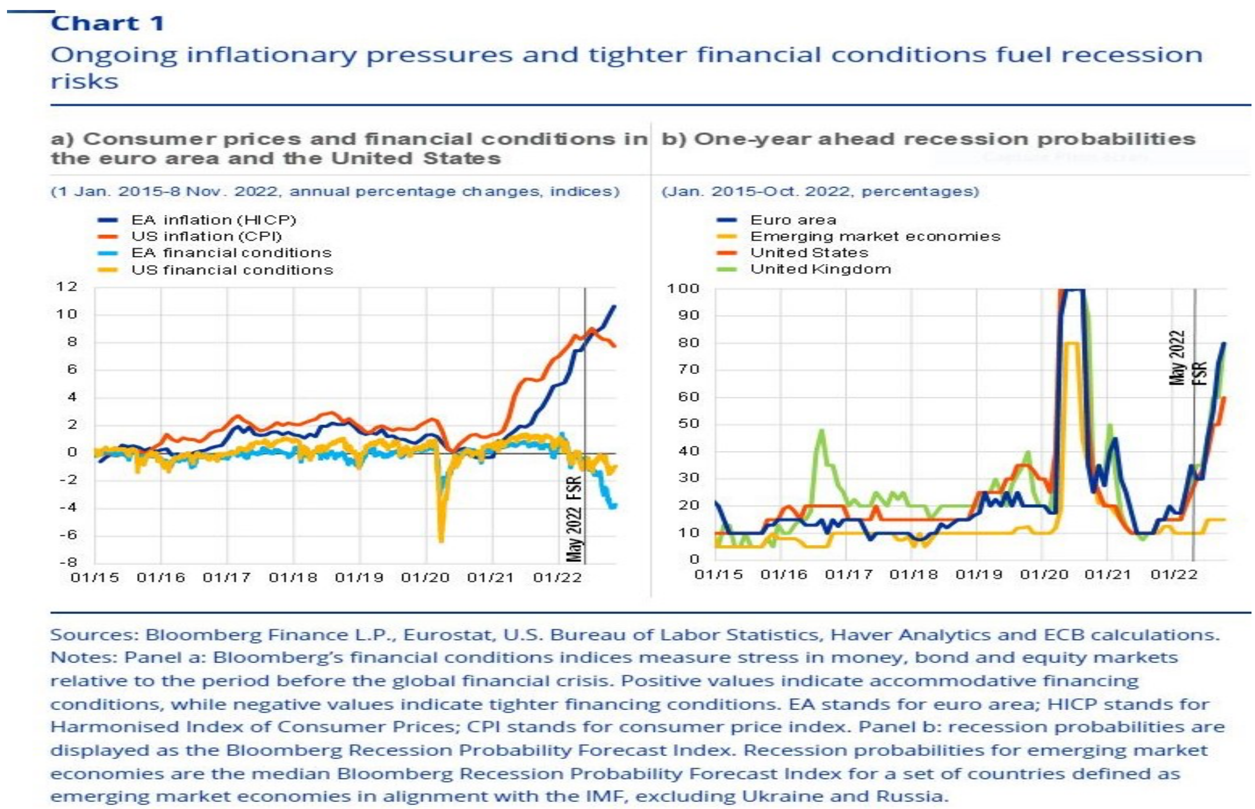
a decrease as credit risk is defined as the sensitivity of credit to the private sector to money market rates changes.

2.3 The relationship between financial stability and economic performance:

Figure 3: Financial stability and economic performance



Source: Dhal Kumar and Ansari J (2011) Financial stability Economic growth inflation and monetary policy linkages

Credit risk is tremendously compromising for financial stability.

As a matter of fact, it triggers either the risk of non-performing loans or excessive risk premiums that might result in non performing projects rather than loans when the cost of capital is excessively high the project owner might fail to manage accurately his expenses and looses profitability in such a way that the expected economic benefit from the projects is harmed.

It might also reveal compromising for liquidity risk as overall tolerance to risk from the financial system is limited thus excess credit risk decreases maneuvering liquidity risk and is binding for bearing it up to a certain point.

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In many circumstances, credit risk through its effects on the probability of non performing loans, non performing projects and liquidity risk might hinder the financial system stability through increasing the likelihood of outburst of financial meltdowns or merely result in a bank run due to excessive non performing loans or deteriorated profitability of projects that might destabilize the financial system through the financial accelerator effect. Credit risk is conversely related in a synequanone relation and dual causal relationship to financial stability. When credit risk increases financial stability decreases with increased vulnerability and when credit risk decreases financial stability improves through decreased vulnerability. There is scanty theoretical literature and evidence on the relationship between credit risk and economic performance except concerning the argument of increased risk premiums that result in increasing the repayment burden to the borrower and hampers economic projects profitability. But the literature on the relationship between financial stability and economic performance is abundant. At a first period financial development used to be measured in terms of size depth openness and competitiveness of financial institutions. Financial stability did not receive much attention. But afterwards, Kindleberger (1978) and Minsky (1991) put forward a viewpoint about financial instability that indicated a negative influence of financial instability on economic growth. Kindleberger argued that the loss of confidence and trust on institutions could fuel disintermediation and institutional closures and when confidence falls investment profitability falls too. A sound financial system instills confidence among savers and investors sothat resources can be effectively mobilized to increase productivity in the economy. According to Dhal Kumar and Ansari (2011): « Financial stability can help monetary policy in terms of enhanced response of growth and inflation to interest rates action. Also financial stability with enhanced output persistence and lower inflation persistence McKinnon (1973) recognized the role of the financial sector in the mobilization of saving and accentuation of capital accumulation thereby promoting economic growth Robinson (1952) argued that financial sector development follows economic growth. The third view maintains a simultaneous causal relationship between financial development and economic growth as shown in figure 3 that is as argued earlier valid for all economies not exclusively EU economies. Patrick (1966) found that the causal relationship between the two was not stable over the development process, when economic growth occurs the demand following response dominates the supply leading response. But this sequential process was not genuine across the industries or the sectors.

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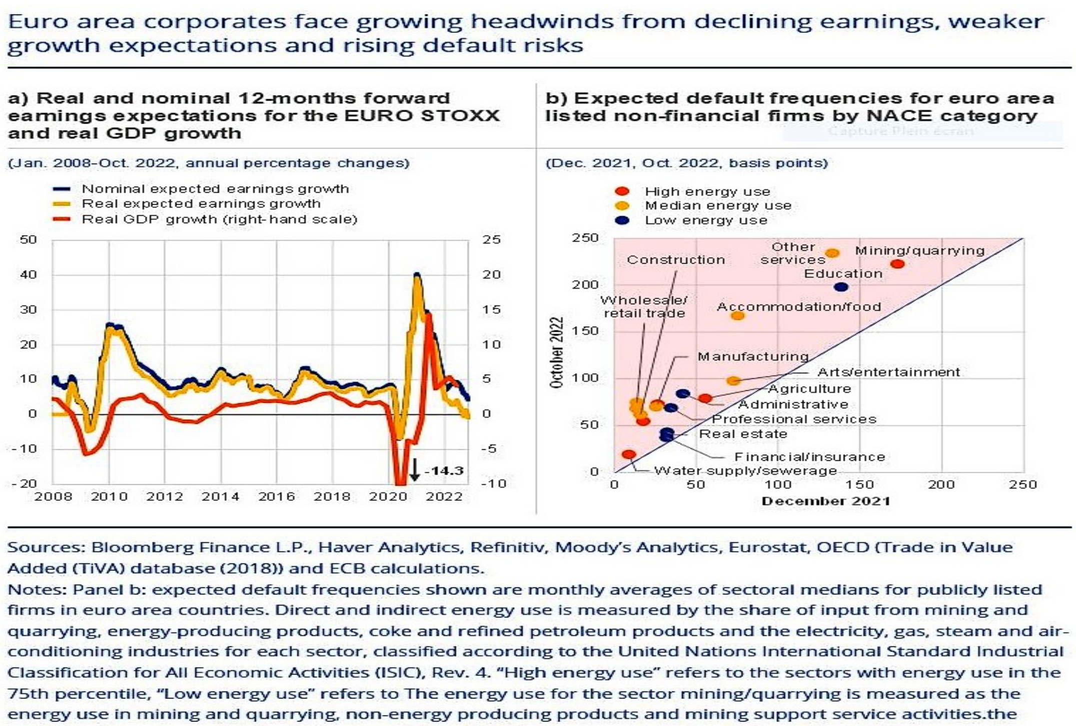
2.4 Relationship between earning expectations for corporations, Real GDP growth, unemployment and inflation:

Figure 4: Corporations earnings and economic performance



Souce : Ball, Sadka and Sadka (2009) Aggregate earnings and asset prices

Alongside with its effects on economic performance through its effects on financial stability credit risk affects economic performance through its effects on earnings expectations of corporations and by a way of consequence as long as earning expectations affect economic performance it affects twofold economic growth firstly through its effects on financial stability that affect positively economic growth and secondly through its effects on earning expectations of corporations that affects positively economic performance. Yet it is quite obvious that credit risk affects negatively earning expectations of corporations as it exacerbates the cost of capital and availability of external borrowing alongside with its effects on investor risk appetite that is triggered upwards and exacerbates imprudence and likelihood of failure of economic projects and hence a slowdown in stock market performance and a decrease in share prices and earnings expectations as well. Not only do aggregate earnings of corporations affect economic performance but they also display a predictive power for economic performance. This shows how far the relationship intertwined is.

The correlation is twofold.

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In the relevant literature, we find arguments that economic performance does affect earnings of corporations. But only a few articles show that earnings of corporations play an informativeness role on economic performance. Such studies disaggregate earnings and show the predictive power of each item of earnings. In this respect Lipe (1986) suggested that earnings disaggregation have incremental explanatory power for economic growth. Harvey (1989) suggest that aggregate earnings of companies associate positively with economic growth. Ball, Sadka and Sadka (2009) state that earnings and return associate with industrial production change, real GDP growth, unemployment and national inflation. As stated earlier credit risk and corporations earnings are intertwined together with non performing loans. This explains the effect of credit risk on inflation and unemployment. Hence credit risk jumps can result in pikes and troughs in unemployment and inflation which might result in socioeconomic unrest and thereby exhibit overlapping historical patterns in economic performance in accordance with jumps in credit risk and generally the situation of the banking system stability. This indeed constitutes the scope of this article and shows the basic idea lying behind the empirical results. As shown in figure 4 expected earnings exhibit notorious similarity with real GDP growth in shape. Therefore, credit risk which is conversable to expected earnings moves contrariwise to real GDP growth. This is in accordance with theoretical predilections and expected assertions according to which credit risk should behave contrariwise to economic performance. This finding is anyway corroborated by the super-multiplier theory discussed earlier that argues that credit risk and any source of financial instability results in economic performance slowdown.

3. CREDIT RISK AND CREDIT TO THE PUBLIC SECTOR CROWDING OUT OR IN

Credit to the public sector offered by the banking sector implies two simultaneous effects one income effect and one substitution effect. The income effect, Credit to the public sector evicts credit to the private sector by ceasing a vast proportion of liquidity that would have been affordable to private borrowing thereby rendering non performing loans of the private sectors excessively compromising for credit risk incurred by the bank as there is risk of draining out of liquidity. Therefore the effect of increases in credit afforded to the public sector evicts or crowds

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out credit affordable to the private sector and its effect on credit risk is positive in other words when banks borrow more to the public sector credit risk increases. As long as government assets are low risk low return assets and that banks strive through a search for yield for more profitability, as credit to the public sector increases banks will try to compensate themselves from the shortage in profitability per unit of credit offered by increasing the risk premiums for a certain level of risk incurred by the private sector. As private borrowers tolerance to cost of borrowing is limited therefore credit risk will decrease as part of risk premiums corresponds indeed to the credit screening expressing the risk incurred by the bank. The bank exerts a cost push on borrowing cost and priate borrowers react by a demand pull for risky projects. Therefore the effect on credit risk is negative increases in credit to the public sector will have a tendency to slow down credit risk. The total effect is the aggregation of the income effect and the substitution effect. Its final outcome on credit risk will depends on whether the income effect outweighs the substitution effect or the other way round.

4. CREDIT RISK, FINANCIAL INSTABILITY AND THE SUPER-MULTIPLIER EFFECT

The super-multiplier theory first advocated by Samuelson 1970 argues for a deteriorated economic performance for unmitigated financial instability what indeed occurs for high credit risk. Figure 1 shows a pike for credit risk in the jump effect episode which involves high financial instability and economic performance excessive slowdown that heralding after à period of a couple of years the time corporations fall of external borrowing and go bankrupt. This pervasive bankruptcy affects negatively output joblessness and results in economic slowdown and social unrest with respect to excess joblessness. Besides excess credit risk during pikes is associated with slow investor risk appetite. Because investor risk appetite is measured as the inverse of the principal component of the stock index it is associated with high stock market volatility as the tre ndof the stock index is not steep. Therefore by the super-multiplier effect that translates high volatility of stock market sector by slowdown in economic performance low investor risk appetite results in economic performance slowdown.

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5. LITERATURE REVIEW ON MARKOV SWITCHING REGIMES FOR CREDIT RISK

A vast array of literature documents accurately the Brownian and jump effects of Markov switching regimes for credit risk and equity markets. One main feature of key salient instruments is that they are subject to a brownian motion process or a jump process like credit risk as stated in Tak Kuen Siu (2010) where he discussed a Markov Regime Switching Marked Point Process for short rate analysis with credit risk where he emphasized that it is of commensurate importance to take into account jumping processes such as Markov switching regime processes because their adverse implications herald unexpectedly. According to Tak Kuen Siu (2010) « Some information items such as surprise information and extraordinary market events may have large economic impact on short rates and cause jumps ». He reiterated that : « Short rate models based on Brownian information flows may not be appropriate to describe large movements. Jump diffusion processes or related processes incorporate large jumps such as Markov switching regimes ». They noticed that the intensity of marked point process is q bounded process and is modulated by two observable factors one is an economic factor described by q diffusion process undone is described by a Markov chain. As far as our subject matter is concerned Through analogy credit risk is described by an economic financial diffusion process modeling the risk premium factor or the credit risk factor Implicit by e NCPS/MMR which corresponds to the economic fundamentals which are under the scope of our model the investor risk appetite the monetary policy efficacy and the lag of credit risk as well as the crowding out effect and one factor described by a Markov chain heralding the jump effect manifesting itself in transition periods which is under the scope of this study and is intended to predict future regime switches in credit risk to better explain the behavior of the credit risk phenomenon through time.

6. RESEARCH METHODOLOGY

The ARDL methodology was first introduced by Perasan and Shin (2001).

The specification is as follows :

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$$Y_t = \gamma_{0i} + \sum_{i=1}^{p} \delta_i Y_{t-i} + \sum_{i=0}^{q} \beta_i' X_{t-i} + \epsilon_{it}$$

For the short run equilibrium taking two years:

There is an initial shock at time t followed by propagation at time t+1 and short ru equilibrium establishes at time t+2.

The specification is as follows:

$$e_t = \alpha + \gamma e_{t-1} + \beta_{1,1}x_{1,t} + \beta_{1,2}x_{1,t-1} + \beta_{1,3}x_{1,t-2} + \beta_{2,1}x_{2,t} + \beta_{2,2}x_{2,t-1} + \beta_{2,3}x_{2,t-2} + \cdots + \beta_{i,1}x_{i,t} + \beta_{i,2}x_{i,t-1} + \beta_{i,3}x_{i,t-2} + \epsilon_t$$

$$\frac{\partial e_t}{\partial x_{i,t}} = \beta_{i,1}$$

$$\frac{\partial e_{t+1}}{\partial x_{i,t}} = \gamma \frac{\partial e_t}{\partial x_{i,t}} = \gamma \times \beta_{i,1}; < \beta_{i,1}$$

$$\frac{\partial e_{t+2}}{\partial x_{i,t}} = \gamma \frac{\partial e_{t+1}}{\partial x_{i,t}} = \gamma^2 \times \beta_{i,1} < \gamma\beta_{i,1}$$

The Markov switch modeling is similar to the one adopted in the jump diffusion process in Tak Kuen Siu (2010). The hypothesis of the prevalence of a Markov switching regime is seemingly likely because monetary policy efficacy unit root tests showed the existence of a breakpoint unit root and that monetary policy efficacy affects tremendously credit risk as the monetary policy conducting relies on the credit channel of transmission mechanism. Indeed, the credit sector in Tunisia accounts for 80 percent of the financial system meaning that the credit channels the main locomotive for Monetary policy conduct especially when such issues as credit risk are dealt with like in this article. But it is noteworthy to state nevertheless that since 2021 the central bank has been relying on an objective of inflation targeting which steps side from a prominent role of the credit channel of transmission mechanism.

7. EMPIRICAL RESULTS OF THE ARDL

Data are collected on the Tunisian economy and banking sector for the period spanning from 1980 to 2019. The explained and explanatory variables of the model ARDL are Credit risk or elasticity of NCPS/MMR, Credit to the public sector to GDP ratio, Monetary policy efficacy or elasticity of ΔOG/MMR, GDP growth and their respective lags. Credit risk is positively and significantly auto-

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correlated which means that jump effects would be exacerbated tremendously due to the fact that an initial surprise increase would be followed by subsequent increases until the phase shifts or the regime switches. Credit risk adjusts instantaneously to investor risk appetite what might herald a certain ability of the banking sector to grasp investor credit worthiness accurately. It does so also with credit to the public sector due to the relatively high solvency of the public sector although public borrowing from the banking sector is a burden to the banking sector that falls short of liquidity as a consequence. Contrariwise, for monetary policy efficacy all lags are significant meaning that the initial exogenous shock as well as the propagation and equilibrium are significantly correlated to credit risk.

This is essentially due to business cycle dynamics. As a matter of fact, credit to the private sector and investor risk appetite are correlated significantly to the business cycle that explain accurately the dynamics in lags of independent variables of the short run ARDL. Although credit to the public sector as a proportion to GDP is significantly correlated to Credit risk it is insignificant in explaining the regime switching contrariwise to monetary policy efficacy and investor risk appetite. During the regime with skyrocketing credit risk New credit to the private sector is very sensitive to MMR variations. Therefore, risk premiums are very high which means that indeed no additional credit is added and stabilization of output does not occur. By a way of consequence monetary policy efficacy as assessed through the speed of stabilization of output is very low. Contrariwise during the regime with low values of credit risk NCPS is not very sensitive to variations in MMR therefore risk premiums are low and credit demand flourishes which speeds up adjustment of output. Therefore credit risk slowdown is associated with improvement in monetary policy efficacy. In addition, credit risk skyrocketing by slowing down credit supply and demand leads to massive layoffs and bankruptcy and therefore increases in joblessness which might lead to riots further exacerbating the political situation and might lead to political trouble. In definitive, paramount increases in credit risk lead simultaneously to deterioration of monetary policy efficacy and massive riots exacerbating the political situation and eventually leading to a regime destabilization like the Markov model type indicates a regime switching pattern.

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Table 1: Regression results of the ARDL

	R^2 =0.9957	**F stat =0.00213**
Variable	**Coefficient**	**P value**
CREDITRISK(-1)	**1.213473**	**0.0025**
MONETPOLEFFI	**-0.003271**	**0.0214**
MONETPOLEFFI(-1)	**-0.01657**	**0.0002**
MONETPOLEFFI(-2)	**0.002334**	**0.0729**
CRPUB/GDP	**1.063189**	**0.0212**
CRPUB/GDP(-1)	**-0.96616**	**0.0187**
GDPGROWTH	**0.599785**	**0.1734**
GDPGROWTH(-1)	**0.184503**	**0.5313**
GDPGROWTH(-2)	**-0.696403**	**0.0463**
C	**-8.02785**	**0.3572**

Source Output Eviews

When monetary policy efficacy improves output gap widens. This means that actual output is farther from potential output. Business are having a boom in sales because of expansionary phase of the business cycle or a bust because recession. Hence credit risk which is measured in terms of sensitivity of credit production to the private sector to MMR which is the willingness of the banking sector to bear excessive risk is at its lowest as they are aware that the boom in sales during expansion is transitory and that the bust is overestimating loss of cash inflows but anyway the rhythm of potential output performance is too gradually and slowly improving. Thus the result is a decrease the willingness of the banking sector to bear excessive risk. As the credit risk fathomed from the banking intermediaries is decreasing due to lower credit production they are going to operate cost push by a search for yield motivation. Therefore risk premiums are going to decrease and by a way of consequence entrepreneurs will find it easy to demand credit and their probability not to default is going to decrease as their outstanding debt is going to cost less in interest payments. Therefore credit risk is going to decrease provided new credit screening is implemented accurately. For GDP growth increases the coefficients are insignificant in t and t-1 but negative and significant for t-2 which shows that either GDP growth affects negatively credit risk or credit risk affects negatively GDP growth depending of the sense of causality. We run for that purpose a

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Granger causality test and found out as will be shown later that indeed credit risk Granger causes in three years time span GDP growth. Credit to the public sector offered by the banking sector implies two simultaneous effects one income effect and one substitution effect. The income effect, Credit to the public sector evicts credit to the private sector by ceasing a vast proportion of liquidity that would have been affordable to private borrowing thereby rendering non performing loans of the private sectors excessively compromising for credit risk incurred by the bank as there is risk of draining out of liquidity. Therefore the effect of increases in credit afforded to the public sector evicts or crowds out credit affordable to the private sector and its effect on credit risk is positive in other words when banks borrow more to the public sector credit risk increases. As long as government assets are low risk low return assets and that banks strive through a search for yield for more profitability, as credit to the public sector increases banks will try to compensate themselves from the shortage in profitability per unit of credit offered by increasing the risk premiums for a certain level of risk incurred by the private sector. As private borrowers tolerance to cost of borrowing is limited therefore credit risk will decrease as part of risk premiums corresponds indeed to the credit screening expressing the risk incurred by the bank. The bank exerts a cost push on borrowing cost and priate borrowers react by a demand pull for risky projects. Therefore as the effect of the ratio of credit to the public sector to GDP on credit risk is negative at t-1 and positive at t, the substitution effect outweighs the income effect at t-1 and the income effect outweighs the substitution effect at t.

8. EMPIRICAL RESULTS OF THE REGIME SWITCH

Constant transition probabilities	
Regime1	**Regime2**
0.471145	**0.52885**
0.074330	**0.925670**
Constant expected durations	
1.8908 years	**13.4535 years**

Source Output Eviews

The expected duration between the two regimes accounting for the time span between the first pike in credit risk in 2008 whose consequences heralded in end 2010 and an expected second pike

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would be 13.4535 years which means that around the end of 2024 symptoms of severe economic performance slowdown and socioeconomic unrest would be expected to herald till the hypothesis of a regime switch explaining a two regime Markov switch for credit risk and economic performance is validated. The duration of the pike in transition is expected to be 1.89 years during which credit risk would be in first regime heralding forthcoming socioeconomic unrest. The probability of transition from regime one with jump to regime 2 with steady low credit risk is very significant whereas the probability of transition from regime 2 to regime 1 is expected to be noon significant which means that regime switches of financial and socioeconomic distress are not ascertained but when they happen the return to the steady state is ascertained. The transition probabilities found empirically validate the hypothesis of a persistent hypothesis of a first tranquil regime and a jump effect highly turbulent regime with a severe pike like the one in 2008 whose excessive negative consequences for economic performance and socioeconomic unrest have shown up with a lag of three years round end 2010 at the onslaught of regional MENA economic and sociopolitical meltdowns.

Granger causality

Empirical results of Granger causality

Number of lags=3	
Null hypothesis	**Prob**
GDPGROWTH does not granger cause CREDIT RISK	**0.1612**
CREDIT RISK does not Granger cause GDPGROWTH	**0.0786**

As prob is inferior to 0.05 we reject the null for causality between CREDIT RISK and GDPGROWTH. Therefore credit risk granger causes GDP growth after a three year lag which means that as credit risk pikes in accordance with the regime switch, just three years afterwards, economic performance will observe a sharp decline that justifies the hypothesized second wave of economic and social unrest at the aftermath of the observed sharp decline of economic performance and the social unrest of the 2011 and that presumably would be followed according to the transition computed with the Markov switch at the end of 2024 after 13 years and a half plus 3 years from 2008.

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9. CONCLUSIONS

Credit risk expressing a financial shock follows a Markov switching regime with jump effects and herald an economic unrest likely to result in social unrest similar to those of winter 2011 around end of 2024 pertaining to social response to excess inflation and unemployment. The empirical findings validate the basic idea of the article according to which financial shocks affect economic performance and when they manifest through jump effects they impact economic performance inflation and unemployment in a fashion that draws a wedge between banking stability and socioeconomic situation. The expected duration between the two regimes accounting for the time span between the first pike in credit risk in 2008 whose consequences heralded in end 2010 and an expected second pike would be 13.45 years which means that around the end of 2024 symptoms of severe economic performance slowdown and socioeconomic unrest would be expected to herald till the hypothesis of a regime switch explaining a two regime Markov switch for credit risk and economic performance is validated. Credit risk is described by an economic financial diffusion process modeling the risk premium factor or the credit risk factor Implicit by e NCPS/MMR which corresponds to the economic fundamentals which are under the scope of our model the investor risk appetite the monetary policy efficacy and the lag of credit risk as well as the crowding out effect and one factor described by a Markov chain heralding the jump effect manifesting itself in transition periods which is under the scope of this study and is intended to predict future regime switches in credit risk to better explain the behavior of the credit risk phenomenon through time.

The first pike in credit risk in 2008 whose consequences heralded in end 2010 and an expected second pike would be 13.4535 years which means that around the end of 2024 symptoms of severe economic performance slowdown and socioeconomic unrest would be expected to herald till the hypothesis of a regime switch explaining a two regime Markov switch for credit risk and economic performance is validated. The duration of the pike in transition is expected to be 1.89 years during which credit risk would be in first regime heralding forthcoming socioeconomic unrest. The probability of transition from regime one with jump to regime 2 with steady low credit risk is very significant whereas the probability of transition from regime 2 to regime 1 is expected to be noon significant which means that regime switches of financial and socioeconomic distress are not ascertained but when they happen the return to the steady state is ascertained.

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REFERENCES

1. Cristopher Frei (2017) Modeling credit risk and loan portfolios in the presence of autocorrelation UBS university of Alberta
2. Kindleberger (1978) Manias Panics and crashes A history of financial crises Mc Millan London
3. Minsky (1991) Financial crises Systemic or idiosyncratic ? Working paper Hypman P Minsky archive 244
4. Dhal Kumar and Ansari J (2011) Financial stability Economic growth inflation and monetary policy linkages in India An empirical reflexion Reserve bank of India occasional reflexions vol 32 N3 2011
5. McKinnon R (1973) Money and capital in economic development, The brooking institute Washington DC
6. Robinson J (1952) The generalization of the general theory in the rate of interest and other essays 2nd edition McMillan London
7. Patrick H T (1966) Financial development and economic growth in underdeveloped countries. Economic development and cultural change 14, 174-189
8. Ball, Sadka and Sadka (2009) Aggregate earnings and asset prices, Columbia Business School research paper
9. Tak Kuen Siu (2010) On Risk minimizing portfolios under a Markovian regime switching black Sckoles economy Annals of operations research
10. Pesaran, Shin and Smith (2001) Bounds testing approaches to the analysis of level relationships Journal of applied econometrics 16, 289-326

DISCLOSURE OF CONFLICT

The author(s) declare that they have no conflicts of interest.

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Tables of Results :

Dependent Variable: ENCPSMMR
Method: ARDL
Date: 02/27/24 Time: 11:09
Sample (adjusted): 2005 2018
Included observations: 14 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): D(EDOGMMR) CRPUBGDP GDPGROWTH
Fixed regressors: C
Number of models evalulated: 27
Selected Model: ARDL(1, 2, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ENCPSMMR(-1)	1.213473	0.180198	6.734110	0.0025
D(EDOGMMR)	-0.003271	0.000891	-3.671506	0.0214
D(EDOGMMR(-1))	-0.016570	0.001254	-13.21415	0.0002
D(EDOGMMR(-2))	0.002334	0.000965	2.418664	0.0729
CRPUBGDP	1.063189	0.288874	3.680455	0.0212
CRPUBGDP(-1)	-0.966116	0.252529	-3.825761	0.0187
GDPGROWTH	0.599785	0.362510	1.654535	0.1734
GDPGROWTH(-1)	0.184503	0.269605	0.684345	0.5313
GDPGROWTH(-2)	-0.696403	0.244240	-2.851301	0.0463
C	-8.027858	7.721037	-1.039738	0.3572

R-squared	0.996590	Mean dependent var	2.664784
Adjusted R-squared	0.988918	S.D. dependent var	10.18517
S.E. of regression	1.072223	Akaike info criterion	3.153153
Sum squared resid	4.598645	Schwarz criterion	3.609622
Log likelihood	-12.07207	Hannan-Quinn criter.	3.110898
F-statistic	129.8925	Durbin-Watson stat	2.196608
Prob(F-statistic)	0.000143		

*Note: p-values and any subsequent tests do not account for model selection.

Pairwise Granger Causality Tests
Date: 02/28/24 Time: 11:19
Sample: 1980 2019
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
GDPGROWTH does not Granger Cause ENCPSMMR	12	2.64026	0.1612
ENCPSMMR does not Granger Cause GDPGROWTH		4.18574	0.0786

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Unit Root with Break Test on EDOGMMR

Null Hypothesis: EDOGMMR has a unit root
Trend Specification: Intercept only
Break Specification: Intercept only
Break Type: Innovational outlier

Break Date: 2007
Break Selection: Minimize Dickey-Fuller t-statistic
Lag Length: 7 (Automatic - based on Schwarz information criterion, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-14.94647	< 0.01
Test critical values:	1% level	-4.949133	
	5% level	-4.443649	
	10% level	-4.193627	

*Vogelsang (1993) asymptotic one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: EDOGMMR
Method: Least Squares
Date: 02/27/24 Time: 11:13
Sample (adjusted): 1997 2018
Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EDOGMMR(-1)	-0.005865	0.067298	-0.087145	0.9321
D(EDOGMMR(-1))	-0.099122	0.012554	-7.895723	0.0000
D(EDOGMMR(-2))	-0.001716	0.007137	-0.240396	0.8144
D(EDOGMMR(-3))	0.038047	0.004993	7.619389	0.0000
D(EDOGMMR(-4))	0.035768	0.004068	8.792553	0.0000
D(EDOGMMR(-5))	0.029449	0.003505	8.403229	0.0000
D(EDOGMMR(-6))	0.017943	0.002667	6.726634	0.0000
D(EDOGMMR(-7))	0.003233	0.001489	2.171252	0.0527
C	92.56169	79.11244	1.170002	0.2667
INCPTBREAK	-100.1934	91.57736	-1.094085	0.2973
BREAKDUM	-2506.988	147.8287	-16.95874	0.0000

R-squared	0.999171	Mean dependent var	501.3029
Adjusted R-squared	0.998417	S.D. dependent var	3548.946
S.E. of regression	141.1897	Akaike info criterion	13.04494
Sum squared resid	219279.8	Schwarz criterion	13.59046
Log likelihood	-132.4943	Hannan-Quinn criter.	13.17345
F-statistic	1325.720	Durbin-Watson stat	1.884890
Prob(F-statistic)	0.000000		

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Dependent Variable: ENCPSMMR
Method: Markov Switching Regression (BFGS / Marquardt steps)
Date: 02/22/23 Time: 11:11
Sample (adjusted): 2004 2018
Included observations: 15 after adjustments
Number of states: 2
Initial probabilities obtained from ergodic solution
Standard errors & covariance computed using observed Hessian
Random search: 25 starting values with 10 iterations using 1 standard deviation (rng=kn, seed=710237099)
Convergence achieved after 11 iterations

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Regime 1				
D(EDOGMMR)	0.006316	0.001775	3.558712	0.0004
D(INVRISAPP)	482.0725	108.2960	4.451433	0.0000
Regime 2				
D(EDOGMMR)	-0.002591	0.000599	-4.322643	0.0000
D(INVRISAPP)	2.517885	5.711417	0.440851	0.6593
Common				
D(CRPUBGDP)	-0.013106	0.167048	-0.078458	0.9375
LOG(SIGMA)	-0.006863	0.270016	-0.025416	0.9797
Transition Matrix Parameters				
P11-C	-0.115549	1.973339	-0.058555	0.9533
P21-C	-2.522002	1.544058	-1.633360	0.1024

Mean dependent var	2.570363	S.D. dependent var	9.821485
S.E. of regression	13.81466	Sum squared resid	1717.604
Durbin-Watson stat	2.132832	Log likelihood	-26.10612
Akaike info criterion	4.547482	Schwarz criterion	4.925109
Hannan-Quinn criter.	4.543460		

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Equation: UNTITLED
Date: 02/22/23 Time: 11:12
Transition summary: Constant Markov transition probabilities and expected durations
Sample (adjusted): 2004 2018
Included observations: 15 after adjustments

Constant transition probabilities:
P(i, k) = P(s(t) = k | s(t-1) = i)
(row = i / column = j)

	1	2
1	0.471145	0.528855
2	0.074330	0.925670

Constant expected durations:

	1	2
	1.890877	13.45350

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