Determinants of Homeownership in the Condominium Housing Sites of Ambo, Ethiopia

Abenezer Wakuma Kitila[1*]

[1]Urban Planning Department, School of Geography and Environmental Studies, College of Social Sciences and Humanities, Haramaya University, Dire Dawa, Ethiopia

*Corresponding author's email: 57662746@mylife.unisa.ac.za

ABSTRACT

This study investigated the determinants of homeownership among the residents of the condominium housing sites of Ambo town, West Shewa Zone, Oromia Regional State, Ethiopia. It employed a descriptive research design, mainly using cross-sectional and correlational studies. A total sample of 230 respondents were selected through a random sampling method. The logistic regression model output showed that homeownership was determined by respondents' gender, age, monthly income, saving practice, loan and credit services, marital status, and household size, while education level, occupation type, and land produced insignificant results. The chi-squared test and independent samples *t* test results also revealed significant associations and differences among and between different variables. The absence of land, lack of capital, bureaucratic system of land provision, limited loan and credit services, and high interest rates were also mentioned as determinant factors of homeownership. Moreover, mean values were computed to determine the adequacy and accessibility of basic amenities between the two sites. Therefore, the study recommends that the government should reformulate a profound housing policy that would improve the efficiency of the housing provision system and reduce the cost of homeownership.

Keywords: Homeownership, Housing, Condominium, Ambo, Sites

1. INTRODUCTION

One of the consequences of rapid population growth that outstripped economic growth and development is the incidence of poverty.

Urban explosion—a situation where the size of urban populations exceeds the capacity of social and physical services—is a common problem in many developing countries.

The rapid rural-urban influx, accompanied with the rate of natural population increase and stagnant economic growth, has brought considerable problems. Thus, the urban areas of developing countries are suffering from problems with basic amenities such as housing, water supply, health services, education, waste collection and disposal, traffic congestion, and public open/green spaces. The resultant stagnant nature of economic development and rapid population growth made it difficult for municipalities to provide adequate physical and social services to residents. Prominently, one of these services is housing.

Housing is incontestably the leading component of urbanization. It is more numerous, more extensive, and represents more investment than any other single use (Paradza, 2007). Housing is a human necessity, but it remains a critical problem plaguing most cities within developing countries (Bihon, 2006). The rapid rates of urbanization have led to massive housing shortages and qualitative deficiencies. The rapid urban growth associated with the accelerated tempo of socioeconomic development has seriously aggravated the shortage of dwelling units. This has resultantly facilitated overcrowding, increased rents, and the proliferation of slums and squatter settlements—which are common features of the urban scene in developing countries (Ozo, 1990). Housing shortage is a major component of the third-world urban housing problem (Odongo, 1979). The need for basic shelter through the provision of sustainable and affordable housing is also a global problem (Fisher, 2002).

Housing has become an essential public concern across Ethiopia and across different economic classes. Studies have documented the role of housing in socioeconomic development. It appears that there is a strong positive relationship between housing and the level of development. Hence, the status of housing within a nation is reflective of the country's socioeconomic development level. Housing also affects the maintenance of privacy, health, and the development of normal family living conditions (Abelti et al., 2001). Jiboye, 2011, also notes that housing has come to be a critical component in the social, economic, and health fabric of every nation. Housing is fundamental to the health and well-being of families and communities. For this reason, access to adequate and affordable housing is critical in any society. Watcher et al., 2018, claim that housing is also the anchoring component in the construction and expansion of cities and the main driver that catalyzes sustainable and resilient territorial development through land use, infrastructure, and transport sectors.

The importance of the homeownership to the individual and society is widely acknowledged. It has become important to consider the ownership of a home as an investment from which the homeowners will receive lucrative and positive financial returns. The financial returns from residential housing take the form of income and capital growth (Tan, 2008). People who own home are not only for shelter but owning of home is considered as an asset and fulfills the psychological and social need (Abdullah et al., 2012). The rationale is that greater home ownership would improve the general level of housing quality and facilitate savings and wealth accumulation within households (Lim et al., 1980). As cited in Okeyinka, 2014, homeownership confers exchange value, opportunities to raise money through the rent of a house, a nexus for a family, and a base for urban accumulation for present and future generations (Paradza, 2007).

Homeownership policy is believed to have significant financial and social benefits for both individuals and communities (Rohe et al., 2002). While homeownership generates healthy benefits related to key variables such as property upkeep, public safety, and school quality, from a macroeconomic perspective, it also represents an enormous store of wealth (Painter and Redfearn, 2002). Jayantha, 2012, mentioned that studies empirically justified that owning a home (relative to renting) leads to the creation of a greater level of individual wealth (e.g., Belsky et al., 2007). Demographic variables and socioeconomic characteristics are crucial factors in explaining individual housing tenure choices (Gyourko and Linneman, 1996; Gyourko et al., 1999; and Gabriel and Rosenthal, 2005). In fact, globally, homeownership rates tend to be higher in poorer countries. Countries with typically lower income per capita, less wealthy residents, and fewer children per household have higher home ownership rates (Hilber, 2007).

Ethiopia has yet to formulate and reinforce a comprehensive housing policy that aims at benefiting the middle and low-income sections of the society. One of the problems is related to the absence of a flexible and diversified housing finance sector that provides loans for the construction of housing. In particular, improving access to housing finance so that a majority of low-income urban households can afford

homeownership remains a serious challenge. Other challenges include the absence of clear land use planning and management approaches. Hence, the illegal grabbing of land remains a formidable challenge for the state and urban administrators. Furthermore, the fluctuation of the market has affected the supply of construction materials. To make matters worse, widespread poverty accompanied with wider income inequality has increased poverty and has led economically less fortunate households to live in the slums.

At present, about 20% of the population is estimated to be living in urban areas. About 60% of the urban areas are estimated to be slums devoid of basic services. Weak economic growth, poor housing quality, weak environmental linkages, shortcomings in urban governance, weak institutional capacity, deficiencies in human and material resources, lack of access to credit, and inadequate strategic and planning interventions have been cited as the main reasons for the proliferation of slums in urban Ethiopia (MoUDHC, 2014).

The government has endeavored to formulate and implement various housing policies and programs at different times. One of these policies was the construction of condominium housing. The effort to build low-cost condominium houses that are affordable for low-income residents through the government's large-scale Integrated Housing Development Program is an experience that deserves close examination. In this regard, while the construction of the condominium houses was at a marginal cost, it seems that many low-income urban residents cannot afford to own these houses (MoUDHC, 2014). The implication from these statements is that the housing policies have passed through a series of successes and failures. What is least disputable, however, is that there have been slight improvements in almost all the social and physical infrastructure—including the housing sector—of the country. It is necessary to recognize the most important factors behind the poor performance of the housing sector and the determinants of homeownership. Not enough work has been done recently to identify the major determinants of homeownership. The scant literature that is available on the determinants of

homeownership in Ethiopia motivated this study. In view of these facts, this study aims to examine the determinants of homeownership among the condominium housing residents of Ambo. It also investigated the overall status of the housing sites in terms of accessibility and availability of the infrastructural services.

2. RESEARCH METHODS

2.1. Description of the Study Area

Ambo was established in 1888 and is the capital town of the West Shewa zone in Oromia Regional State, Ethiopia. The geographical (astronomical) location of Ambo is approximately between 8° 56'30'' N and 8° 59'30'' N latitude and between 37°47'30" E and 37° 55'15" E longitude. Relatively, the town is located 114 km west of Addis Ababa (Finfinne), 60 km northwest of Weliso town, and 12 km east of Guder town. The town has six administrative Kebeles. The total population of Ambo is estimated to be 125,763. This number is comprised of about 66,455 men and 59,308 women. According to ATMO (2018) report, in the town there were about 26,066 residential houses, 3815 commercial (business) houses, and 319 other type of houses. With regard to land use, the town has a total of about 8578 hectares of land for residential (26%), commercial (3.9%), industrial (4.3%), service (5.2%), and green spaces and recreational (49.4%) purposes (ATMO, 2018).

2.2. Research Design and Data Collection Methods

A descriptive type of research design was used to investigate the major sociodemographic and socioeconomic determinants of homeownership in the case of condominium housing sites in Ambo. Specifically, the correlational study was widely utilized to trace the relationships among two or more variables to gain greater situational insight. To this end, both primary and secondary data were used in this study. The primary data were collected from the household heads through a questionnaire survey that was filled upon utilizing a face-to-face data collection approach, whereas the secondary data were gathered mainly using published sources, internet sources, and from the Ambo Town Housing Development Office (ATHDO).

2.3. Sampling Procedure and Sample Size

The study was delimited geographically, by the subjects of the study, thematically, and in terms of sectoral foci. Geographically, this study was confined to Ambo. The town has four condominium housing sites—namely *Awaro, Kisose, Gosu, and Ketero*—that were constructed in 1999 and 2000. The sites incorporate housing types ranging from business houses (houses for commercial use) to houses with 3 bedrooms. As indicated in Table 1, the total number of dwelling units is about 781, and the Awaro site has the most housing units (348). It is followed by the Kisose site—which has 188 units. The target population of this study are the condominium housing residents of Ambo, who are represented by the 536 household heads.

Table 1: Number and type of condominium houses in Ambo

Type	Awaro	Kisose	Gosu	Ketero	Total
Business	42	0	0	0	42
Studio	94	35	29	16	174
1-bed room	86	40	23	36	185
2-bed rooms	46	75	55	40	216
3-bed rooms	80	38	35	11	164
Total	348	188	142	103	781

Source: ATHDO, 2018

Table 2: Study's population and sample size

Site's Name	Total Population (Household Heads)	Sample Size
Awaro	348	50
Kisose	188	80
Total	536	230

Source: Field Survey, 2018

The study purposively selects the Awaro and Kisose condominium housing sites owing to a number of reasons. The two most important reasons were as follows. First, these sites consist of a large number of households and dwelling units unlike Gosu and Ketero. Second, their homeowners or renters come from diverse economic backgrounds, unlike Gosu, which is owned by Ambo University and serves as a residential area for its instructors; and Ketero - where the residents are mainly from relatively high-income groups owing to its locational advantages. Accordingly, a total sample of 230 respondents were selected from the two sites (150 from Awaro and 80 from Kisose) using a simple random sampling method (see Table 2).

The following formula was adopted to determine the sample size.

$$n = \frac{N}{1+N(e)^2} \quad n = \frac{536}{1+536(.05)^2} \quad n = \frac{536}{1+1.34} = 229.65 = 230$$

2.4. Data Analysis Methods and Model Specification

The collected data were carefully organized, classified, coded, and entered into the computer using Statistical Package for Social Sciences (SPSS) version 21. The data was analyzed quantitatively using both descriptive statistical methods such as frequency distribution, mean, standard deviations, and percentages and inferential statistical methods—namely the independent *t* test, the chi-squared test, and the logistic regression model. They were tested at a significance level of 0.05. If the value computed from this statistic is less than 0.05, it indicates a significant association between the variables. If the resultant value is greater than 0.05, it indicates that there is no association between the categorical variables.

A binomial logistic regression model was used mainly to determine the factors influencing homeownership. The dependent variable is a dummy variable, which is 1 if the household owns

their home and 0 otherwise. On the contrary, the independent variables are those factors expected to determine homeownership such as gender, age, monthly income, education level, savings, availability of loan or credit, marital status, household size, occupation, and land provision.

The goodness-of-fit test (statistical significance) of the logistic regression model in this study was analyzed using the following:

1. The Omnibus test, which is a likelihood ratio chi-square test that tests whether the coefficients of the variables in the model are all jointly equal to zero
2. The Hosmer & Lemeshaw (H-L) goodness-of-fit test, which examines the null hypothesis that the model adjusts well to the data
3. The Cox and Snell (1989) and Nagelkerke (1991) -to understand how much variation was in the independent variables, the Cox and Snell R square and Nagelkerke R square values were explained

The adopted model assumed the following statistical formula:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + ui$$

- Y = the probability of the residents to be homeowners (measured on a dichotomous scale: homeowner or non-homeowner)
- X_1 = Age (in years, continuous scale)
- X_2 = Gender (1. Male 2. Female, dichotomous scale)
- X_3 = Monthly income (in Birr, continuous scale)
- X_4 = Household size (in number, continuous scale)
- X_5 = Marital status (1. Single 2. Married, dichotomous scale)
- X_6 = Occupation type (1. Private organizations 2. Government employee 3. NGOs 4. Self-employed, Nominal scale)
- X_7 = Education level (1. Elementary school complete 2. Secondary school complete 3. College/University complete, Nominal scale)
- X_8 = Land (1. Not owned 2. Owned, dichotomous scale)
- X_9 = Loan (1. Not obtained 2. Obtained, dichotomous scale)
- X_{10} = Saving practice (1. No 2. Yes, dichotomous scale)

3. RESULTS AND DISCUSSION

3.1. Respondent's Background Information

This study involves a total of 230 sample respondents to gather relevant data pertaining to the determinants of homeownership. As the socioeconomic profiles of the respondents could determine homeownership, the study investigates the gender, age, monthly income, marital status, educational level, occupation type, and household size of the respondents (see Table 3). Studies found that the decision to own is associated with household income, wealth, family size, marital status, race, and the age of the head of the household (Tan, 2008; Hilber, 2007; and Abdullah et al., 2012). As indicated in Table 3, the study involved a greater number of male respondents (158), who accounted for 68.7% of the sample. The 72 female respondents represented the remaining 31.3%.

The age distribution of the respondents indicates that the majority of the respondents (110) fell in the age bracket of 36 to 45 years, which represented 48% of the sample. Following that, the 95 individuals in the 25 to 36 age range comprised 41.3% of the sample. The least number of repsondents were older than 56 years. The mean value of the respondents was 37 years. Regarding their occupations, a majority of the respondents were government employees (132 = 57.4%), whereas a nearly equal number of respondents were employees of private organizations (52 = 22.6%) or self-employed (44 = 19.1%). The educational level of the respondents showed that a majority (132 = 57.4%) of the respondents possess a college- and university-level education, while 25% and 17% of them attended secondary and primary schools, respectively. This implies that the study fortunately selected educated respondents and it helped obtain quality data. With regard to the respondents' marital statuses, about 153 (66.5%) of the respondents were married, while 77 (33.5%) of the respondents were single at the time of the study. The monthly income of the respondents indicated that a majority (93 = 40% and 87 = 38%) of the

respondents fell in the income bracket ranging from 2000 to 4000 ETB and from 4001 to 6000 ETB. The lowest percentage (7%) of respondents had a monthly income of greater than 8000 ETB. The mean value is about 5005 ETB, with a standard deviation of 1993 ETB. Looking at the respondent's household size, the result shows that most of the respondents (170 = 73.8%) had a household size ranging from 1 to 3 members. Those who had a family size of 4 to 6 members represented 33%. The mean value is 2.83, with a minimum of 1 and a maximum of 8 members.

Table 3: Respondents' Profile			
Variables	**Characteristics**	**Frequency**	**Percentage**
Ownership	Homeowner (HO)	65	28.3
	Non-Homeowner (NHO)	165	71.7
Gender	Male	158	68.7
	Female	72	31.3
Age	25-35	95	41.3
	36-45	110	47.82
	46-55	12	5.21
	>55	8	3.47
Occupation	Private organizations	52	22.6
	Government employee	132	57.4
	NGO employee	2	0.9
	Self-employed	44	19.1
Education Level	Primary schools	40	17.4
	Secondary school	58	25.2
	College and university	132	57.4
Marital Status	Single	77	33.5
	Married	153	66.5
Household Size	1-3	170	73.8
	4-6	57	32.9
	>6	3	1.3
Monthly Income	2000-4000	93	40.43
	4001-6000	87	37.8
	6001-8000	34	14.78
	8001-10000	12	5.21
	10001-12000	4	1.73
Source: Field Survey, 2018			

3.2. Sociodemographic and Economic Determinants of Homeownership

3.2.1. Factors Associated with Homeownership (Chi-squared Test Results)

As indicated in Table 4, the chi-squared test result is statistically significant that the occupation type, obtaining land and loan, savings, and housing type were associated with ownership. It revealed that the majority (64.8%) of the non-homeowners were government employees, followed by private organization employees (18.2%). An almost equal percentage of homeowners was government employees and private organization employees and the result ($X^2 = 14.978$; P = <.002) was statistically significant. Additionally, a majority of the homeowners (87.7%) have not owned land than those of the non-home owners (66.7%) and the

result ($X^2 = 10.365$; P = <.001) was statistically significant.

The result produced from the chi-squared test revealed that most of the homeowners (81.5%) were able to save money, while a majority of the non-homeowners (72%) never practiced saving, and the result ($X^2 = 54.766$; P < .001) was statistically significant. Many of the homeowners (81.5%) had obtained loans while a majority of the non-homeowners (59.4%) had not obtained loans, and the result ($X^2 = 24.608$; P < .001) was statistically significant. Most of the homeowners (50.8%) lived in houses with 2 bedrooms, while a majority of the non-homeowners (40%) lived in the houses with 3 bedrooms, and the result ($X^2 = 53.281$; P < .001) was significant.

Table 4: Association of socioeconomic variables with homeownership					
Variables	**Characteristics/Respondents**	**HO**	**NHO**	**X²**	**Sig.**
Occupation	Private organizations	33.8	18.2	14.978	.002
	Government employee	38.5	64.8		
	NGO employee	0	1.2		
	Self employed	27.7	15.8		
Education level	Primary schools	20	16.4	5.023	.081
	Secondary school	33.8	21.8		
	College and university	46.2	61.8		
Land	Owned	12.3	33.3	10.365	.001
	Not owned	87.7	66.7		
Loan	Obtained	76.9	40.6	24.608	.000
	Not obtained	23.1	59.4		
Saving	Yes	81.5	27.9	54.766	.000
	No	18.5	72.1		
Type of housing	Studio	21.5	21.2	53.281	.000
	1 bedroom	23.1	27.9		
	2 bedrooms	50.8	10.9		
	3 bedrooms	4.6	40		
Source: Field Survey, 2018					

Table 5: Association of marital status with type of housing

Marital status	Type of housing				X^2	Correlation coefficient
	Studio	1 bedroom	2 bedrooms	3 bedrooms		
Single	34	21	9	13	40.777; P = .000	.372; P = .000
Married	15	40	42	56		
Total	49	61	51	69		

Source: Field Survey, 2018

The chi-squared test was computed to see whether there is any association between the housing type of the respondents and their marital status. The result (X^2 = 40.777; P < .001) shows that their marital status is significantly associated with the housing type (see Table 5). Thus, married respondents are more likely to dwell in houses with 2 and 3 bedrooms than unmarried (single) respondents. In addition to this, there appears to be a weak positive correlation between marital status and housing type. Hence, the correlation coefficient is .372, P < .001. As revealed in Table 6, the chi-squared test was computed to see whether there is any association between the respondents' savings and their monthly income. Accordingly, the study found that saving is positively associated with the monthly income of the respondents. Hence, a chi-squared test result of 58.243, P = .000 was statistically significant.

Thus, respondents with a high monthly income are more likely to practice saving than the respondents with a low monthly income. Besides this, the Spearman rho correlation coefficient of .338, P < .001, indicates a positive correlation between monthly income of the respondents and saving However, the relationship is weak. Similarly, there was a statistically significant association between the monthly income of the respondents and their housing type with a chi-squared result of X^2 = 139.982, P = <.001 (see Table 6). This implies that the respondents with a high monthly income are most likely to live or rent houses with 2 and 3 bedrooms than the respondents with a low monthly income, who tend to live or rent smaller houses such as studios and 1 bedroom houses.

Table 6: Association of monthly income of the respondents with saving and type of housing

Monthly Income	Saving		X^2	Correlation Coefficient
	YES	NO		
2000-4000	26	67		
4001-6000	38	49		
6001-8000	21	8	52.483, P = .000	.328, P = .000
8001-10000	11	6		
10001-12000	3	1		

	Housing Type				X^2	Correlation Coefficient
	Studio	1 bedroom	2 bedrooms	3 bedrooms		
2000-4000	33	33	10	17		
4001-6000	10	17	18	42		
6001-8000	5	7	13	10	139.982, P = .000	.370, P = .000
8001-10000	1	4	5	1		
10001-12000	0	0	4	0		

Source: Field Survey, 2018

Table 7: Association of type of housing with household size

Type of Housing	Household Size								X^2	Correlation Coefficient
	1	2	3	4	5	6	7	8		
Studio	27	18	4	0	0	0	0	0		
1 bedroom	0	21	26	10	2	1	1	0	171.718, P = .000	.385, P = .000
2 bedrooms	0	6	13	18	12	1	1	0		
3 bedrooms	0	31	24	10	3	0	0	1		
Total	27	76	67	38	17	2	2	1	230	

Source: Field Survey, 2018

As shown in Table 7, the result, $X^2 = 171.718$, P = <.001, was statistically significant and indicates that an increase in the household size of the respondents is associated with an increase in the chance of them renting or living in houses with 2 or 3 bedrooms.

3.2.2. Differences in the Factors Affecting Homeownership (t Test Results)

The study attempted to compare the household size, monthly income, rental price, and the rent increase between the two condominium housing sites (see Table 8). The t test value indicates that there was a statistically significant difference in the mean value of rent increase for the non-homeowners of the Kisose site (X = 831, SD = 167) and the non-homeowners of the Awaro site (M = 683, SD = 190); t (163) = 4.905, P = <.001). This implies that there is a significantly greater increase in the rental price of the houses in Kisose than those in Awaro. This is associated with the accessibility of the sites, which is linked to their locations. Kisose is in the center of the town, unlike Awaro. Similarly, there was a difference in the mean value of the rental price between Kisose (M = 808.75, SD = 924.6) and Awaro (M = 755.33, SD = 879; t (228) =.431, P =.667). However, the result was statistically insignificant.

Furthermore, though the result was insignificant, there was a difference in the household size of residents from the Kisose and Awaro sites. Accordingly, respondents from Kisose had a greater mean value (M = 2.85, SD = 1.223) than the respondents from Awaro (M = 2.82, SD = 1.270); t (228) =.173, P > .05). The t test was computed to see

any statistically significant difference among the respondents' savings and homeownership based on rental price and monthly income (see Table 9). The result revealed that there was a statistically significant difference in the mean value of the rental price for those respondents who save money (X = 535.35, SD = 888.755) and those who did not save money (X = 954, SD = 846.6); t (228) = 3.611, P<.001). This implies that the respondents who have paid a relatively small amount of money for rent are more likely to save their money than those who paid higher rents. On the contrary, there was a statistically significant mean difference in the monthly income between homeowners (X = 7092, SD = 2071) and non-homeowners (X = 4184, SD = 1212); t (228) = -13.209, P = <.001.

Table 8: Differences in the household size, monthly income, and rental price between the housing sites

| | | Site's Name | | t test for equality of means | | |
		Kisose	Awaro	t	df	Sig.
Household size	Mean	2.85	2.82	.173	228	.863
	SD	1.223	1.270			
Monthly income	Mean	4923.75	5049.33	-.454	228	.650
	SD	2218.692	1868.774			
House Rental Price	Mean	808.75	755.33	.431	228	.667
	SD	924.654	879.028			
Rent Increase	Mean	831	683	4.905	163	.000
	SD	167	190			

Source: Field Survey, 2018

Table 9: Differences in saving and ownership among the residents based on rental price and monthly income

| | | Savings | | t test for equality of means | | |
		Yes	No	t	df	Sig.
Rental Price	Mean	535.35	954.20	3.611	228	.000
	SD	888.755	846.640			
		Ownership				
		HO	NHO			
Monthly income	Mean	7092.31	4183.64	-13.209	228	.000
	SD	2071.330	1212.148			

Source: Field Survey, 2018

3.2.3. Determinants of Homeownership (Logistic Regression Model Result)

The main purpose of this study was to identify the determinants of homeownership in Ambo in the case of condominium housing sites. One of the statistical models used was the logistic regression model to determine whether the dependent variable "homeownership" is predicted based on the independent variables such as gender, age, monthly income, marital status, household size, educational level, occupation type, land, savings, and loans.

The statistical significance of the model (goodness-of-fit tests) was determined. As indicated in Table 11, the Cox & Snell R Square value is .616, and the Nagelkerke R Square value is .885. This means that the explained variation in the dependent variable based on the model ranges from 61.6% to 88.5%, and shows that between 61.6% and 88.5% of the variance in the dependent variable is explained by

the model. This is very good. In addition, the omnibus tests of model coefficients show a result of $X^2(13, N = 230) = 220.070$, $P < .001$, which is a significant value; and the Hosmer and Lemeshow test result was $X^2 = 1.244$, $P > 0.05$, which is an insignificant value - implying that there is not enough evidence to conclude that the model does not fit the data (see Table 10).

Table 10: Omnibus tests of model coefficients and Hosmer and Lemeshow test

Model Test	Chi-Square	df	Sig.
Omnibus tests of model coefficients	220.070	13	.000
Hosmer and Lemeshow Test	1.244	8	.996

Source: Field Survey, 2018

Table 11: Cox & Snell and Nagelkerke results

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	53.815	.616	.885

Source: Field Survey, 2018

Table 12: Sociodemographic and economic determinants of homeownership (logistic regression model)

Variables	β	S.E.	Wald	df	Sig.	Exp(β)=OR
Gender(1)	3.265	1.385	5.558	1	.018	26.169
Age	.288	.075	14.643	1	.000	1.334
Occupation			.675	3	.879	
Occupation(1)	.712	1.033	.475	1	.491	2.038
Occupation(2)	-18.871	26121.315	.000	1	.999	.000
Occupation(3)	-.128	1.173	.012	1	.913	.880
Education			4.342	2	.114	
Education(1)	2.418	1.236	3.829	1	.050	11.228
Education(2)	.851	1.234	.475	1	.491	2.341
Marital(1)	2.076	1.008	4.247	1	.039	7.975
Household size	.844	.379	4.966	1	.026	2.325
Income	.002	.000	13.790	1	.000	1.002
Owning land(1)	-2.631	1.041	6.389	1	.011	.072
Saving(1)	2.937	.987	8.849	1	.003	18.861
Obtain loan(1)	2.305	.967	5.688	1	.017	10.028
Constant	-30.761	6.548	22.067	1	.000	.000

Source: Field Survey, 2018

The results of the logistic regression model have shown that a majority of the variables were statistically significant in the determination of homeownership at a significance level of $P < .05$ (see Table 12). The model has correctly classified 71.7% cases. The result revealed that out of 230 of the surveyed residents in both condominium sites, most of the residents (71.7%) were non-homeowners. The explanation from the model is that a male-headed household is 26 times more willing to commit to homeownership than a female-headed household (OR = 26.169, $P = .018$). In this regard, a study conducted by Lauridsen and Skak, 2007, confirmed that homeownership increases when the breadwinner is a man and that the odds ratio shows that the probability of homeownership increases by 23% when the breadwinner is a man. Similarly, a study by Lim et al., 1980, showed that

a female-headed household is less likely to be a homeowner, all other things being equal.

An increase in the age of the respondents is associated with an increase in the probability of them being homeowners. (β =.288, $P < .001$). Though it is not perfectly connected to this study, previous studies have explored the effect of household age—noting that the cohabitation of young adults with their parents should increase homeownership rates. This is because younger individuals living on their own typically rent, while middle-aged and older individuals typically own their homes (Hilber, 2007). The household size of the respondents also determines homeownership. Accordingly, a higher household size is positively associated with the probability of being the owner of a home (β =.844, $P = .026$). In this regard, couples with children are more often homeowners than single individuals with or without children and couples without children. Couples with children presumably desire ownership because of their greater need to (or welfare from) adapt their homes when there are children in the family (Lauridsen and Skak, 2007). Similarly, these authors added that more people in a household increases its financial capacity, and in turn the probability of homeownership. However, households that are loaded with children are typically high-wear households, which - because of adverse selection - tend to be renters (Lauridsen and Skak, 2007). Lim et al., 1980, also affirmed that on average, doubling the household size, with other things being equal, will increase the probability of homeownership by 0.43. Conversely, Jayantha, 2012, claimed that the relationship between household size and the rate of homeownership is expected to be negative. This implies that the smaller the household size, the higher the homeownership rate, and vice versa.

An increase in the monthly income of the respondents was associated with an increase in the probability of becoming a homeowner. Hence, more respondents who earn a high monthly income are homeowners than those who earn a low monthly income (OR = 1.002, $P < .001$). In this regard, a study conducted by Hilber, 2007, disclosed that the household income and household (and perhaps parental) wealth are expected to have a significant impact on individual homeownership outcomes because income and wealth help overcome barriers

to homeownership. Besides this, Lauridsen and Skak, 2007, noted that with the credit rating of individuals increasing with (expected future) their annual income level, one can expect ownership rates to increase with household income. What is more, Lim et al., 1980, confirmed that if a household doubles its permanent income, the probability of owning a home is increased by 0.19.

Furthermore, married respondents were 7.975 times more likely to become homeowners than respondents who are single (OR = 7.975, $P = .039$). Lauridsen and Skak, 2007, showed that when the breadwinner is divorced or single, the probability of homeownership falls compared with that of married or cohabitating breadwinners. Households who practiced saving were 18.861 times more likely to become homeowners than those who did not practice saving (OR = 18.861, $P = .003$). Obtaining a loan is more likely associated with the probability of becoming a homeowner. This means households who obtained a loan are 10.028 times more likely to become homeowners than the households who have not. Owning land, however, was negatively associated to home ownership. Hence, owning land is less associated with being a homeowner with an odds ratio of 0.072 (OR = 0.072, β = -2.631). A study conducted by Tan, 2008, found that households with a higher education background, where careers tend to be more established, have high valence on most of the homeownership externalities. However, this study found that the education status of the respondents have not determined homeownership, hence a greater number of homeowners were only secondary school graduates. Finally, the model predicted that the type of occupation of the respondents was less important in determining homeownership.

3.3. The Housing Site's Status of Basic Infrastructural Services and Problems

One measure to assess the adequacy of the provision of a habitable home is to calculate the number of habitable houses. Meaning, the nature of housing not only covers the house structurally, but covers all the supporting facilities both inside and outside the house. These include the environmental safety system, the drainage system, roads, the power grid, and the telephone network (Kusuma, 2018). This study examined the adequacy of some basic services in the selected housing sites based on

the report obtained from the respondents. As showed in Table 13, the result indicates that there are an inadequate number of health centers, early childcare centers, waste collection and disposal facilities, and green spaces and playing grounds (the mean values are less than 0.5, which is close to "0", indicating inadequacy).

The issue of waste collection and disposal was reported as a major problem that affects the residents' health and reduces the aesthetic value of the sites. The respondents have also mentioned the absence of green spaces and playing ground which affects the social interactions, entertainment, and the development of the children. However, there

was an adequate water supply, an adequate number of primary schools, shops, protection and security (the mean values are close to "1", which indicates adequacy). The sites have shown few variations in the adequacy of some services. Accordingly, a relatively greater number of primary and secondary schools, health centers, and early childcare centers were found to be in the Kisose site than in the Awaro site. Similarly, Kisose has more adequate protection and security than Awaro. On the contrary, both access to transportation and shopping facilities were found to be better in Awaro than Kisose.

Table 13: Adequacy of basic services in the selected housing sites

Serial No.	List of infrastructures	Mean	
		Kisose	Awaro
1	The number of primary schools	.8000	.6267
2	The number of secondary schools	.6000	.5533
3	The number and types of shops	.75000	.9000
4	The number of health centers	.3350	.2567
5	The number of early childcare centers	.4375	.3300
6	Transport	.6250	.7000
7	Water supply	.9050	.7000
8	Waste collection and disposal facilities	.0522	.0300
9	Protection and security	.9275	.6700
10	Electricity and power supply	.5875	.6200
11	Green space	.2000	.1867
12	Playing grounds	.4375	.2533

Source: Field Survey, 2018

Table 14: Distance of housing sites from basic services

Serial No.	List of infrastructures	Mean	
		Kisose	Awaro
1	The distance from primary schools	1.90	1.80
2	The number of secondary schools	1.34	1.23
3	The number of health centers	2.00	1.98
4	The number of early childcare centers	1.35	1.10
5	Transport	2.34	2.26
6	Workplace	1.45	1.20
7	Market	1.34	1.04
8	Shops	2.00	2.45

Source: Field Survey, 2018

As shown in Table 14, the distance of the sites from the services and work places, the mean values (close to "2" and greater than "2") for the distance to health centers, transport terminals, primary schools, and shops indicate that these services are found to be nearest to the housing sites. Whereas distance to secondary schools, early childcare centers, workplace, and markets were found to be furthest away.

The two sites, however, showed little variation in the mean values for most of the services. As a result, the Kisose site is located relatively at center of the town, while the Awaro site is located in the suburban area of the town.

The report obtained from Ambo Town Municipality Office revealed that the residential areas of Ambo were characterized by their narrow access, unsafe living and working conditions, occupation of prime land of the town, lack of playgrounds and greenery, vulnerability to different hazards like fire and epidemic out breaks, etc. (ATMO, 2018). So, planning intervention is required to ameliorate these conditions. The illegal settlements and black land-market are also concerns that are greatly present around the periphery or at the fringe areas. These residential areas are characterized by a lack of basic services and infrastructure, loss of land resource, insecurity of tenure, and other such issues. These also require planning interventions (ATMO, 2018). A study conducted by Bihon, 2006, also revealed that the complementary part of housing, which is the accessibility to basic services such as sanitation, transportation, communication, education, and health is not adequate. Most of the residents are suffering from a lack of these basic facilities, and it makes the existing housing problem of the city worse (Bihon, 2006).
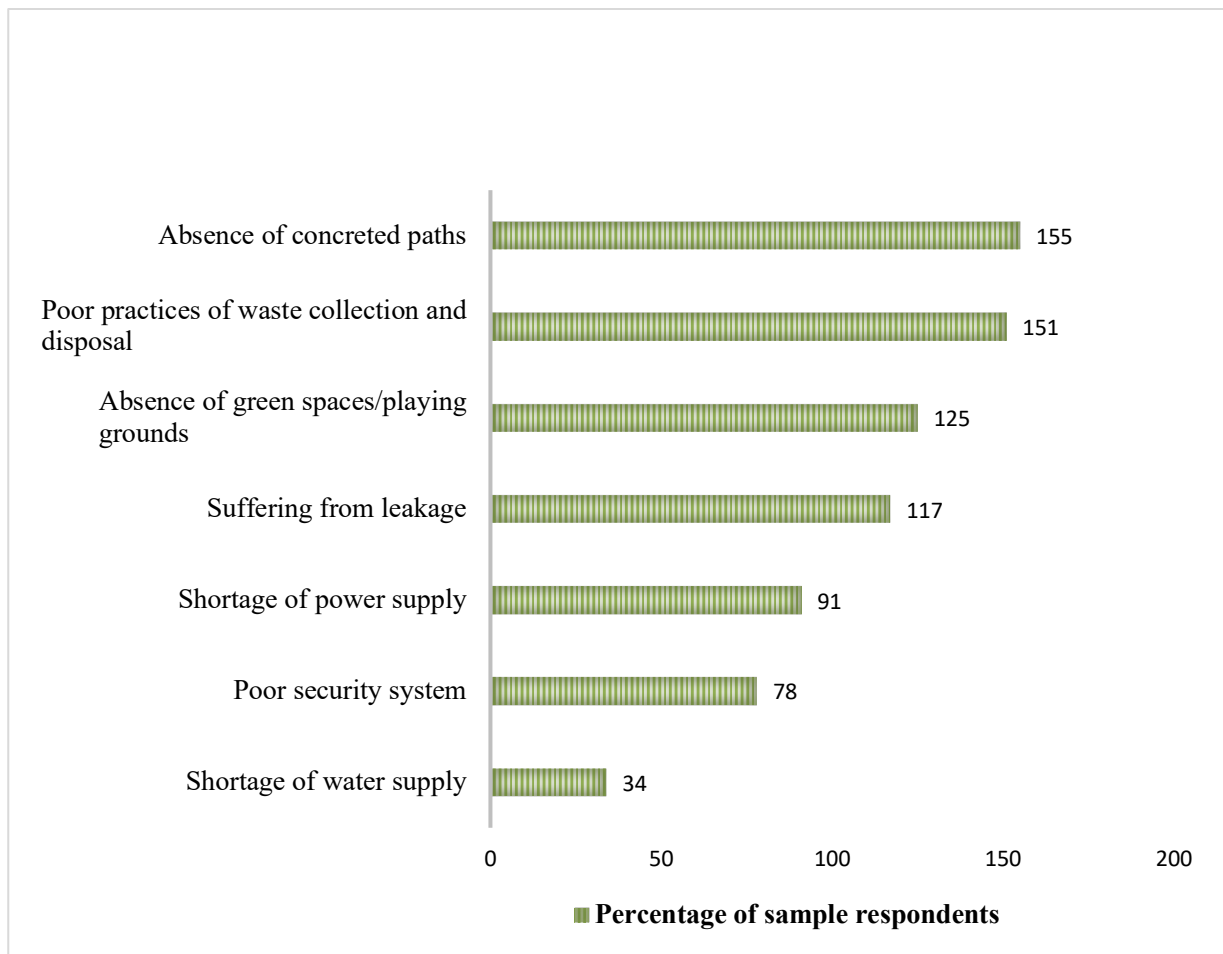

Figure 1. The major problems prevailing in the housing sites

Similar to what has been said, the major problems existing in the housing sites include the absence of concreted paths (68%), improper waste collection and disposal (66%), the absence of green spaces/playing grounds (55%), leakages (51%), the shortage of power supply (40%), poor security systems (34%), and the shortage of water supply (15%).

The non-homeowners were asked about the major reasons that keeps them from homeownership. Accordingly, they have reported that the absence of land (75%), the lack of capital (71%), the bureaucratic nature associated with land (67%), the absence of loan and credit services (62%), the high interest rates (61%), and the increasing cost of construction materials (59%) are the major reasons governing their choice. In this regard, Bihon, 2006, mentioned the low level of income of the residents as the other main challenge of housing supply by the municipality. Kenny, 1999, also revealed that real household income has been one of the important determinants of the homeownership movement in most of the studies.

With regard to the problems related to land, MoUDHC, 2014, indicated that the key sources of inefficiencies of land management and transaction have remained the major impediments in land management in Ethiopian urban centers. This is due to the absence of an independent system of registering or recording real estate transactions, where city administrations are in charge for recording transactions, certifying property rights, and maintaining records and files. An integrated urban level address system - the lack of which has created enormous obstacles in the identification of properties and the availability and reliability of information about prices and professions - is at an initial stage of development. Kenny, 1999, stated that the higher rates discourage new housing developments simply because the cost of finance is a significant part of total construction costs. In studies that explore the effects of interest rates on home ownership, their effect is found to be either marginally negative (Green, 1997; Painter and Redfearn, 2002) or even slightly positive (Kenny, 1999).
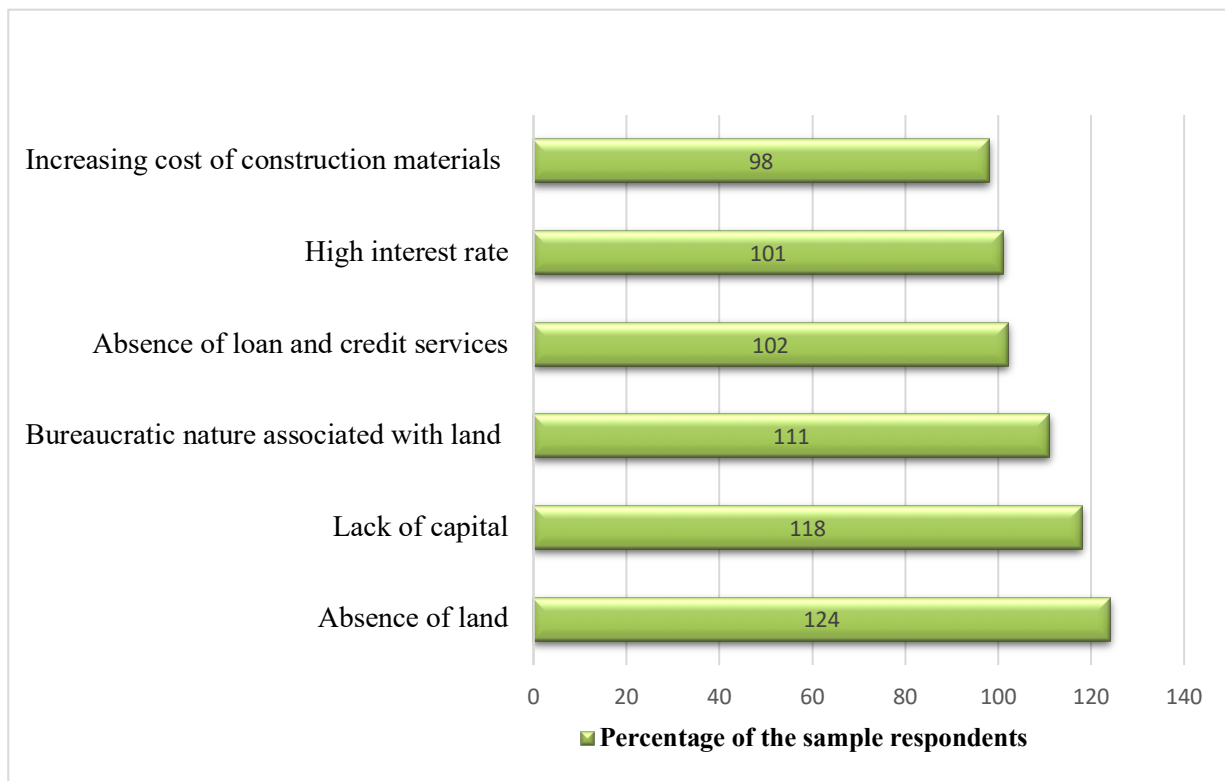

Figure 2. Reasons for not becoming a homeowner

4. CONCLUSIONS AND RECOMMENDATIONS

Housing is one of the essential components of urban infrastructures that requires strong policy for its efficiency and effectiveness. Housing shortage, which is a typical problem of a developing country, poses a formidable challenge to the efforts of improving the life of urban community. Housing becomes an indicator of the level of development. It appears that greater homeownership would improve the general level of housing quality and facilitate savings and wealth accumulation within households. The principal objective of this study was to assess the determinants of homeownership among the condominium housing residents in Ambo. A total of 230 household heads from two condominium sites filled the survey that was utilized for this study.

The study disclosed that homeownership was determined by an individual's gender, age, household income, marital status, education status, household size, use of loans, and saving practices. Accordingly, male-headed households were more likely to be homeowners than female-headed households. Homeownership was influenced by the household's age distribution, as a higher household age was associated with a high probability of becoming homeowners. On the contrary, a greater number of homeowners were found among the household heads who earned a high monthly income and had a high household size. Similarly, the households who practiced saving and acquired loans and credit services were more likely to become homeowners than those who did not. It was found that homeownership was also associated with the educational level of the residents. Furthermore, the other determinants of home ownership were the absence of land, the lack of capital, the bureaucratic nature associated with land provision, the absence of loan and credit services, and high interest rates. The sites had an inadequate number of health centers, early childcare centers, waste collection and disposal facilities, green spaces, and playing grounds. More importantly, the issue of waste collection and disposal was reported as the key problem that considerably affects the residents' health and reduces the aesthetic value of the sites. The absence of green spaces and playing grounds were mentioned as problems that affect the social interactions, recreational activities, and the children's social and psychological development. What is least disputable, however, is that there was adequate water supply, an adequate number of primary schools, shops, and protection and security. In terms of the distance of the sites from those services, it was found that health centers, transport terminals, primary schools, and shops were situated nearest to the sites. However, secondary schools, early childcare centers, workplaces, and markets were found to be the farthest.

On the basis of these findings, the study strongly recommends that the government and the private sector should work collaboratively to ensure that there is an adequate supply of affordable housing for the working class and middle-class individuals. As high interest rates discourage housing development and homeownership, they should be readjusted and subsidized to enhance homeownership. This could be done through financial assistance with down payment and mortgage interest payments. Third, organized saving and credit services exclusively for housing development and improvement programs should be promoted. Fourth, there is a need to have a clear and flexible system that aims to regulate the urban land provision and management for housing construction and development. Additionally, the municipality should strive to either facilitate efficient transportation alternatives to increase the accessibility of the housing sites or it should attempt to place critical infrastructure nearer to the sites. Moreover, there must be a strong commitment to ensure proper waste management in the housing sites to minimize its impact on residents' health and improve the aesthetic value of the sites. Therefore, the government should formulate a profound housing policy that would improve the efficiency of the housing provision system and reduce the cost of homeownership. This study provides a holistic picture of the determinants of homeownership, and the overall status of the housing sites in terms of their adequacy and their infrastructural accessibility. This is done so that the municipality, the government, and other stakeholders can work toward minimizing the problem. It can also inspire other researchers and scholars in this field to further investigate this issue through future research.

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Examining the Concurrent Effects of Specific Corporate Traits and Macroeconomic Variables on Capital Structure

Aso Esmailpoor[1], Ali Sarkhosh-Sara[2], Mohamad Rahimpour[3*]

[1]Ph.D. Candidate, Department of Economics, Faculty of Economics Management and Business, Tabriz University, Tabriz, Iran
[2]Ph.D. Candidate, Department of Economics, Faculty of Administrative Science and Economics, University of Isfahan, Isfahan, Iran
[3]Industrial Engineer, Tehran, Iran

[*]**Corresponding author's email:** mrehimpoor@gmail.com

ABSTRACT

The main purpose of this study is to investigate the effects of specific characteristics of a company and macroeconomic variables on the capital structure of the companies accepted in the Tehran Stock Exchange between 2008 and 2015 using the panel data approach. To measure specific characteristics of a company, profitability ratio, payable dividends ratio, and stock price performance ratio were employed; variables such as GDP growth rate, exchange rate, inflation rate, interest rate, and ratio of the amount of bank credits were employed as macroeconomic variables. The results showed that the variables of profitability ratio, payable dividends ratio, and ratio of the amount of bank credits have a significant negative effect and GDP growth rate has a significant positive effect on capital structure. The results also showed that effects of specific corporate variables differ from macroeconomic variables on capital structure according to the type of industry.

Keywords: Capital structure, Corporate specification, Macroeconomic variables

JEL classification: E31, E32, C22

1. INTRODUCTION

The capital structure consists of a combination of debt and equity, with which companies finance their long-term assets (Weston and Copeland, 2007). Capital structure is the long-term financing of the company, which is shown by long-term debt and equity (Pourzamani and Jamshidi, 2015). As it impacts the company's value, determining the

capital structure by top managers is one of the most important subjects in the financial field; therefore, further research is needed in this field. In deciding the capital structure of the company, corporate executives should consider the specific characteristics of the company, in accordance with macroeconomic conditions, and determine the optimal capital structure. Most of the relevant studies involved company-specific variables as determinants of capital structure by considering the influence of the specific factors of each company that can be managed. However, the importance of macroeconomic factors cannot be ignored. Nowadays, in combining economics and finance, no company can remain uninfluenced by what is happening in the world economy. Therefore, these interactions lead managers to new demands require to consider linking the

company and its development to changes in the macroeconomic environment. In other words, whatever managers find power and dimensions of macroeconomic factors, they can better identify their impact on the structure of capital, and the decision-making process will be more flexible and efficient. More attention should be paid to market-oriented or bank-centered economy while making decisions about capital structure. According to (Demirguc-kunt et al., 1999), market-oriented economies are more transparent and protect the interests of investors, while bank-centric economies are less transparent and do not protect the interests of investors. In addition, companies operating in market-oriented economies are less debt-driven than bank-centric economies. On the contrary, results of various previous studies indicate that the optimal amount of debt in a capital structure depends on the economic conditions of a country, type of industry, legal system, accounting regulations, etc., that differs across countries. So, effective economic factors, such as internal factors, should be considered. In Iran, despite sharp fluctuations in economic indicators over the past few years, this issue has been underestimated by researchers. Therefore, in this study, effects of the corporate specifications and macroeconomic variables on the structure of capital are studied according to the type of industry.

2. LITERATURE REVIEW

Capital Structure Irrelevance Principle by Modigliani and Miller, 1958, followed a surge in discussing capital structure and is a theorem on capital structure, arguably forming the basis for modern thinking and discussion on capital structure. The basic theorem states that in a certain market price process (the classical random walk), in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is. They proved that the market value of the company is independent of its capital structure. According to their results, the use of debt in the capital structure does not increase the value of the company. However, this

theory was based on limited assumptions such as full capital market, homogeneous expectations, and absence of transaction costs and taxes. The existence of these limiting hypotheses has led researchers to test and examine how various factors affect the capital structure. Finally, the combination of theoretical and empirical studies in the field of capital structure led to the presentation of two important theories of "balance" and "hierarchical" in relation to optimal capital structure.

According to the trade-off theory, companies that use debt as a source of funding must create a balance between the benefits of using debt versus its related costs, for example, financial distress costs (Hejazi and Khademi, 2013). The hierarchical theory presented by Russ, 1977, and Majluf and Myers, 1984, acknowledges that companies take all existing financing practices into account and initially choose the cheapest source. Finally, the financing arrangement will be such that first the accumulated profit then the debt and eventually the distribution of shares will be on the agenda. In view of these explanations, to achieve the research objectives, three corporate characteristics (profitability ratio, payable dividends ratio, and stock price performance ratio), and five economic factors (GDP growth rate, exchange rate, inflation rate, interest rate, and ratio of the amount of bank credits) have been selected, according to previous studies, such as those by Taoulaou and Burchuladze, 2014, and Eriotis et al., 2007.

2.1. Corporate Specifications and Capital Structure
Profitability is the ultimate aim of all corporate finance plans and decisions. According to the hierarchical theory, there is a negative relationship between profitability and debt-to-book ratio, because more profitable companies have more potential to finance their own investment projects through domestic resources. On the contrary, as profitability increases the market value of the company, it can be expected that there will be a negative relationship between profitability and the debt-to-market ratio (Kurdestani and Najafi, 2009). On the basis of the Static Trade-off theory, the relationship between profitability and capital structure is investigated

through bankruptcy. By decreasing the company's profitability, the expected cost of bankruptcy increases, which reduces the financial leverage. Therefore, based on the Static Trade-off theory, there is a positive relationship between profitability and capital structure (Khalifesoltan et al., 2015). While (Ghalibaf Asl and Izadi,1988; Titman and Wessels,1988; Rajan and Zingales, 1995; and Serghiescu and Vaidean, 2014) have confirmed the negative relationship between profitability and debt levels, Jensen, 1986, argues that high-profit companies can take advantage of the ordering and limitation of debt payments to reduce the problem of free cash flows.

To explain the relationship between the amount of dividends paid by the company and the structure of capital, it is pointed out that whatever the company's profit is paid to the shareholders, it will accumulate and can be used in the resources required for the company's investments. Therefore, paying more dividends will increase the ratio of debt to total equity, which can be based on the positive relationship between the number of dividends paid and the ratio of debt to equity (Bokpin, 2009). According to Allen, 1993, and Chang and Rhee, 1990, dividend payments have a positive impact on financial leverage, while Rozeff, 1982, Mackie-Mason, 1990, and Asgharian, 1997, have shown a negative relationship between dividends and financial leverage. Sarlak et al., 2016, showed that companies prefer debt financing at each stage of their life cycle (growth, maturity, and decline). In other words, companies follow the hierarchical theory to arrange financial resources.

Asgharian, 1997, and Dimitrov and Jain, 2008, in their research found a negative relationship between market performance and leverage ratio. Taoulaou and Burchuladze, 2014, argued that companies tend to favor stock issuance under favorable market conditions and considered stock performance ratios as potential determinants of capital structure decision making. This affects the overall leverage in a positive way. Khalifesoltan and Bahrami, 2013, also concluded that changes in capital structure have a significant negative effect on liquidity changes, but liquidity changes have no significant effect on capital structure changes. Momeni-Taheri and Sadeghi, 2017,

showed that in both groups of firms with capital-driven debt-capital structure, capital structure has a negative and significant effect on the financial performance of companies. However, this negative effect on debt-driven companies is larger. The financial performance of companies is also more severe than the economic downturn in corporate debt-driven firms.

2.2. Macroeconomic Variables and Capital Structure

Many researches consider GDP growth rate as a determinant of capital structure. The GDP growth rate is considered as a measure that enables companies to deal with future debt costs. In previous studies that have been carried out mainly in developing countries, GDP growth rate has had an inverse relationship with the structure of selected capital (Taoulaou and Burchuladze, 2014). Bokpin, 2009, states that the increase in GDP will improve cash flows and profits, indicating an inverse relationship between GDP growth rate and capital structure. Gajurel, 2005, also shows that GDP growth rate has an inverse relationship with the amount of debt in the capital structure. While the findings of a study by Hejazi and Khademi, 2013, indicate a positive and significant relationship between economic growth and capital structure in Iran, Bandyopadhyay and Barua, 2016, showed that the economic cycle significantly affected the financing decisions of a company and, as a result, the performance of companies in India. Setayesh et al., 2011, showed that there is a positive and significant relationship between GDP and capital structure in Iran.

Another important factor affecting capital structure is inflation rate. The results appear to be different in relation to the inflation rate. For instance, Bastos et al., 2009, argue that inflation does not affect capital structure. Goyal and Frank, 2009, found a relationship between inflation and market leverage but did not find any relationship between inflation and leverage. In addition, Camara, 2012, showed that inflation has a significant relationship with capital structure. Sett and Sarkhel, 2010, and Hanousek and Shamshur, 2011, also argue that inflation has a powerful and positive effect on capital structure. In addition, Gajurel, 2005, concluded that inflation had a

negative relationship with the total leverage and short-term debt ratio but had a positive effect on the long-term debt ratio. Drobetz et al., 2007, stated that in the long run, an increase in the inflation rate would improve the company's cash inflows, which would increase the company's accumulated dividends profits that could be attributed to corporate financing. Therefore, by financing from accumulated profit, the financial leverage of the company will decrease, which indicates a negative effect of the inflation rate on the structure of capital.

Interest rate as a financial factor in economic entities plays a key role. As money is a vital factor in managing directors' decisions, interest rate changes are also important in these cases. Bokpin, 2009, argued that raising the expected rate of investors would increase the risk-free interest rate that would increase the cost of financing the company to secure the necessary repayment through the issuance of bonds. As financial managers are seeking access to financing sources at the lowest cost, raising interest rates and the cost of financing the partnership bonds will most likely eliminate the option of financing through the issuance of bonds, which indicates a negative relationship between the interest rate and capital structure. Therefore, directors tend to finance through the issuance of shares that will cost less than financing through the issuance of bonds. Chakraborty, 2015, showed that with the growth of long-term interest rates and inflation rates, companies' willingness to use debt in the capital structure decreases, whereas with increasing economic growth, the tendency to use domestic cash has been higher.

In general, exchange rate changes can affect the structure of capital of companies that use foreign credit, because the funds that they channel into the company should be converted into domestic currency. Therefore, increasing the value of the domestic currency against the currencies of other countries could lead to the acquisition of more financial resources. On the contrary, an increase in the exchange rate and devaluation of the domestic currency will result in more cash outflows and an increase in the company's interest rate, which will increase the ratio of debt to

equity, while the company should use more debt. Accordingly, there is a positive correlation between exchange rate changes and capital structure (Fanelli and Keifman, 2002). Karimi et al., 2015, confirm the positive effect of the exchange rate variable on the capital structure of companies admitted to the Tehran Stock Exchange.

On the basis of theoretical foundations, adoption of open policies for lending by banks provides conditions for more companies to use the amount of the loan, which leads to an increase in the ratio of debt to equity, and accordingly, the relationship between the amount of bank credits and the structure of capital is positive (Bokpin, 2009). Rajan and Zingales, 1995, also claimed that the criterion of importance for the banking sector while choosing a policy to finance a company is the ratio of bank loans granted to the private sector to GDP, which is far more important for economies that are banking-based than for capital-based economies. The research findings of Taoulaou and Burchuladze, 2014, also show that the amount of bank credits as a percentage of GDP has a positive relationship with capital structure. Zhang et al., 2015, showed that, in China, large corporations close to the capital, with a rise in uncertainty about monetary policy, are reducing their financial leverage, but smaller and marginalized companies tend to decline. Setayesh et al., 2011, showed that there is a significant negative relationship between the volume of liquidity and import with the capital structure in Iran.

3. RESEARCH METHODOLOGY

3.1 Research Pattern
In this study, the model by Taoulaou and Burchuladze, 2014, is used by the panel data approach in the form of equation (1) to answer research questions. In equation (1), y represents the capital structure, specific company variables are showed by F, macroeconomic variables are represented by M, i is the variable for company, and t for year. In this model, the company's specific variables change over time from one company to another, while macroeconomic

variables remain unchanged for each company but change over time.

The model estimated in this study is formulated as follows:

$$y_{it} = \infty + \sum_{k=1} \beta_k F_{k,it} + \sum_{j=1} \gamma_{JM_{j,t}+u_{it}}$$

According to the research goals and to meet the hypothesis, in line with Chakraborty, 2015, Taoulaou and Burchuladze, 2014, and Eriotis et al., 2007, the variables of profitability ratio, payable dividends ratio, and stock price performance ratio were selected to examine specific corporate characteristics, and variables of GDP growth rate, exchange rate, inflation rate, interest rate, and ratio of the amount of bank credits were selected to study the effect of macroeconomic variables on capital structure. In Table 1, the research variables and their calculation methods are stated.

Table 1: Research variables			
Variable	**Type**	**Symbol**	**Calculation Method**
Capital structure	Dependent	y	$\dfrac{\text{Total debits}}{\text{Total assets}}$
Profitability ratio (corporate)	Independent	F_1	$\dfrac{\text{Operational Profits}}{\text{Sales}}$
Payable dividends ratio (corporate)	Independent	F_2	$\dfrac{\text{Cash Dividends per Share}}{\text{Dividends per Share}}$
Stock price performance (corporate)	Independent	F_3	The geometric mean of final price monthly changes percentage per share
GDP growth rate (macroeconomic)	Independent	M_1	Consumer price index
Exchange rate (macroeconomic)	Independent	M_2	$\dfrac{\text{GDP of interest year} - \text{GDP of base year}}{\text{GDP of base year}}$
Inflation rate (macroeconomic)	Independent	M_3	Dollar vs. Rials exchange rate of informal market
Interest rate (macroeconomic)	Independent	M_4	The annual interest rate of government banks
Ratio of the amount of bank credits (macroeconomic)	Independent	M_5	Amount of credits by government and commercial banks (reported by the central bank of Iran) to GDP

3.2. Population and Statistical Sample

The statistical population of this research includes all companies accepted in the Tehran Stock Exchange. The statistical sample of the research is selected according to the statistical population and using the sampling method. The companies with the following characteristics were selected from the statistical sample:

1. Companies that have been accepted before 2008.
2. Companies whose fiscal year ends on March 20 every year.
3. Companies that have not been in the course of the examination, stop the transaction, or change the financial period.
4. Companies that are not financial intermediaries.
5. Companies whose data are available.

Therefore, 103 companies were selected as the research sample. Table 2 presents the descriptive statistics of the research variables.

Table 2: Descriptive statistics						
Variable	Observations	Mean	Mid	Std. Dev.	Min.	Max.
Capital structure	824	0.628	0.619	0.224	0.067	1.66
Profitability ratio	824	0.231	0.162	0.518	-1.24	13.02
Payable dividends ratio	824	0.556	0.561	0.536	-067	7.05
Stock price performance	824	0.255	-0.022	1.053	-0.91	10.16
GDP growth rate	824	1.85	3	7.99	-6.8	7.7
Exchange rate	824	110.75	100	51.15	52.74	203.24
Inflation rate	824	18591.66	13568	10608.25	9357	34750
Interest rate	824	16.6	17	3.23	11.5	22
Ratio of the amount of bank credits	824	0.204	0.079	0.239	0.05	0.62

The companies surveyed were accepted in the Tehran Stock Exchange for a period of 8 years from 2008 to 2015, representing a total of 824 observations (company per year). The dependent variable is financial leverage with the criterion of the total ratio of total debt to total assets, which is an average of 0.628, indicating that, on average, 62.8% of the total assets of sample companies are financed from debt liabilities. Independent variables include two groups of company specification variables and macroeconomic variables. The company's specification variables include profitability ratio, payable dividends ratio, and stock price performance ratio with average values of 0.213, 0.556, and 0.255, respectively. The macroeconomic variables include GDP growth rate, exchange rate, inflation rate, interest rate, and ratio of the amount of bank credits as a percentage of gross domestic product, the average of which is equal to 1.85, 110.75, 18591.66, 16.6, and 0.204, respectively.

4. ESTIMATION AND ANALYSIS OF RESULTS

4.1. Statistical Tests

4.1.1. F-Limer Test (LM)

In panel data, first, statistical tests are necessary to explain the data type. In Table 3, the results of the F-Limer test (Chow) are shown for each specification of the research. In this test, the hypothesis of zero indicates that data are combined and the opposite hypothesis indicates noncompilation or randomness of data (Wooldridge, 2012). As shown in Table 3, the probability of this statistic is less than 0.05, so zero assumption of the test of data fusion is rejected.

4.1.2. Hausman Test

According to the F-limer test, the Hausman test is required to determine the type of panel data. In this test, the zero hypotheses indicate the effects of the constant of the data and the opposite hypothesis indicates the randomness of the data (Wooldridge, 2012). As shown in Table 4, the probability value for this statistic is less than 5%, so the zero hypothesis is rejected. Therefore, the result of the Hausman test shows that the data are a panel with constant effects. Therefore, the research model is estimated based on the panel data approach with constant effects.

Table 3: F-Limer test results			
Effects test	Statistic	Degree of freedom	Significant level
F statistic related to the panels	22.3872	(102.710)	0.0000
ψ^2 statistic related to the panels	1171.64	102	0.0000

Table 4: Hausman test results			
Test summary	ψ^2 statistic	Degree of freedom	Significant level
Random effects of the panels	38.997	8	0.0000

Table 5 presents the results of model estimation for total firms. According to Fisher's statistics, and the significance of the whole model at a 5% error level, 0.0000 is a sign of the fitting of the model. The adjusted coefficient of determination with the value of 0.928 indicates that the independent variables can well explain the dependent variable. The value of the Durbin-Watson statistic, between 1.5 and 2.5, is also indicative of the lack of autocorrelation in the research model. To test the hypotheses, the t statistic is also used. If the significance of the independent variable statistic is less than the error level of the test (0.05), then the hypothesis is accepted; otherwise, if it is more meaningful than the error level, it will not be accepted

Table 5: Model estimation results for total firms				
Variable	Coefficient	t statistic	Significant level	Model values
Profitability ratio	-0.0293	-3.297	0.0010	F-statistic significant: 0.000
Payable dividends ratio	-0.0260	-4.4296	0.000	
Stock price performance ratio	0.001473	0.8669	0.387	Determination coefficient: 0.928
GDP growth rate	0.00261	5.0776	0.000	Durbin-Watson: 1.57
Exchange rate	0.00017	0.6196	0.5357	
Inflation rate	0.003010	1.604	0.1092	
Interest rate	0.00001	0.9897	0.3266	
Ratio of the amount of bank credits	-0.091	-7.937	0.0000	

4.2. Analysis of the Results in the Industry Level

4.2.1. Analysis of the Effect of Specific Corporate Characteristics on Capital Structure

As shown in Table 5, the significance level of the variable profitability ratio is equal to 0.001, less than the error level of the test, and is therefore significant. The coefficient of the variable profitability ratio is -0.029 which indicates that there is a negative relationship between profitability ratio and capital structure. These results are consistent with the Hierarchical Theory and research findings of Asgharian, 1997, and Dimitrov and Jain, 2008. This means, by increasing the company's profitability and internal resources, reliance on foreign resources and debt boosts declines. In addition, according to the results shown in Table 5, the significance level of the variable payable dividends ratio is 0.000, less than the level of the test error and is

therefore significant. The coefficient of this variable is -0.026, which indicates that there is a negative relationship between the payable dividends ratio and capital structure. This result is due to the fact that the increase in the profit margin reduces domestic corporate resources and increases reliance on external sources, which ultimately leads to increased debt in the company. This result is in line with the results of the research by Rozeff, 1982, MacKie-Mason, 1990, and Asgharian, 1997. However, in other studies such as those by Allen, 1993, and Chang and Rhee, 1990, there is a positive and significant relation between the payable dividends ratio and capital structure. The significance level of the variable stock price performance ratio is 0.37, more than the error level of the test and is therefore not significant. Therefore, it can be said that there is not a significant relationship between stock price performance ratio and capital structure in Iran. However, in some recent studies such as those by Asgharian, 1997, and Dimitrov and Jain, 2008, a negative correlation between price stock performance and capital structure ratio is shown.

4.2.2. Analysis of the Effect of Macroeconomic Variables on Capital Structure

In Table 5, the results of the effect of macroeconomic variables on the structure of capital are also shown. According to the results, the significance level of the GDP growth rate variable is equal to or less than the error level of the test and is therefore significant. The coefficient of the variable is 0.002 and positive, which shows that there is a positive relationship between GDP growth rate and capital structure. This result shows that with increasing GDP and economic growth, external information represents a good future for corporations, so managers prefer to use more debt in the capital structure. This is in line with the study of Karimi et al., 2014, although this is in contrast with studies by Gajurel, 2005; Bokpin, 2009; and Chakraborty, 2015. The significance level of the inflation rate variable is equal to 0.109 and is not more than the error level of the test and is therefore not significant. This result may be due to the fact that the increase in inflation would increase uncertainty in the economy and thus can make it difficult for managers and companies to

make decisions. Inflation can have different outcomes based on the type of goods and services that the company offers. As a result, the same procedure has not been observed in relation to the capital structure during inflation, which ultimately leads to a lack of significance of the effect of this variable on the structure of capital. A priori research on this subject has different results; for instance, Bastos et al., 2009, believe that inflation does not affect the structure of capital, but some studies indicate a positive or negative relation of inflation with capital structure. Research results such as those of Taoulaou and Burchuladze, 2014, and Karimi et al., 2014, indicate a negative relationship between inflation rate and capital structure, whereas the research results of Sett and Sarkhel, 2010, and Hanousek and Shamshur, 2011, indicate a positive relationship between inflation rate and capital structure. In addition, according to the results, the significance level of the interest rate variable is equal to 0.326, more than the error level of the test, and therefore is not significant. This result can indicate the lack of dependence of the companies accepted in the Tehran Stock Exchange on bank credits, which ultimately led to a lack of correlation between interest rates and capital structure in these companies. While research results such as those of Taoulaou and Burchuladze, 2014, show a positive relationship between interest rates and capital structure, the results of the survey by Bokpin, 2009, and Chakraborty, 2015, showed a negative relationship between interest rates and capital structure.

According to the results of Table 5, the significance level of the exchange rate variable is not equal to or greater than the error margin of 0.328 and is therefore not significant. The result is in line with that of Chakraborty, 2015; Bokpin, 2009; and Fanelli and Keifman, 2002,. This can be due to different behaviors of companies in the face of rising exchange rates in Iran. In relation to exporting companies such as petrochemicals, rising exchange rates have increased their profitability and, thus, ultimately reduce the ratio of debt to capital and have a negative effect on capital structure. Instead, for foreign and foreign affiliate companies and consequently imports, rising exchange rates have led to a sharp increase

in costs and, consequently, a reduction in their profitability, which resulted in the financing of outsourced resources and ultimately increased debt ratios and positive relationships with the capital structure. These two different results make the effect of an increase in the exchange rate on the capital structure of companies in Iran not meaningful.

Finally, the results of model estimation in Table 5 show that the significance level of variable ratio of the amount of bank credits as a percentage of GDP is less than 0.000, which is less than the level of test error and is therefore significant. The coefficient of this variable is -0.91, which indicates that there is a negative relationship between the ratio of bank credits as a percentage of gross domestic product and capital structure. The results of Taoulaou and Burchuladze, 2014, showed a positive relationship between the amount of bank credit and capital structure. This

indicates that companies accepted in the Tehran Stock Exchange have used less bank credits as a source of capital, or a small amount of bank credit has been allocated to companies admitted to the Tehran Stock Exchange. The lack of significant correlation between interest rates and capital structure can also be attributed to this, namely, the inverse relationship between bank credit and capital structure. On the contrary, an increase in bank credit and, subsequently expansionary policies can increase demand in the economy which results in more profitability of companies and ultimately leads to a reduction in the ratio of debt to their assets.

4.3. Analysis of the Results in Different Industries
In this study, sample companies are classified according to Table 6 in six industry groups. The results of model estimation for various industries are presented in Table 7.

Table 6: Classification of Companies

Industry classification	Observations
Automotive industry	192
Food industry	88
Metal products and fabric metals industry	120
Cement, tile, and mineral industries	176
Pharmaceutical and chemical products	184
Other industries	64
Total	824

Table 7: Regression model estimation in different industries

Industry	Variable	Coefficient	t statistic	Significant level	Model values
Automotive industry	Profitability ratio	-0.323	-5.230	0.000	Significant: 0.000
	Payable dividends ratio	-0.064	-4.29	0.000	
	Stock price performance	0.009	2.77	0.0063	Determination coefficient: 0.812
	Inflation rate	-0.001	-3.39	0.0006	
	GDP growth rate	0.007	5.23	0.000	Durbin-Watson: 1.77
	Interest rate	0.11	3.59	0.0004	
	Exchange rate	8.38E-06	5.84	0.000	

	Ratio of the amount of bank credits	0.59	16.29	0.000	
Food and beverages	Profitability ratio	-0.110	-0.588	0.568	Significant: 0.000
	Payable dividends ratio	-0.0395	-2.243	0.018	
	Stock price performance	0.0279	5.220	0.000	Determination coefficient: 0.862
	Inflation rate	0.0002	0.372	0.7108	
	GDP growth rate	0.0076	5.839	0.000	Durbin-Watson: 1.59
	Interest rate	0.0088	3.246	0.0018	
	Exchange rate	1.64E-06	5.838	0.000	
	Ratio of the amount of bank credits	-0.274	-6.62	0.000	
Metal products and fabric metals	Profitability ratio	-0.176	-3.314	0.0013	Significant: 0.000
	Payable dividends ratio	0.0033	0.535	0.593	
	Stock price performance	0.0030	0.539	0.590	Determination coefficient: 0.821
	Inflation rate	0.0016	3.579	0.0005	
	GDP growth rate	-0.0063	-4.370	0.000	Durbin-Watson: 1.65
	Interest rate	-0.018	-4.446	0.000	
	Exchange rate	-1.01E-05	-5.555	0.000	
	Ratio of the amount of bank credits	0.2542	6.497	0.000	
Cement, tile, and mineral industries	Profitability ratio	-0.0114	-6.81	0.000	Significant: 0.000
	Payable dividends ratio	-0.063	-2.730	0.0071	
	Stock price performance	0.002	0.791	0.4303	Determination coefficient: 0.913
	Inflation rate	0.0002	0.589	0.558	
	GDP growth rate	0.003	3.91	0.0001	Durbin-Watson: 1.82
	Interest rate	-0.0028	-0.750	0.454	
	Exchange rate	-2.88E-07	-0.169	0.866	
	Ratio of the amount of bank credits	0.047	1.784	0.0765	
Pharmaceutical and chemical products	Profitability ratio	-0.0246	-0.592	0.554	Significant: 0.000
	Payable dividends ratio	-0.0231	-2.289	0.0241	
	Stock price performance	-0.0031	-0.860	0.391	Determination coefficient: 0.890
	Inflation rate	0.0006	1.069	0.286	
	GDP growth rate	0.0044	6.011	0.000	Durbin-Watson: 1.56
	Interest rate	0.0034	0.836	0.000	

	Exchange rate	2.48E-06	1.046	0.000	
	Ratio of the amount of bank credits	-0.211	-14.2525	0.0063	
Other industries	Profitability ratio	-0.240	-2.054	0.0006	Significant: 0.000
	Payable dividends ratio	-0.073	-1.743	0.000	
	Stock price performance	-0.0166	-4.0171	0.0005	Determination coefficient: 0.597
	Inflation rate	0.0024	3.079	0.000	
	GDP growth rate	-0.0011	-4.0537	0.000	Durbin-Watson: 1.78
	Interest rate	-0.0043	-0.0601	0.558	
	Exchange rate	-1.47E-05	-2.665	0.018	
	Ratio of the amount of bank credits	0.1484	1.236	0.000	

Table 7 shows that the profitability ratio variable in all industries except the food and beverages industry and pharmaceutical and chemical products has a negative and significant relationship with capital structure. Payable dividends ratio in all industries except the metal products industry has a negative and significant relationship with capital structure. Stock price performance in the automotive industry, food industry, and other industries has a significant relationship with capital structure. GDP growth rate in all industries has a positive and significant relationship with capital structure. Inflation rate in the automotive industry, metal products, and other industries has a significant relationship with capital structure. Interest rate in the automotive, food, and metal products industries has a significant relationship with capital structure. Exchange rate in the automotive industry, metal products, and other industries has a negative and significant relationship with capital structure. Finally, ratio of the amount of bank credits in all industries except those in other industries has a significant relationship with capital structure.

5. SUMMARY AND RECOMMENDATIONS

In this paper, effects of different macroeconomic variables and company specifications on the capital structure of companies accepted in the Tehran Stock Exchange during the years 2008 to 2015 were investigated. GDP growth rate, exchange rate, inflation rate, interest rate, and ratio of the amount of bank credits considered as a percentage of the gross domestic product were selected as macroeconomic variables, and profitability ratio, payable dividends ratio, and stock price performance ratio were selected as specific corporate features.

The results indicate that there is a negative and significant relationship between profitability ratio and capital structure in the whole industry. Similarly, the industry-to-industry survey shows that there is a negative and significant relationship in all industries except the food industry, pharmaceutical, and chemical products. In addition, the results show that there is a negative and significant relationship between the ratio of payable dividends and capital structure. There is a relationship in all industries except the metal and metal products industry. According to the results of the whole industry, there was no significant relationship between stock price performance ratio and capital structure; however, the industry-to-industry survey showed that in the food industry, this relationship is positive and in other industries, there is a negative and significant relationship. There is a positive and significant relationship between GDP growth rate and capital structure in the whole industry, but in metals and other industries, this relationship is negative; there is a positive relationship in the automotive industry, food, cement, mineral

products, and pharmaceutical and chemical products. In addition, no significant relationship between inflation rate and capital structure was observed. However, the automotive and metals industry have a negative relation between inflation rate and capital structure but, in other industries, there was a positive relationship. On the contrary, despite the fact that there is no significant relationship between interest rate and capital structure in the whole industry, in the automotive and food industry, there was a positive and significant relationship with the metals industry. The results of the study indicate that there is no significant relationship between exchange rate and capital structure. However, the automotive industry has a positive relationship with the metal industry, and other industries have a negative relationship between exchange rate and capital structure. Finally, despite the negative and significant relation between the ratio of the amount of bank credits to gross domestic product and capital structure in the entire industry, automotive, food, and pharmaceutical industries, there was a positive relationship in the metal industry.

The results of this study indicate that, despite the significant effect of some corporate and economic factors on the whole industry, in different industries, the influence of the factors affecting the capital structure is distinct; therefore, managers of companies should focus on the specifications of the company in the type of industry terms to decide about financing. In addition, given the interaction between economics and finance, corporate executives need to consider macroeconomic factors when financing. Indeed, as corporate executives better understand the strengths and dimensions of macroeconomic factors and their impact on corporate capital structure, their flexibility and efficiency will increase in financing decisions. Meanwhile, industry-to-industry surveys show that some of the macroeconomic factors of some industries are overwhelming, so managers must decide on funding according to their industry. It should be noted that considering the impact of macroeconomic variables on the capital structure, legislators and policymakers should facilitate the financing of companies by making changes and modifying the rules.

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The Growing Phenomenon of Money Ritual–Motivated Killings in Nigeria: An Empirical Investigation into the Factors Responsible

Habeeb Abdulrauf Salihu[1*], Monsurat Isiaka[1], Isiaka Abdulaziz[2]

[1]Department of Criminology and Security Studies, Faculty of Social Sciences, University of Ilorin, Ilorin, Nigeria
[2]Department of Social Sciences Education, Faculty of Social Sciences Education, University of Ilorin, Ilorin, Nigeria

*Corresponding author's email: salihu.ha@yahoo.com

A B S T R A C T

This study investigated how beliefs in magical powers and related sacred activities, particularly those that accept human body parts for ritual sacrifices in return for fortunes, alongside poverty, unemployment, and quest for wealth as predictors responsible for the increase in money ritual–related killings in Ilorin Emirate of Kwara State, Nigeria. A total of 1736 respondents were selected using simple random sampling techniques. The instrument employed for data collection was a questionnaire. In addition, the information gathered was analyzed using the Statistical Package for Social Sciences. The results indicated that the increase in money ritual–related killings in Ilorin Emirate is a result of the general belief that ritual sacrifices enhance fortunes, the boundless desire for material wealth among Nigerians, unemployment, and poverty in Nigeria. Therefore, this paper suggests that there should be public enlightenment in all languages spoken in Nigeria about the dangers in associating individual success with spiritual influences.

Keywords: Money rituals in Nigeria, Belief in magical sacrifices, Unemployment, Poverty, Excessive quest for wealth among Nigerians

1. INTRODUCTION

The belief in the existence of supernatural powers and the practice of ritual sacrifices are major phenomena that have been part of Nigerian society for ages. Nigeria and other sub-Saharan African countries have a long traditional belief that individuals' successes and accomplishments could be realized with the intervention of a mystical power(s) (Moore and Sanders, 2003). This form of belief is still widespread across all ethnic groups and social classes in Nigeria. A significant number of Nigerians hold the conviction that charms and amulets (tied around the body or hung in houses and cars) can protect them against any misfortune, such as an accident, sickness and diseases, stillbirth, and death (Oyewole, 2016). In addition, people are confident that ritual sacrifices and magical concoctions prepared with bizarre ingredients will bring them financial fortunes, fame, and power (Obineke, 2008). Thus, ritual sacrifices are often performed (to achieve these aims) in various forms using different materials. The kind of ritual sacrifices performed to induce or enhance financial fortunes are referred to as money or wealth rituals. Money rituals are supposed to make the doer rich or draw fortunes to him or her (Smith, 2001). The

kind of materials used in money ritual sacrifices depend on the amount of wealth the doer desires. Some make use of wildlife, while many use human body parts that are believed to be more potent (Jegede, 2014; Abayomi and Dedeke, 2006). The various parts of the human body, as Obineke, 2008, has stressed, are understood to produce different results in money rituals. For instance, in an interview conducted with people caught with human body parts, Usman, 2017, found that human genitals, female breasts, head, tongue, heart, and bones yield powerful outcomes in money rituals. Moreover, certain categories of humans with different (genetic) conditions such as people with albinism, dwarfism, and hunchbacks are also said to be suitable for money ritual sacrifices (Brilliant, 2015; Nkrumah, 2018).

Accordingly, thousands of innocent Nigerians (male and female) across all ages have been killed and their body parts severed for money ritual sacrifices (Usman, 2017). The rate at which people are murdered and incomplete bodies abandoned in Nigerian cities has been alarming in recent years. In fact, hardly will a week pass by without news (on the media - print and online) of a missing person and an incomplete human body found. In addition, cases of individuals caught with human body parts continuously flood news updates. The actual number of people murdered for money rituals in Nigeria is not known, owing to the lack of systematic data gathering on issues relating to money ritual–related killings in the country. Similarly, academic investigations that explore this area are relatively scanty. Therefore, it is difficult to present figures and illustrate how pervasive the phenomenon is in Nigeria.

It is important to note, however, that ritual–related killings are not new in Nigeria. The practice dates back to the precolonial era when many communities offered human (and animal) souls and parts for ritual sacrifices to the deities (Moore and Sanders, 2003). Victims during this period were criminal offenders, persons who defied the gods and leaders, and those who committed other dishonorable deeds such as incest (Awolalu, 1979). In most cases, communities resorted to human sacrifice in times of adversity (during a disease outbreak, persistent infant mortality, and death of rulers) to appease certain divinities, cleanse the community, and to prevent further and future calamity (Ayegboyin, 2009). Law Robin, 1985, stressed that this practice was based on the principle that it is better to sacrifice the lives of individuals who flouted the norms and who are dangerous to the public for the good of the community than for all to perish. Nonetheless, human sacrifice by private individuals or a group outside the communal rituals was not acceptable. This practice was abolished and criminalized in Nigeria, and there were no cases of such practices reported anywhere in the country in the last few decades (Oyewole, 2016).

However, the upsurge in taking peoples' lives for money ritual sacrifices in Nigeria is pervasive in recent times (Usman, 2017). The reasons for this increase remain unclear. This is, perhaps, due to the deficiency in academic research and/or divergent opinions among different intellectuals on this matter. Some experts, on the one hand, claimed that the undesirable socioeconomic condition (the level of poverty and unemployment) in Nigeria is an underlying factor (Melvin and Ayotunde, 2011; Adagbada, 2014), while others held that the culture of boundless quests for material wealth, power, and fame among Nigerians and the general beliefs that ritual sacrifices (especially those that contain human body parts) induce fortunes have encouraged money ritual–related killings in Nigerian cities (Jegede, 2014; Okeshola and Adeta, 2013). However, none of these positions has been duly subjected to an empirical investigation.

It is on this account that this study considers it necessary to examine the perception of the people (based on widespread opinions) about the underlying factors that have driven the increase in money ritual–related killings in recent times in (Ilorin Emirate, Kwara State) Nigeria. This study is primarily opinion-based research, as it samples the perception of the people of Ilorin Emirate, the capital city of Kwara State, Nigeria, on whether the socioeconomic conditions in Nigeria, obsession with wealth, and the widespread beliefs in ritual sacrifices influence the increase in money ritual–related killings in the city.

2. CONCEPTUAL AND THEORETICAL FRAMEWORK

2.1. Money Rituals

Ritual generally refers to a series or chain of actions that involve the use of gestures, specific words (with intonation and syntax), objects (including roots and herbs), and animals or human body parts as materials for sacrifices (Igbinovia, 1988). It is often performed by specialized individuals in accordance with the tradition or doctrine of a given group, community, or religion (Law, 1985). Rituals involve "activating spiritual powers, whether they be of gods, spirits, or ancestors, in order to achieve a beneficent result" (Fontaine, 2011, p. 2). These activities are often conducted in secret (and sometimes in the open, depending on the type and purpose) and in special places (Law, 1985). Rituals, according to Bell, 1997, are usually characterized by strict adherence to traditional practice and values, sacral symbolism, and sequential performance.

A vital component in a ritual sacrifice is the identification of a particular object(s) that becomes a sacred symbol(s) through a process of sanctification (Fontaine, 2011). Generally, rituals take different forms and are performed for different purposes or motives. Among the widely known types of rituals in Africa and/or reasons why rituals are performed are coronation rites, rites of passage, commemorative (festival) rites, and mitigation of affliction rites, among others (Law, 1985). Money rituals are rites or activities that follow the same procedure as other forms of rituals except for their motives, the kinds of materials used, and perhaps the kind of people involved. Money rituals unlike other forms of rituals are performed to enhance riches or to make people rich (Awolalu, 1979). They are often performed by "herbalists" (also known as witchdoctors or magicians) on behalf of their clients or ritualists (people who visit them for spiritual or ritual assistance). Herbalists are individuals who are believed to be wizards and to have magical powers to see and command spirits (Adeniyi, 2014).

In Nigeria, money rituals are categorized into three types. The first category involves the use of human body parts (head, tongue, eyes, heart, and genitals) as sacred symbols and objects for ritual sacrifices. The second category includes using wild animals (combined with roots and herbs) for ritual sacrifices, while the third category involves using amulets and charms, and incantation of phrases that are supposed to bring fortune to the person who uses them. The first category is generally believed to be more potent, reliable, and long-lasting than the other two; for these reasons, many people interested in money rituals go for it (Falae, 2018).

People (ritualists) who are fascinated by it are required to bring or offer human body parts (fresh or decomposed) for ritual sacrifices (Akinyemi, 2017). Similarly, Nkrumah (2018), Usman (2017), and Brilliant (2015) noted that body parts of individuals with special genetic conditions (such as albinism, dwarfism, and hunchbacks) are also believed to be more potent in money ritual sacrifices. The ritualists (also known as head-hunters) generally go hunting for prey (victims) at the request of the herbalists, who perform the rituals. The victims' body parts are obtained by either taking innocent lives or exhuming dead bodies from their graves and offering them to the divine spirit (to whom the ritual is addressed) in return for fortune (Ebhomele, 2015).

Moreover, the ritualists also engage in odd activities such as having sexual intercourse with dead bodies and with people with physical disabilities and mental health disorders (Igbinovia, 1988). The dead body, for instance, is assumed to be surrounded by spirits that could be controlled (through charms and intercourse) to bring fortune to an individual. In the same way, persons with physical challenges and mental health disorders are perceived to be possessed by wild forces that could be turned into agents of fortune (Adagbada, 2014). From the above, this study defines money rituals as a sequence of spiritual rites and activities that are believed to induce fortunes or draw riches to people when performed. It involves the use of objects, incantations, and offerings of human body parts (or animals in some cases) as the sacrificial component of the rituals to the deities in return for a prosperous life.

2.2. Factors Responsible for the Increase in Money Ritual–Related Killings in Nigeria

In the light of the increase in money ritual–related killings across Nigeria in recent years, this paper briefly examines how the socioeconomic challenges in the country and the quest for material

wealth among Nigerians have encouraged these brutal and barbaric killings.

Nigeria's Socioeconomic Challenges: Nigeria is a country bedeviled by multidimensional poverty, unemployment, and insecurity among other problems (Ojowu et al., 2017). The wave of Nigeria's socioeconomic challenges and their impact are widely reported in the literature. Numerous studies and reports have demonstrated that a significant number of Nigerians live below the poverty threshold, do not have access to drinking water, medical, and health care facilities, and find it challenging to survive. For instance, the National Bureau of Statistics (NBS) reports have consistently revealed that poverty in Nigeria is growing at an alarming rate. The number of people who cannot afford the basic needs such as food, shelter, and clothing is roughly half of the entire population (see the National Bureau of Statistics Reports, 2009, 2010, 2016, 2017). Recently, the World Poverty Clock also reported that 87 million Nigerians, or around half of the country's population, live in extreme poverty and that the number of Nigerians falling into abject poverty grows approximately by six people every minute (Gertz and Kharas, 2018). This particular report indicates that Nigeria tops the list of the world's poorest nations, despite her enormous human and natural resources and poverty alleviation and intervention programs.

Similarly, unemployment is also a serious challenge facing Nigeria. The NBS reported that more than 45% of the Nigerian working population is unemployed. Between January 2016 and September 2017, around 7.956 million jobs were lost in Nigeria, and the capacity (of both public and private sectors) to create new ones is limited (NBS, 2017). This is because the various economic sectors (particularly manufacturing, trade, and investment) that are supposed to drive Nigeria's economy are practically handicapped (Salihu, 2019). Consequently, the civil service (local, state, and federal), which is presently the largest employer of labor in Nigeria, finds it tough to create new jobs and pay salaries to the current employees (Etodike et al., 2018). More than 20 (out of the 36) states in Nigeria were reported to have owed at least 7 months' salary between 2016 and mid-2018. Besides, employees serving under some local and

state civil services received 25 % of their monthly salaries throughout the first and second quarters of 2018 (*The Nation,* 2018; Olowolagba, 2018).

Additionally, employees in the private sector lose their jobs by the day. In fact, private establishments fire more employees than they hire in recent years (Nwanguma et al., 2012). The economic situation, decaying infrastructure, and the unfavorable business environment (government policies, tax system, high interest on and access to loans, and insecurity, among others) in the country have made it very difficult for many of the private businesses - including small and medium scale, to survive (Okpara, 2011). For most of them struggling to survive in such conditions, cutting down the staff strength and increasing the price of their services are the order of the day (Ihugba et al., 2014). In addition, many have folded up or relocated to the neighboring countries. The Manufacturers' Association of Nigeria (MAN) reported that between 2015 and 2017, more than 200 private manufacturing enterprises (including small- and medium-scale businesses) have either crumpled or relocated to neighboring countries owing to Nigeria's economic conditions (Clement, 2017).

Consequently, it has become difficult for graduates to get jobs. It is also challenging for those who acquired (or have an interest in) vocational and entrepreneurial skills to put them into practice and earn a living (Agwu and Emeti, 2014). The various prospective determinants and legitimate means of having a good and prosperous life (such as education, skills and talents, and employment, among others) appear to be irrelevant in Nigeria in recent years (Salihu, 2019). Thus, many Nigerians have learned the hard way; they go to any length to put food on the table and fulfil other basic necessities of life. Many engage in devious and criminal activities to meet these needs (Economic and Financial Crimes Commission, 2016). *Quest for Wealth and Material Acquisition Among Nigerians:* Nigeria is also one of the societies in Africa (and the world) where great value is attached to money, properties, and luxuries; excessive acquisition of wealth is boundless, and the source of the acquisition is often not a concern (Obo et al., 2014). Excessive desire for wealth and properties is a social syndrome that cuts across all the cultural groups and social classes in Nigeria. Wealth

accumulation according to Iheriohanma, 2009, has become a general way of life in Nigeria and young people are being socialized in this way unconsciously. Iheriohanma further stated that the volume of fortune - mansions, vehicles, and expensive outfits, that one has and/or how extravagant one is, define his or her influence in the society. In fact, success in the Nigerian context as Salihu, 2012, observed, is often associated with a person's wealth and material possession (similar to Robert Merton's description of the American dream). An individual who has a lot of money and sometimes extends his or her hands (with cash and material distribution or gifts) to other members in the community is recognized as successful.

Accordingly, many (young) Nigerians grow up to admire wealth and have a high regard for an extravagant lifestyle. This strong desire for wealth has become an obsession that makes an average Nigerian (young, adult, educated, and uneducated) think about money and a luxurious life (Bisong and Ekanem, 2014). How to own a private jet, buy the latest vehicles and a luxury mansion, and spray money at public functions are the dreams of an average school-going boy in Nigeria (Adama, 2015). In addition, despite the high level of poverty and unemployment in the country, the society still expects people to be successful and wealthy. Parents and family members, for instance, always anticipate and expect that their younger ones, who are often without a specific source of income, will raise them out of poverty or provide for their basic needs (Iheriohanma, 2009).

This boundless obsession for wealth fueled by the societal pressure has, therefore, pushed many Nigerians to engage in all kinds of (strange and illegal) activities to get rich. The end results are evident in the enormous diversion and misappropriation of state resources, and the unimaginable illicit enrichment among public office holders (Obo et al., 2014); increase in fraud, pilfering, and other dubious activities that are common among employees in the public and private sectors (working class Nigerians; Issah et al., 2016); and different forms of depravities - such as the Advance Fee Fraud (commonly known as 419), internet scam (also known as Yahoo-Yahoo), armed robbery, kidnapping for ransom, street and store raiding, trafficking of humans, sale of drugs,

and trading of human body parts, among others, are being perpetrated by unemployed Nigerians (Smith, 2001; Salihu, 2019). The excessive desire for wealth undoubtedly remains a major social issue that fuels other social problems confronting both young and old Nigerians today (Bisong and Ekanem, 2014).

2.3. Incidents of Money Ritual–Related Killings in Nigeria

There is no official record on the occurrence of money ritual–related killings in Nigeria; however, there are regular media reports of the incidence across the country. The media coverage of some cases involving individuals caught and arrested for the possession of human body parts revealed that, in several cases, perpetrators were family members, friends, neighbors, co-workers, and religious leaders of the victims. In addition, perpetrators (male and female) are varied in age range, with an average being in their early 20s to mid-30s; and the overwhelming majority are men from the lower class (Usman, 2017). This, therefore, suggests that money ritual–related killings are perpetrated by both the young and middle-aged individuals from the lower class. This paper presents some of the recent incidents of money ritual–related killings so as to have a clear understanding of how rampant the practice is in Nigeria. All the cases presented here are made available to the public by the law enforcement agency through Nigerian daily newspapers, magazines, and online news blogs.

Among the widely circulated incidents include the case of a third-year university student, Olozino Ogege, from Delta State University, Abraka, who was earlier declared missing on the November 18, 2018. Her body was later found the following day with her breast and tongue severed (Perez, 2018). Also, an 18-year-old boy, Samuel Akpobome, was arrested on October 29, 2018, for killing his mother for money rituals in Edo State. Samuel confessed to the police that he strangled his mother while she was asleep and had sexual intercourse with her corpse as the herbalist instructed him (Alexandra, 2018). On October 5, 2018, Yakubu Azeez, a 37-year-old commercial driver and his group were also paraded by the Nigeria Police Force for being in possession of human skulls, bones, and hair, in Aromaradu area in Ilorin Emirate, Kwara State. Yukubu's house was raided and the group arrested

by the police following intelligence about suspected ritual killings (Jimoh, 2018).

In another case, on August 27, 2018, Folake Folade who posed as an insane person was caught with a decomposing corpse and other human body parts in Lagos State. Police interrogation led to the arrest of her accomplices and the discovery of a tunnel where decomposing corpses, human bones, and materials (such as clothes, bags, student school uniforms, and books) were found (Onyegbula, 2018). Similarly, on November 23, 2017, Olayinka Abass, a 32-year-old man, was caught with human skulls which he claimed to have exhumed from a cemetery in Ilorin for money rituals (Akinyemi, 2017). Also, on August 20, 2017, a 23-year-old man, Ifeanyi Chukwu Dike, was arrested for killing and severing the body parts of an 8-year-old girl, Chikamso Victory, at Messiah street, Ellozu area of Port-Harcourt in River State (Usman, 2017). These cases are a few among several others reported. It should be noted that there are many other unreported cases of money ritual–related killings in Nigeria.

2.4. Structural Strain Theory

This study draws on Robert Merton's structural strain theory. The structural strain theory was greatly influenced by Emile Durkheim's work on (anomie) suicide (Stack, 2004), which explains the condition where the cultural norms of a society break down as a result of the inability of the society to regulate or restrain the goals and desires of its individual members. Merton adopted this idea to develop a macro understanding of the social structure and pattern of norm-violating behavior in American society. For Merton (1938), the society consciously defined a set of (cultural) goals or desires that serve as the dominant culture instilled in its members and created an institutionalized (socially accepted) means to attain these goals.

In American society, the dominant theme (American dream) according to Merton was the culture that emphasized on a member's monetary success. Success in American society is measured by the amount of an individual's wealth and material possessions. Besides, society emphasizes more on members' successes than the means available to attain them. Thus, members are socialized in this way and made to believe that

everyone has a right and opportunity to be successful and that by using the institutionalized means, they will definitely achieve the American dream.

However, in the process of pursuing the American dream, some portions of society will realize that there is a disconnect between the goals and the socially accepted means of attaining them. This disconnect, according to Merton, 1938, is a result of the uneven distribution of opportunities created by the structure. The social conditions and economic realities dictate who succeeds, that is, the structural arrangement limits the rights and opportunities of some members in the society. Consequently, different individuals will experience a different level of strain as they try to achieve the goals. These variations will, in turn, produce some pressures that typically result in various kinds of outcomes (lawlessness).

Merton's assumption is based on the principle that if an individual is thwarted in his or her efforts to obtain the culturally defined goals using institutionalized means, he or she may be tempted to achieve them through a variety of illegal means, that is, individuals who are frustrated by their inability to fulfil the American dream are likely to channel their energies into unlawful activities as ways of attaining these goals. Merton gave five major ways individuals or groups may respond to the situation of strain. According to him, some groups will conform to the existing standards and values by accepting the goals and are determined, despite the constraint, to achieve them using legitimate means (conformist), while others will opt for rather deviant approaches by accepting the legitimate goals but inventing illegitimate means to achieve them (innovationists), rejecting the goals but continuing to use the legitimate means (ritualists), rejecting both the goals and the means (retreatists), or rejecting the goals and substituting them with something entirely different, and adopting whatever means they deem fit to achieve their goals (rebels).

Merton's structural strain theory basically focused on how the structure of a society induces or motivates individuals or groups to violate the social norms. To Merton, the societal emphasis on the socially defined goals rather than on the means of

attaining them and the restricted opportunities available to some members are the essential ingredients that fuel a sense of strain and anomie, which in turn contributes to the crime rate.

In the case of Nigerian society, wealth and material acquisition may be likened with the American dream (Merton's culturally defined goals) that serves as the dominant culture in which Nigerians are socialized and urged and pressured to pursue. Also, formal and informal education including vocational and entrepreneurial skills that Nigerians are encouraged to acquire so as to be able to make a living and fulfil life expectations can be associated with Merton's legitimate or accepted means. However, the limitations or unequal opportunities created by the system prevent some groups of Nigerians from attaining the goals through socially accepted means, and thus they experience some levels of strains or pressures, which in turn produce various kinds of consequences.

3. MATERIALS AND METHODS

The study was carried out in Ilorin Emirate, the capital city of Kwara State located in the north-central geopolitical zone of Nigeria. Administratively, Ilorin Emirate is divided into 35 wards clustered into three local government areas (LGA). Both primary and secondary sources of data were employed. The primary data were a cross-sectional survey design, and the targeted population for the survey included all the residents of Ilorin Emirate aged 18 years and above. The convenience sampling method was the recruitment technique employed to select a total of 1800 respondents.

A questionnaire was the instrument used to collect (quantitative) data from the selected respondents. The questionnaire was structured and designed in three sections. The first part contained the sociodemographic information of the respondents (such as the age, gender, education, and employment status); the second part covered questions on the prevalence of money rituals and related killings in Ilorin; and the third section covered issues regarding the respondents' perception of the factors responsible for the increase. The questionnaire was measured on a five-point Likert scale ranging from strongly disagree to strongly agree (very low - very high).

To achieve a reasonable level of validity, the questionnaire was evaluated by a number of research experts in the Faculty of Social Sciences at the University of Ilorin, Nigeria. It was revised based on the recommendations of these experts. Also, a pilot study was conducted on 150 people in Ilorin to discover and rectify possible errors in the questionnaire as well as to ensure the reliability of the instrument. Moreover, regarding the procedure employed, copies of the questionnaire were administered on a cross-sectional basis with the assistance of six research assistants. The researchers took enough time to shed light on areas that were not clear to the respondents and also provided answers to questions raised by the respondents. Some of the respondents completed and returned the questionnaire on the day it was given, while others were received a few days after. Basically, the duration of the exercise (administration and collection) was 1 month (including weekends).

It is important to point out that participants' consent was sought. They were duly informed of the objectives of the study and their rights to or not to participate and withdraw from participation anytime. Also, they were assured of their anonymity and confidentiality of the information shared. Thus, participation was voluntary and anonymous. The information gathered was coded and analyzed using the Statistical Package for Social Sciences (SPSS) to generate simple percentages, frequency distributions, and multiple regression analysis on some quantitative responses relating to the research objectives. Finally, the secondary sources used include academic research, institutional reports, information from newspapers and magazines, and online sources. These sources were carefully analyzed to give a clear picture of the widespread poverty and unemployment and the belief in the existence and influence of supernatural powers on individual success and that human body parts can bring fortune when used for rituals in Nigeria.

3. RESULTS

It is important to note that this study adopts opinion-research, and the results are founded on the opinions of the respondents, rather than an association with an act that has been done, or that the respondents might do. This section, therefore, presents and analyzes the results of the information gathered from the survey. It is also important to note that 1800 questionnaires were distributed to respondents; however, only 1736 were returned completed. Thus, the analysis and inferences are drawn based on the completed questionnaires. It can be observed from Table 1 that 57% of the respondents were male and 43% female. Also, 11% were between the ages of 18 to 23 years, 26% were 24 to 29 years, 42% were 30 to 35 years, and 21% were 36 years and above. Additionally, the table shows that 12% have informal education, 9% have secondary education, 38% have a Polytechnic National Diploma (ND) and National Certificate in Education, and 41% have a Higher National Diploma and Degree. Finally, 17.4% were government employees, 20% were private organization employees, 27.6% were self-employed, and 35% were jobless.

Table 1: The components that are used in the project							
Sex	**Frequency (%)**	**Age**	**Frequency (%)**	**Education**	**Frequency (%)**	**Occupation**	**Frequency (%)**
			191		208		302
Male	990 (57%)	18-23	(11%)	Informal Edu.	(12%)	Civil Servant	(17.4%)
			451		156	Private Sector Employee	347
Female	746 (43%)	24-29	(26%)	Secondary Edu.	(9%)		(20%)
			729		660		479
		30-35	(42%)	ND/NCE	(38%)	Self-Employed	(27.6%)
					712		
		36-above	365 (21%)	HND/Degree	(41%)	Unemployed	608 (35%)
Total	1736		1736		1736		1736

Source: Researchers' Field Survey, 2018

In addition, the respondents' perception of the degree of the quest for material wealth among Nigerians and an increase in money rituals in Ilorin Emirate is presented in Table 2. The table shows that 54% of the respondents believed that the quest for material wealth is very high among Nigerians,

Table 2: Distribution of respondents' perception of the level of the quest for material wealth among Nigerians and the increase in money rituals in Ilorin Emirate

Rate of pursuit/quest for wealth among Nigerians	Frequency	Percentage
Very low	0	0
Somewhat low	0	0
Neither high nor low	139	8
Somewhat high	660	38
Very high	937	54
Total	1736	100
Increase in money rituals	**Frequency**	**Percentage**
Strongly Disagree	0	0
Somewhat Disagree	87	5
Neither agree nor disagree	243	14
Somewhat Agree	642	37
Strongly Agree	764	44
Total	1736	100

Source: Researchers' Field Survey, 2018

38% said it is somewhat high, while 8% were of the view that it is neither high nor low. In addition, 44% of the respondents strongly agreed that there is an increase in money rituals in Ilorin Emirate, 37% somewhat agreed, 14% neither agreed nor disagreed while 5% somewhat disagreed and none of the respondents strongly disagreed. The implications of these results are that the majority of the respondents perceived that the rate at which Nigerians pursue wealth is extraordinary and that money rituals are on the rise in Ilorin Emirate.

Furthermore, Table 3 presents the respondents' perceptions of the increase in money ritual–related killings in Ilorin Emirate and the factors responsible for the increase. The table shows that 28% of the respondents strongly agree that money ritual killings are on the rise, 43% somewhat agree, 17% neither agree nor disagree, and 12% somewhat disagree. In addition, 17% and 22% of the respondents strongly agree and agree, respectively, that poverty was the factor responsible for the increase, 29% neither agree nor disagree, while 6% and 26% strongly disagree and disagree, respectively. Moreover, 57% (31%) strongly agree (agree) that unemployment was the factor, 12% neither agree nor disagree, while none (0%) strongly disagree and disagree. Also, 67% (28%) agree (strongly agree) that excessive desire for material wealth was responsible, 4% were neutral, 1% disagree, and none strongly disagree. Additionally, 55% (32%) agree (strongly agree) that the shared beliefs in (money) rituals were responsible, 9% neither agree nor disagree, and 17% (3%) strongly disagree (agree). The implications of these results are that a larger number of the respondents were of the perception that money ritual killings are on the rise and excessive quest for material wealth among Nigerians, unemployment, and beliefs in rituals are the key factors responsible for the increase. Also, less than half (39% - 677) of the respondents held that poverty was the reason.

Table 3: Distribution of respondents' perception of the widespread money ritual–related killings and the factors responsible in Ilorin Emirate

Widespread/increase in money ritual–related killings	Frequency	Percentage
Strongly disagree	0	0
Somewhat disagree	208	12
Neither agree nor disagree	295	17
Somewhat agree	746	43
Strongly agree	487	28
Total	1736	100

Factors Responsible	Strongly Disagree	Disagree	Neither Agree nor Disagree	Strongly Agree	Agree	Total
Poverty	104 (6%)	451 (26%)	504 (29%)	295 (17%)	382 (22%)	
Unemployment	0 (0%)	0 (0%)	208 (12%)	990 (57%)	538 (31%)	1736 (100)
Excessive demand/quest for material wealth	0 (0%)	18 (1%)	69 (4%)	486 (28%)	1163 (67%)	
Beliefs in (money) rituals	17 (1%)	52 (3%)	156 (9%)	556 (32%)	955 (55%)	

Source: Researchers' Field Survey, 2018

Additionally, Table 4 presents the multiple regression and coefficient analysis of poverty, unemployment, the quest for material wealth, and beliefs in (money) rituals as predictors of money ritual–related killings in Ilorin Emirate, Nigeria. It can be observed that, R-Square which measures the amount of variance in the dependent variable (that independent variables accounted for when taken as a group) is $R^2 = .60$. This suggests that poverty, unemployment, excessive demand for wealth, and the belief in rituals significantly predict the occurrence of money ritual–related killings in Ilorin Emirate. Also, the analysis of variance that tests whether R-square is significantly greater than 0 ($R^2 > 0$) is 0.000, that is, F (4,149) = 55.751, P value $0.000 < .001$, and $R^2 = .60$ ($R^2 > 0.000$).

In addition, the table indicates the coefficient analysis that shows the relationship between the dependent variable (ritual-related killings) and each predictor (independent variables: excessive quest for material wealth, unemployment, beliefs in [money] rituals, and poverty) at alpha 0.05. The results indicate the P value for the predictors, (a) excessive quest for material wealth = .000, (b) unemployment = .000, (c) beliefs in (money) rituals =. 000, and (d) poverty = .000, are less than the alpha value: $\alpha = 0.05$ (P values < a, b, c, and d). Thus, there are significant relationships between the independent variables (predictors) and the dependent variable.

Table 4: Multiple regression analysis of the influence of independent variables on the dependent variable

	Predictors	β	T	P	R	R²	F	Sig
a.	Excessive quest for material wealth	.345	5.938	<.05			(4, 149)	
b.	Unemployment	.658	11.619	<.05	.774ᵃ	.599	55.751	.000
c.	Beliefs in (money) rituals	.195	3.643	<.05				
d.	Poverty	.491	8.684	<.05				

Source: Researchers' Field Survey, 2018

5. DISCUSSION

This study investigated respondents' perceived factors responsible for the increase in money ritual–related killings in Ilorin Emirate of Kwara State, Nigeria. Poverty, unemployment, the unbound quest for wealth, and the belief in rituals (or supernatural powers) among Nigerians were examined as the underlying predictors. Respondents' opinions clearly indicate that the rate

at which people seek material wealth is high, the demand for money rituals is on the rise, and so are killings related to money rituals. Moreover, the results also indicate that the predictors considered in this study altogether (as a set) accounted for a substantial change observed in money ritual–related killings in Ilorin Emirate. This revealed that the collective presence of the independent variables has a significant influence on the dependent variable, that is, an excessive quest for wealth

among Nigerians, unemployment, and the general beliefs in rituals, as well as poverty, contributed to the increase in money ritual–related killings in Ilorin Emirate. The results, therefore, suggest that unemployment, the excessive quest for wealth, the beliefs in rituals, and poverty do predict and have implications on money ritual–related killings in Ilorin Emirate of Kwara State, Nigeria.

Thus, these findings signify that despite the level of poverty and unemployment in Nigeria, value for wealth accumulation is widespread among Nigerians. It appears that Nigerian society places greater emphasis on achievement and success (socially defined goals) and automatically socializes members in this way in the presence of the limitations and difficulties in attaining them. To be a successful person in the Nigerian context (as the literature has demonstrated), an individual is expected to be rich, have the necessary material wealth, and be able to provide for the needs of family members and/or possibly lead them out of poverty. However, the socioeconomic reality in the country appears to be a constraint blocking the opportunities of some portions of the population.

Hence, some people appear to be unsatisfied and frustrated with their situation of being jobless, inability to quench their desire for wealth acquisition, and perhaps not having access to basic needs (poverty). Therefore, the willingness to better their present condition appears to be widely influenced by a shared belief in the existence of mystical powers and influences rituals could have on individual fortune. Consequently, these resulted in strains that compelled them to opt for money rituals to achieve the goals - material acquisition (innovationists); this in turn resulted in the hunt for the essential component of ritual sacrifices - human body parts. Thus, the principles of Merton's structural strain theory agree with the findings of this study.

The findings, therefore, validate the positions of some analysts and scholars such as Melvin and Ayotunde, 2011; Adagbada, 2014; Jegede, 2014; and Okeshola and Adeta, 2013, who have claimed that the predominant desire or urge for wealth among Nigerians, socioeconomic conditions, the level of poverty and unemployment, and the common belief that rituals could bring fortunes are

major elements that encouraged money ritual killings in (Ilorin Emirate) Nigeria.

6. CONCLUSION AND RECOMMENDATIONS

Nigeria is one of the religious countries in the world. There are deep beliefs among Christians, Muslims, and followers of the African Traditional Religion that life and death, success and failure, and health and sickness are determined by destiny or influenced by supernatural divinity. These beliefs, therefore, play a significant role in the day-to-day activities of the people. They shape interactions among the various groups and how people interpret events and occurrences in their lives and around them. This paper examined how the belief in the magical powers and related sacred activities, particularly the ones that accept human body parts for ritual sacrifices in return for fortunes, alongside other factors such as poverty, unemployment, and desire for wealth, have resulted in a major social problem that continues to claim innocent lives on a daily basis across all cities in Nigeria.

On the basis of the findings discussed, the authors, therefore, conclude that there is an indication of relationships between the collective presence of the predictors (widespread beliefs that ritual sacrifices enhance fortunes, the boundless desire for material wealth among Nigerians, unemployment, and poverty) and money ritual–related killings in Ilorin Emirate. In other words, money ritual–related killings in Ilorin Emirate are influenced by the widespread beliefs in ritual sacrifices, the desire for material wealth, unemployment, and poverty. Thus, this study suggests that there should be public enlightenment in all languages spoken in Nigeria about the dangers in associating individual success with spiritual influences. People should be educated that the various determinants of success are education, skills and efforts, and employment opportunities. In addition, there should be a campaign against the belief that human body parts used for rituals will enhance financial fortunes. These notions have not been scientifically proven anywhere in the world. In addition to this, severe penalties (more severe than imprisonment) should be imposed on any person caught with human body parts or found guilty of killing another person for rituals. Also, such a punishment should be carried

out in the public. Scholars have established that severe public punishments serve as a threat to the potential offenders and often put them in a conscious position.

Additionally, a conducive business environment that will allow Nigerians to own business and create employment opportunities should be the objective of the government for eradicating poverty and unemployment in the country. As it is not possible for the public service to accommodate all Nigerians, policies that will aid and encourage small- and medium-scale business should be made. Also, the issue of infrastructure decay should be addressed. When the necessary amenities (such as stable power supply) are provided, business will thrive and young Nigerians will be job architects rather than job hunters. Finally, the urge for wealth is not peculiar to the Nigerian society, as people around the world strive to get rich. However, the manner in which many Nigerians pursue or get their wealth is questionable. People should be encouraged through various religious institutions and social groups to seek wealth in a healthy and lawful manner

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The Use of Presuppositions in the Short Story of *Zilkê Şixatê* (Matchstick)

Sabah Sulaiman Haji[1], Fakhir Omar Mohammed[2]

[1]Department of English, College of Basic Education, University of Zakho, Duhok, Kurdistan Region - F.R. Iraq
[2]Department of English, Faculty of Humanities, University of Zakho, Duhok, Kurdistan Region - F.R. Iraq

Corresponding author's email: sabah.haji@uoz.edu.krd

ABSTRACT

This study explores the use of presuppositions in the Kurdish short story, Zilkê Şixatê (The Matchstick), which is written in Northern Kurmanji dialect (hence, NK) by Isma'il Hajani. It attempts to determine which type of presupposition is the most recurring one in the short story and why it is so. The data in this study are analyzed descriptively and qualitatively. Yule's (2006) classification which divides presupposition into six types has been employed: existential, factive, non-factive, lexical, structural, and counterfactual. The data of the research are sentences which contain presupposition triggers (i.e. linguistic forms to mark presuppositions). Applying the formula presented by Oktoma and Mardiyono (2013: 79), the results obtained throughout this paper show that different types of presuppositions have different percentages from the total number of presuppositions. They are (94) in number. It is noted that the most dominant type of presupposition used in the short story is the existential presupposition, manifesting definite descriptions of facts about real life, while the structural presuppositions have the lowest percentage. This shows that much of the story text is written to definitely describe the main theme, the characters and the events as they are. Finally, this study is particularly important because no other such studies have been conducted on the use of presuppositions in any literary work in NK. Therefore, this study occupies a crucial place in the research literature into pragmatic aspects of NK.

Keywords: Presupposition, short story, presupposition triggers, Zilkê Şixatê, Northern Kurmanji (NK)

1. INTRODUCTION

In everyday life situations, speakers often make implicit assumptions about the real world, and the sense or understanding of an utterance may depend on such assumptions. In other words, when a person produces an utterance, the meaning is actually in the person's head. In a more general way, Yule (2006) and Fromkin and Rodman (1983) focus on the fact that "we design our linguistic messages on the basis of large-scale assumptions about what our listeners already know." These assumptions are called presuppositions.

This study focuses on the use of presuppositions

in a piece of literary work written by the NK writer Isma'il Hajani from Duhok City. Also, as shown in the following sections, the types of presuppositions and their triggers have been classified and interpreted according to Levinson (1983), Yule (1996), Verschueren (1999), and Brinton and Brinton (2010). The data were analyzed by adopting a formula calculated by Oktoma and Mardiyono (2013).

2. LITERATURE REVIEW

In this part of the study, the term presupposition is defined, and some previous studies are discussed. These are elaborated in the following sub-sections.

2.1. Presuppositions: The Definition
A presupposition (shortened as PS) is defined as "an implicit assumption about the world or background belief relating to an utterance whose truth is taken for granted in discourse" (Akmajian et al., 1995). Presuppositions are unsaid beliefs; these helps provide meaning to what a person says or refers to.

Presuppositions are important in communication. Pragmatically, the presuppositions in our mind are necessary to make our speech concise and clear. If we had to utter every detail underlying what we try to say, we would face difficulties in everyday communication. Presuppositions allow us to use "linguistic shorthand" (Brinton and Brinton, 2010). The following examples highlight the aspects of implied meaning, which are understood and taken for granted:

(1) *Why did you arrive late?* Presupposition: You are late.
(2) *There are pieces of cake on his lips.* Presupposition: He ate a cake.
(3) *I responded to him.* Presupposition: He asked me a question.

All in all, Cruse (2006) states that "presuppositions are like propositions whose truth is taken for granted by the producer of an utterance and which must be known and taken account of for the utterance to make sense to an interpreter."

2.2. Some Previous Studies
A wide range of research has been conducted on the concept of presuppositions, their types, triggers, and uses in written discourse. Khaleel (2010), for example, investigated the use of presuppositions and their triggers in the texts of six different national and regional English newspapers. After giving a literature review about the concept of presuppositions, their types, and triggers, the analysis of data showed that English journalistic texts relied heavily on existential presuppositions (57.7%) of the studied sample. In contrast, the lexical presuppositions showed the lowest percentage (19.7%).

In their paper titled "The Analysis of Presupposition in the Short Stories of Silvester Goridus Sukur," Oktoma and Mardiyono (2013) described the types of presuppositions and their meanings in the short stories by Silvester Goridus Sukur, an Indonesian writer. In order to analyze the data, the researcher employed Yule's theory, which divides presupposition into six types: existential, factive, lexical, structural, non-factive, and counterfactual. From the total of 219 examples, the results showed that existential presuppositions had the highest percentage (58.90%), whereas the counterfactual presuppositions measured only 136%.

Siagian et al. (2015) studied the types of presupposition in *Time* magazine from the advertisements published in the magazine (issues from April to May, 2009). By conducting a descriptive quantitative analysis, the data were collected by reading and underlining the target advertisements. After analyzing the data, the researcher found that the most dominant type of presuppositions was the existential one, which was present in noun phrases. From the total of 143 presuppositions, the highest percentage (62%) was for the existential presuppositions, whereas the lowest percentage (0.64%) was measured for the structural one.

As it is obvious from the above studies, the existential presupposition is measured to have the highest percentage among the other types of presuppositions. As a matter of fact, by using any of the expressions that are present in the assumptions made by speakers or writers, they are assumed to be "committed to the existence of the entities labelled or named" (Yule, 1996).

3. AIMS OF THE STUDY

Depending on the literature review provided and previous knowledge of the concept of presuppositions, the researchers will answer the following question:

- What types of presuppositions are used in the short story of *Zilkê Şixatê* (Matchstick)?

4. TYPES OF PRESUPPOSITIONS: A PRELIMINARY OUTLINE

On the basis of different presuppositional triggers in utterances of contexts, presuppositions can be classified into different types: (1) existential, (2) factive, (3) non-factive, (4) lexical, (5) structural, and (6) counterfactual. Such classification depends on factors, such as the form of utterances, their lexical content, and the conventions associated with them (Yule, 1996; Verschueren, 1999; Brinton and Brinton, 2010).

These linguistic forms (i.e., triggers) are considered as indicators of potential presupposition, which can only become actual presupposition in contexts with speakers. In order to clarify the relation between triggers and their presuppositions, the triggers themselves are italicized, and the symbol (») stands for "presupposes."

4.1. Existential Presuppositions

They are presuppositions where the speakers are committed to the objects and entities named. For example, noun phrases such as *my cat, the boy in the garden, the United States, Peshmerga*, among many others, have existential references, and they presuppose background belief about certain unique utterances. By using any of these expressions, the speaker is assumed to be "committed to the existence of the entities labelled or named" (Yule, 1996).

> (4) *My son's cat* is asleep. » I have a son. » My son has a cat.

In the above example, both *my son* and *son's cat* are definite descriptions that refer to entities named by the speaker.

4.2. Factive Presuppositions

According to Yule (1996), certain verbs or constructions indicate that something is a fact:

> (5) She did not *realize* that someone was ill. » Someone was ill.

Like many other verbs, *know, learn, regret, discover, understand, hear, notice, resent, accept, appreciate,* the verb *realize* in the above example indicates that the presupposition *Someone was ill* is a fact.

4.3. Non-factive Presuppositions

Non-factive verbs such as *dream, pretend, imagine*, etc., are used to presuppose that something is not true. The verb *dream* in example (6) is used not only to show that the proposition (being rich) is not a fact but also to show that it is not true.

I *dreamed* that I was rich. » I am not rich.

4.4. Lexical Presuppositions

This type of presupposition refers to the assumptions where one lexical item can act as an indicator for understanding another meaning:

> (6) You are late *again.* » You were late before.

> (7) Suzan *stopped* being on diet. » She used to be on diet.

Here, the use of the expressions *again* in example (7) and *stop* in example (8) are taken to presuppose another unsaid concept. Generally speaking, the use of an asserted form can be used to presuppose a non-asserted form (Yule, 1996). This is clear from examples (7) and (8).

4.5. Structural Presuppositions

Certain grammatical structures such as Wh-question forms are used to show further assumptions in an utterance:

> (8) *When* did Ali buy his car? » Ali bought a car.

The Wh-form in the above example makes the listener perceive that the information presented is necessarily true. Here, speakers can use such structures to treat the information mentioned as presupposed and finally accepted as true by listeners (Yule, 1996).

4.6. Counterfactual Presuppositions

These presuppositions refer to the assumption that what is presupposed is not only untrue but also the opposite of truth, or contrary to facts. This is represented by means of if-clauses:

If I was a doctor, I would cure my wife. » I am not a doctor.

5. PRESUPPOSITION TRIGGERS

Presupposition triggers are lexical items or linguistic constructions, which are in charge of creating presuppositions. These triggers simply signal the existence of presuppositions in utterances. Levinson (1983), Brinton and Brinton (2010), and Verschueren (1999) put a list of presuppositional triggers. These are explained below with examples.

5.1. Definite Descriptions

Definite descriptions are usually singular common nouns or noun phrases in general. These noun phrases are usually described in terms of definite articles (Verschueren, 1999). A noun phrase is described as "proper" when the phrase has exactly one referent (object). In contrast, a phrase is said to be "improper" when there is more than one referent. In speech, definite descriptions are implicitly assumed to be appropriate; hence, such phrases trigger the presupposition that the referent is usually unique and existent.

> (9) *The handicapped boy* in our school did not play *the game*. » There is a boy who is handicapped. » There is a game.

The phrase *the handicapped boy* in example (11) is proper because it refers to one unique person (object) in our school. Here, this phrase is a presuppositional trigger that presupposes the assumptions *there is a handicapped boy* and *there is a game* at the same time. So, example (11) is an utterance that is definitely used to describe the situation as being a fact.

5.2. Factive Verbs

Factive verbs, such as *know, learn, regret, discover, understand, hear, notice, resent, accept, appreciate, tolerate, remember,* and *realize*, among others, presuppose the factual truth of their objects. In addition, factive predicates such as *be sorry that, be proud that, be glad that, be aware that, the fact*

that, be sad that, etc., can function as presuppositional triggers (Brinton and Brinton, 2010). The following examples include factive verbs as triggers:

> (10) David *regrets* drinking a beer. » David in fact did drink a beer.

> (11) Jacob *realized* that he was in trouble. » Jacob was in fact in trouble.

All the family *was aware that* their lost son would not come back. » Their son is in fact lost.

5.3. Implicative Verbs

Verbs, such as *manage, forget, avoid, happen*, etc., are considered implicative. In the two following sentences, the verb *manage* is used to mean *try* and *succeed,* whereas the verb *forget* is used to send a message of intention.

> (12) Hala *managed* to open the door. » Hala tried to open the door.

Sarah *forgot* to close the door. » Sarah intended to close the door.

5.4. Change of State Verbs

State verbs such as start, finish, cease, take, enter, come, go, arrive, leave, carry on, and others, are used as presuppositional triggers. The following examples show further assumptions or background belief because they contain a kind of change of their verbs:

 Juliet stopped singing classic songs. » Juliet had been singing classic songs.

The babies started crying. » The babies were not crying.

5.5. Iteratives

Iteratives are lexical items that show repetition in actions and events. Iteratives may be verbs (*return, repeat, restore, come back, go back, redial, renew*) or adverbs (*again, anymore, too, so*). The following examples have iteratives that presuppose assumptions about the event:

> (13) ISIS will attack Peshmerga *again*. » ISIS attacked Peshmerga before.

Dalal Bridge has not been *renewed* yet. » There was an attempt to renew Dalal Bridge.

5.6. Temporal Clauses

Subordinate clauses starting with lexical items such as before, after, during, whenever, as, while, or when have a semantic function of temporality. These clauses are used to trigger further assumptions, as in the following examples:

(14) When you leave, please close the door. » You will leave.

Since Aram graduated, he has not found any job. » Aram graduated.

5.7. Cleft Sentences

Clefts typically put a particular constituent into focus. Cleft constructions as a whole are used as triggers to presuppose a background belief about the relation between the speaker and the hearer, as in the following examples:

(15) *It* was Henry that kissed Rosie. » Someone kissed Rosie.

What John lost was his wallet. » John lost something.

5.8. Comparisons and Contrasts

Comparisons and contrasts may be marked as presuppositional triggers to show a background belief about the speaker of the utterance.

(16) My friend swims *better than* I do. » I swim.

Rosie is *the best* student. » There are other good students.

5.9. Questions

According to Belnap (2009), "every question presupposes *precisely* that at least one of its direct answers is true." For example, the following question seeks further assumptions:

Why did you stop smoking? » You were a smoker.

5.10. Possessive Case

Possessive constructions are used to function as presuppositions in certain contexts. In example (28), the noun phrase, *my two kids*, is in the possessive case. It is used as a presuppositional trigger showing that the speaker of the utterance has two kids.

My two kids are very clever. » I have kids.

6. METHODOLOGY

The methodology used in this study was descriptive and qualitative. The story of Zilkê Şixatê (Matchstick) was analyzed according to the application of the presupposition types via trigger frequency and percentage. This story (pages 45-53) is one of the short stories published within the collection of *Meydana Koçikan (A Pack of Dogs)* written by Isma'il Sileman Hajani, a writer from Duhok City. According to Grundy (2008), there are two ways in which presuppositions are identified. The first way is through presupposition triggers, and the second one is to think of them as expressions with shared background belief of knowledge. Following the presupposition triggers, the six types of presuppositions by Yule (2006) were taken as the basis of analyzing data. To analyze the availability of presuppositions, the steps below were applied:

1. Reading the short story.

2. Identifying the items that are related to presupposition triggers.

3. Collecting the sentences that contain triggers.

4. Listing the sentences into the table of presupposition.

5. Classifying the data into the types of presuppositions (existential, factive, non-factive, lexical, structural, and counterfactual).

6. Finding percentage of presupposition types.

To know the percentage and dominant type of presuppositions in the mentioned short story, the following formula by Oktoma and Mardiyono (2013) was employed:

$$\% \text{ of type:} \frac{\text{No. of one type occurrence}}{\text{Total No. of all types occurrence}} \times 100$$

7. DATA ANALYSIS AND DISCUSSION OF PRESUPPOSITIONS IN THE SHORT STORY OF *ZILKÊ ŞIXATÊ* (MATCHSTICK)

Yule (2006) states that when speakers' assumption and expressions are analyzed, presuppositions are associated with the use of a large number of words,

phrases, and structures (or presupposition triggers). Following Oktoma and Mardiyono (2013), their formula mentioned in the Methodology section calculates the percentage of any type of presupposition. These calculations were processed via Excel sheets. For the purpose of analyzing the

data obtained from the short story, the following table shows the types of presuppositions, examples (written in the Kurdish alphabets and letters), presuppositions (i.e., assumption), and explanations for these sentences:

No.	Type	Examples	Presuppositions	Explanation
		Table 1: Data obtained from the story of *Zilkê Şixatê* (Matchstick)		
		Metîn Bilinde (Metîn is high.)	» There is a mountain called Metîn.	It is a definite description of an existent entity.
		Asman deryayeka reş u şîne (The sky is a dark blue sea.)	» The sky is there.	Even if this sentence is negated, the sky is still there.
		Ewir gizîrtên spîne (Clouds are white islands.)	» Clouds exist.	There is a definite reference to the entity of clouds.
		… bi leztirîn ritmê jiyanê… (the fastest rhythm of life)	» *leztirîn* presupposes existential assumption.	Comparative structures show real face of situations.
1.	Existential	Pên wî (his foot), swîka Nebî (Nebi Bazar), çavên wî (his eyes), milê wî (his shoulder), tivenga te (your rifle), Hebîb, didanê min (my tooth), kîskê min (my tobacco bag), devê wî (his mouth), gewrîya wî (his throat), devê xwe (his mouth), koxka xwe (his cough), gupalê wî (his stick), stuye xwe (his neck), Sînema Nîcum (Nijoom Cinema), derzîkeka Morfînî (Morphine), giyanê wî (his soul), leşê wî (his body), lingên wî (his legs), Şeytan (Satan), serê xwe (his head), Ecne (Gini), piştên xwe (their bags), tivengên xwe (their rifles), bejna xwe (his body), aleka min (his cheek), devê wî (his mouth), tilên min (my fingers), tilên xwe (his fingers), zilkekê şixatê (a matchstick), leşkerê	» All these phrases, including some proper nouns, are woven into as triggers within the lines of the story. They presuppose definite descriptions about the utterances produced.	The speakers are committed to the objects and entities named. These triggers show uniqueness of denotation.

		Osmaniya (Ottoman army), destên xwe (his hands), gupalê xwe (his stick), çavên me (our eyes), and cigara xwe (his cigarette).		
		Ne zelamê van ahengane (Not the man of these celebrities.)	» Life is tough.	The example presupposes that life is tough, which is definitely a true description.
		… bi leztir rêk kêşa ber xwe (walked the road faster)	» He walked fast.	*faster* is descriptive
		Demê gehiştîne gelyê kur…. qoşenê pêşiyê xwe da ser berekê bilind (When they reached the deep valley, the leader went on a high rock.)	» There is a leader. » There is a high rock. The leader did something.	A place is presupposed; hence, it should be reached by somebody.
		Agir ji wan wêvetir geşbu (A distance from them, the fire was lit.)	» There is fire. » There was no fire before.	A change of state verb (lit) is used to show that there was no fire before. This is a constant assumption.
		Bi êkcarî ji janê rizgarkim (I will release you from pain forever.)	» There is pain.	When negated, the presupposition remains constant.
		Piştî kizên ji didanî hatî,… pên azad xavbun (After his tooth was burnt,… he felt weak in the knees.)	» He has toothache. » He is weak.	The subordinate clause presupposes a definite description.
2.	Factive	Pên wî… fêrboyne rêveçunê (His feet… learnt walking.)	» He was walking in fact.	Factive verbs such as fêrboyne (learnt), niyasî (realized), dizanit (knows), cerbandî (tried), dizanin (know), negehte (hear not), ageh nema (forgot), dizanim (know), and dîtin (saw) all presuppose facts
		Hinêra befrê niyasî (He realized the strength of snow.)	» There was in fact a snow storm.	
		Ew dizanit tivenga wî mezintrîn şerefa wî ye (He knows that his rifle is his unique honor.)	» His rifle is in fact his honor.	

		Min bxwe yê cerbandî (I have tried it before.)	» I did something before.	about their referred objects and events.
		Em dizanin ji ber çi revîne (We know why they escaped.)	» They surely escaped.	
		Da deng negehte quşenê pêşyê (So that the leader will not hear his cough.)	» The leader did not hear him cough.	
		Ageh ji seqem u jana didanî nema (He forgot his toothache.)	» He did have a toothache.	
		Ez dizanim hun westiyan (I know you are tired.)	» You are in fact tired.	
		Hind dîtin ji nişkave agir ji wan wêvetir geşbu (They suddenly saw the fire lit.)	» There was in fact a fire.	
		Hevalan, hun dizanin ev kumbuna me liser çiye? (My friends, you know what this meeting is about?)	» There was surely a meeting.	
3.	Non-factive	Ya! (Are you sure?)	» You are not sure.	Sometimes exclamatory expressions presuppose to be against the truth.
		Ecne newêrin derkevin (Demons dare not to go out.)	» There are demons, and they can go out.	Verbs such as newêrin (dare not), bê hişkir (pretended) and dixwazim (hope) presuppose assumptions opposite to truth.
		Weko leşkerekî mariş dikir (He was walking like an army march.)	» He was weak.	
		Xwe bê hişkir (He pretended to be mindless.)	» He was not mindless.	
		Dixwazim ev tişte êdî dubare nebit (I hope this is not repeated anymore.)	» Something was done.	
		Neko sera vî zilkî min gulebaran bikit (I'm afraid he will shoot on me because of this matchstick.)	» He will not shoot.	
4.	Lexical			

Bi tinê zelam liber semayê dikin (Only men dance for it.)	» Only men, not women, dance for it.	Lexical items, including bi tinê (only), bi rê di et (is coming), ji nu (newly), carcar (from time to time), hêş (yet), careka dî (once again), pitir (more), baştir (better), -jî (too), ji nişkave (suddenly), raweste (hold on), ev şeve (tonight), êdî (anymore), and dîsa (again), that are mentioned here in the story are used as triggering items. These triggers presuppose indications for further meanings (presuppositions).
U karwan yê bi rê di et (And the caravan is coming.)	» There is a caravan.	
Ji nu hinêra befrê niyasî (He newly knew the strength of snow.)	» There was a snow storm.	
Carcar tiveng ji milê wî dket (From time to time, his rifle was falling down.)	» He could not carry his rifle.	
Hêş ne gehiştye ser ferşa spî (It [the rifle] has not reached the white carpet yet.)	» The rifle did not fall down.	
Careka dî qulingê qerimî yexbu (Once again the frozen craven appeared.)	» The frozen craven appeared before.	
Lingên wî pitir erd girt (His feet were fixed on the ground more.)	» His feet fixed on the ground.	
Hebîb carcar li xwe dizivrî (He used to look behind from time to time.) Baştire! (It's better.)	» He kept an eye on his friends.

» Something is better. | |
| Hun dişên agirîjî helkin (You can light fire too.) Hind dîtin ji nişkave agir ji wan wêvetir geşbu (They suddenly saw the fire lit.) | » You can light fire.

» There was no fire before. | |
Raweste ezê bu te cigarekê helkim (Hold on, I will light a cigarette for you.)	» There is a cigarette.	
Kombuna me ev şeve liser zilkê şixatêye (Our meeting tonight is about matchstick.)	» There is a meeting.	
Dixwazim ev tişte êdî dubare nebit (I hope this is not repeated anymore.)	» Something was done.	
Korê min dîsa dbêjim ew zilik beyhude çu (My son, I say again that matchstick has gone in vain.)	» Something was uttered before.	

5.	Structural	Wey babo, ev şeve min çikir? (Oh God! What have I done this night?)	» I did something. » I regretted on doing something.	The *Wh*-question form is used to show further assumptions in this utterance.
6.	Counterfactual	Heke rêya me bi gundekê ket, pêş vî zilkîve ez deh derzinên şixata bu şoreşê bikrim (If we passed across a village, I will buy a dozen of matchsticks for the revolution.) Ew zilik beyhude çu heke tu hindî kargehên cîhanê bînî (That matchstick has gone in vain if you can buy all the matchsticks of the world.)	» He did not buy a dozen matchsticks. » He cannot buy all the matchsticks of the world.	If-conditionals are used as triggers. What is presupposed is not only untrue, but is the opposite of truth, or contrary to facts.

It is clear from the above formula that the existential trigger (53 occurrences, 56.38%) was the most frequently used presupposition in the transcript of the short story of *Zilkê Şixatê* (Matchstick). In contrast, the least frequently used presupposition triggers were structural (1 occurrence, 1.06%) and counterfactual (2 occurrences, 2.12%).

The storyteller describes the characters, events, plot, and settings according to referential facts. Hence, all these things are clearly asserted by obvious existential presuppositions. The writer tries to be more realistic and accurate rather than unrealistic and fanciful.

8. CONCLUSION

The types of presupposition and their triggers were talked about in this study. In addition, presuppositions were tested by means of negation, modals, and questions. As a pragmatic application of the topic of presuppositions, the short story of *Zilkê Şixatê* (Matchstick) written by Isma'il Hajani was analyzed pragmatically. The types of presuppositions and the presuppositional triggers were studied, concluding that all the types of presuppositions occurred in the story. The occurrence of presuppositional triggers in the story varies. The total number of these triggers was

ninety-four. It is concluded that the most dominant type of presupposition used in the short story was the existential presupposition, whereas structural presupposition were the lowest measured presupposition triggers. This shows that much of the story text was written to describe the main theme, characters, and events. To conclude, the writer of *Zilkê Şixatê* adds a sense of certainty to his propositions.

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On Standard of Living and Infant Survival in Some East African Countries

Jacques Silber[1]*

[1]Department of Economics, Faculty of Social Sciences, Bar-Ilan University, Ramat-Gan, Israel

*Corresponding author's email: jsilber_2000@yahoo.com

A B S T R A C T

To summarize the extent of infant survival in a country, three indices have been defined. The first one is the complement to 1000 of the infant mortality rate (expressed in per thousand births). The second one takes into account the inequality in infant survival rates between population subgroups. The third indicator adjusts the average infant survival rate by giving more weight to a population subgroup with a lower socio-economic status. The computation of the last two indicators requires the use of an inequality index and a concentration ratio. We used two measures of inequality, the Gini index and the Bonferroni index, as well as two concentration ratios, derived from the Gini index and related to the Bonferroni index. A short empirical illustration, based on seven East African countries, confirms the usefulness of the approach presented in this paper.

Keywords: Bonferroni index, East Africa, Gini index, Gini concentration ratio, Infant mortality

JEL Classification: D31, D63, I14, I15, I31

1. INTRODUCTION

In the State of East Africa 2012 report, a comprehensive survey prepared by the Society for International Development (SID), inclusiveness is assumed to refer to how much the most disadvantaged East Africans are participating in the process of economic growth. "From this perspective, focusing on an average metric such as per capita GDP, to evaluate inclusiveness leads to misleading conclusions. Furthermore, average changes do not say anything about what is happening to the first and last person in the income distribution. Equity describes how the fruits of economic growth are shared among the region's citizens. Recent analysis shows that inequality is really about the share of income that goes to the richest (top 10 per cent of the population) and the poorest citizens (bottom 40 per cent of the population). Simply stated, inequality is about what is happening at the tail ends of a country's income distribution" (Executive Summary of the State of East Africa Report 2012).

However, did this decrease in infant mortality affect all strata of the population equally. Studies

of the link between the standard of living and infant mortality in East Africa are rather scarce. A recent paper by Odwe et al. 2017, takes a detailed look at the reasons for the decline of infant mortality in Kenya during the first decade of the 21st century, but it stresses more issues related to over- or under-estimation of infant mortality than the impact of socioeconomic factors. The purpose

of this paper is to check the extent to which infant mortality is related to the standard of living of the households/individuals. Using data from the Demographic and Health Surveys that appear in aggregate form on the World Health Organization website, we define indices taking into account the impact of standard of living on infant survival.

Several of the proposed measures, at least those related to the Gini index of inequality and more precisely to the index's concentration ratio, have appeared previously in the literature. We, however, also introduce measures derived from the less known Bonferroni index of inequality. All these measures are then applied to data concerning seven East African countries: Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, and Uganda.

The paper is organized as follows: Section 2 summarizes the various ways of measuring inequalities in health, making a distinction between a univariate and bivariate approach to this topic. While the former simply measures inequality in health, using some inequality index, the latter considers the correlation that may exist between standard of living and health. Section 3 gives an empirical illustration based on data from the seven East African countries. Concluding comments are given in Section 4.

2. MEASURING INEQUALITIES IN HEALTH

The term "health inequalities" is measured in two ways (see, Wolfson and Rowe, 2001). The first one looks only at health and analyzes the inequality of the distribution using some health variables such as the size of individuals or the level of their nutrition. A second approach focuses on a bivariate distribution, for example, that of health and income. This section also defines three types of health achievements. Assuming that the health indicator is infant

survival (the complement to 1000 of infant mortality), this paper makes a distinction between the average value, in the whole population, of infant survival, an indicator correcting this average value by taking into account the inequality existing between subpopulations, and finally an indicator of infant survival giving greater weight to infant survival among a population subgroup with lower standard of living. For each country in different years, values of the various measures previously described are given, a distinction being made between indicators derived from the Gini index (Table 1) and those related to the Bonferroni index (Table 2).

2.1. A univariate approach to health inequality measurement

2.1.1. Measuring health inequality using the Gini index

Let h be a vector whose elements h_i refer to some measure of the health of individual i (such as the size of an individual or his/her weight). Assume there are n individuals in the population analyzed and call e' a row vector whose elements are all equal to $(1/n)$. Let G be a squared n by n matrix, called G-matrix (see, Silber, 1989), whose typical element g_{ij} will be equal to 0 if $i = j$, to -1 if $j \succ i$, and to +1 if $j \prec i$. Let us also define a column vector s whose typical element s_i is equal to $(h_i / \sum_{i=1}^{n} h_i)$, these elements being ranked by decreasing values of h_i. We can now measure inequality in health as we measure income inequality and define, for example, the Gini index I_G of health inequality as the product (see, Silber, 1989).

$$I_G = e'Gs \qquad (1)$$

Berrebi and Silber, 1987, have proven that this Gini index could be also expressed as follows:

$$I_G = (2) \left[\left(\frac{1}{n} \right) \sum_{i=1}^{n} \left[S_i - \left(\frac{1}{n} \right) \right] \left[\left(\frac{n+1}{2} \right) - i \right] \right] \quad (2)$$

that is, as twice the covariance between the ranks and the shares in total health of the individuals. Note that expression (2) may be also written as:

$$I_G = (2/n)\{[((n+1)/2)] - [n((1/n)((n+1)/2)] - [\sum_{i=1}^{n} i s_i] + [(1/n)n((n+1)/2)]\}$$

$$= (2/n)\{[((n+1)/2)] - [\sum_{i=1}^{n} (h_i/n\bar{h})i]\} = ((n+1)/n) - [(2/(n\bar{h}))\sum_{i=1}^{n} h_i(i/n)]$$

$$= [1 - (2/(n\bar{h}))\sum_{i=1}^{n} h_i(r_i)] + (1/n) \qquad (5)$$

where $\bar{h}$ is the average level of health in the population and $r_i = (i/n)$ is the relative (or "fractional") rank of individual i.

Using expression (3) we then derive the following:

$$I_G \approx [1 - (2/(n\bar{h}))\sum_{i=1}^{n} h_i(r_i)] \qquad (4)$$

as $n \to \infty$.

It is easy to conclude (see Wagstaff and van Doorslaer, 2002) that if one measures "ill-health," then the Gini index of "ill-health" will be expressed, when $n \to \infty$, as:

$$I_G \approx [(2/(n\bar{h}))\sum_{i=1}^{n} h_i(r_i)] - 1 \qquad (5)$$

It is also possible to give a graphical interpretation of this Gini index of health inequality. Plot on the horizontal axis the cumulative values of (1/n), that is, plot the shares (i/n) with i varying from 1 to n. On the vertical axis, plot the cumulative values of the shares S_i that were defined previously, these shares being ranked by increasing values of h_i. One then obtains a curve that will start at point (0,0) and end at point (1,1). It can be shown that this curve, called a Lorenz curve (see Graph 1), has a non-decreasing slope and that the Gini index of health inequality is equal to twice the area lying between this Lorenz curve and the diagonal (the 45-degree line defined previously).

Graph 1:
The Lorenz Curve
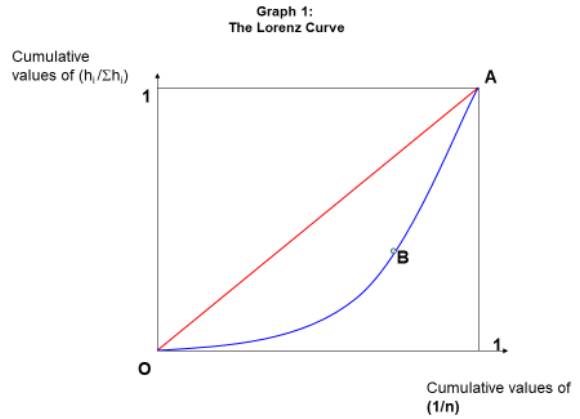
Clearly the Gini index I_G will be equal to 0 when all individuals have the same health level h_i, in which case the Lorenz curve will be identical to the diagonal OA.

2.1.2. Measuring health inequality using the Bonferroni index

The Gini index is not the only index that can be used to measure health inequality. One interesting inequality index is the so-called Bonferroni index I_B (see Bonferroni, 1930; Tarsitano, 1990; and Chakravarty, 2007) which, in the case of health inequality, is defined as follows:

$$I_B = \{[(1/n)\sum_{i=1}^{n} h_i] - [(1/n)\sum_{i=1}^{n} (1/i)\sum_{j=1}^{i} h_j]\}/[(1/n)\sum_{i=1}^{n} h_i] \quad (6)$$

assuming that $0 \le h_1 \le ... \le h_n$.

Bárcena-Martin and Silber, 2013, have proven that the Bonferroni index could also be expressed as follows:

$$I_B = e'Bs \qquad (7)$$

where e' is a 1 by n row vector of the n individual population shares which are evidently all equal to $(1/n)$ and B, henceforth called the B-matrix or Bonferroni matrix, is defined as:

$$B = \begin{bmatrix} 0 & n/2 & n/3 & ... & n/i & ... & n/(n-1) & n/n \\ -n/2 & 0 & n/3 & ... & n/i & ... & n/(n-1) & n/n \\ -n/3 & & 0 & ... & n/i & ... & n/(n-1) & n/n \\ .... & & & ... & ... & ... & n/(n-1) & n/n \\ -n/i & -n/i & -n/i & ... & 0 & ... & n/(n-1) & n/n \\ ... & ... & ... & & ... & ... & ... & ... \\ -n/(n-1) & -n/(n-1) & -n/(n-1) & ... & -n/(n-1) & ... & 0 & n/n \\ -n/n & -n/n & -n/n & ... & -n/n & ... & -n/n & 0 \end{bmatrix} \quad (8)$$

Note that the B-matrix may be defined as follows: assuming that i refers to the line and j to the column, its typical element b_{ij} is equal to 0 if $i = j$, to $-(n/i)$ if $j \prec i$, and to (n/j) if $j \succ i$. This clearly implies that $b_{ij} = -b_{ji}$ for $i \neq j$.

There exists also a graphical device to derive the Bonferroni index. Let us plot on the horizontal axis the cumulative population shares $[(1/n),(2/n),...,((n/n)=1)]$. On the vertical axis, we plot the ratio of the cumulative health shares divided by the cumulative population shares, the individuals being ranked by increasing health h_i. In other words, on the vertical axis we plot the values:

$$\left\{[(h_1/n\bar{h})/(1/n)], \left[\left((h_1+h_2)/n\bar{h}\right)/(2/n)\right], ..., \left[\left((h_1+h_2+\cdots+h_n)/(n\bar{h})\right)/(n/n)\right]\right\},$$

that is, the cumulative values $(h_1/\bar{h}), \left(((h_1+h_2)/2)/\bar{h}\right), ..., \left(((h_1+h_2+\cdots+h_n)/n)/\bar{h}\right)$,

where $\bar{h}$ is the average health level in the population.

The Bonferroni index I_B is then defined as the area lying above the Bonferroni curve (see Graph 2) in the one by one square defined by the two sets of cumulative values (see Tarsitano, 1990).

Graph 2:
The Bonferroni Curve
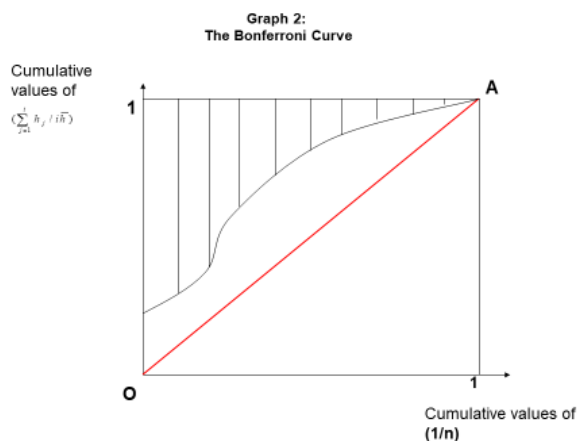
Aaberge, 2007, stressed several attractive properties of the Bonferroni index or what he called "scaled conditional mean curve" which is just another name for the Bonferroni (1930) curve. He thus stressed that the Bonferroni curve which, like the Lorenz curve, is bounded by half of the unit square and is also strongly related to the shape of the underlying distribution curve F: when F is convex (strongly skewed to the left), the Bonferroni curve is concave and when F is concave (strongly skewed to the right), the Bonferroni curve is convex. Aaberge, 2007, also proved that the Bonferroni index satisfies the principle of diminishing transfers (see Kolm, 1976; Shorrocks and Foster, 1987) for all strictly log-concave distributional functions and the principle of positional transfer sensitivity (see Mehran, 1976) for all distributional functions. Finally, the Bonferroni index may also be interpreted in terms of relative deprivation (see Chakravarty, 2007).

2.2. The bivariate approach to health inequality measurement

2.2.1. The bivariate approach and Gini's Concentration index

Let now y be a vector whose elements y_i refer to some measure of the standard of living of individual i (e.g., her/his income). We can now define the concentration index (for more details on this concept, see Kakwani, 1980) C_G as the product:

$$C_G = e'G\tilde{s} \qquad (9)$$

where $\tilde{s}$ is the column vector of the health shares s_i, the latter being now classified by decreasing values of y_i rather than h_i. Here also it can be shown (see, O'Donnell et al., 2008) that C_G in expression (9) may be expressed as:

$$C_G = (2/\bar{h})Cov(h_i,\tilde{r}_i) \qquad (10)$$

where Cov refers to the covariance between health and income and $\tilde{r}_i = (i/n)$ is the fractional rank of individual i in the distribution of the

standard of living y_i, the individuals being ranked this time by increasing values of y_i.

Here again it is possible to give a graphical interpretation, called Gini concentration curve, to this concentration index. As before, plot on the horizontal axis the cumulative values of $(1/n)$, that is, plot the shares (i/n) with i varying from 1 to n. On the vertical axis, plot the cumulative values of the shares s_i that were defined previously, these shares being ranked by increasing values of y_i. One then obtains a curve that will start at point (0,0) and end at point (1,1). It can be shown that if this curve lies mostly under the 45-degree line joining the points (0,0) and (1,1), the concentration index C_G will be positive, indicating that as a whole health increases with the standard of living. If, on the contrary, this curve lies mostly above the 45-degree line, C_G will be negative, indicating that health decreases with the standard of living. C_G will be equal to 0 either when all individuals have the same health level h_i, whatever their standard of living y_i, or when the sum of the areas lying below the 45-degree line is exactly equal to the sum of areas lying above the 45-degree line (the concentration curve, although increasing, can clearly cut several times the 45-degree line). It can be proven that the concentration index C_G is in fact equal to the sum of the areas lying between the concentration curve and the 45-degree line, the areas below the 45-degree line being given a positive sign and those above this line being given a negative sign.

Here also, when n is big enough ($n \rightarrow \infty$), the concentration index may be expressed as (see Wagstaff and van Doorslaer, 2002):

$$C_G \approx [(2/\bar{h}) \sum_{i=1}^{n} h_i \tilde{r}_i] - 1 \qquad (11)$$

where $\tilde{r}_i$ is individual's i fractional rank in the distribution of the standard of living indicator y_i, this indicator being ranked by increasing values.

Note (see O'Donnell et al., 2008) that expression (11) may also be written as:

$$C \approx 1 - \{(2/n\bar{h}) \sum_{i=1}^{n} h_i (1 - \tilde{r}_i)\} \qquad (12)$$

Using Yitzhaki's, 1983, ideas on the extension of the Gini index, we can also define an *extended concentration index* (see O'Donnell et al., 2008) written as $C(v)$:

$$C_G(v) = 1 - \{(v/n\bar{h}) \sum_{i=1}^{n} h_i (1 - \tilde{r}_i)^{(v-1)}\} \qquad (13)$$

with $v \succ 1$.

It is easy to observe that when v, the *inequality aversion parameter*, is equal to 2, one obtains the definition of the concentration index given in (11).

Note that when one works with grouped data, expression (12) will be written (see O'Donnell et al., 2008) as:

$$C \approx 1 - \{(v/\bar{h}) \sum_{t=1}^{T} f_t h_t (1 - \tilde{r}_t)^{(v-1)} \qquad (14)$$

where f_t refers to the share of group t in the population (sample), h_t is the average level of health in the tth group and $\tilde{r}_t$ is the fractional rank of group t and is defined (see O'Donnell et al., 2008) as:

$$\tilde{r}_t = \sum_{k=1}^{t-1} f_k + (1/2) f_k \qquad (15)$$

2.2.2. Implementing the bivariate approach on the basis of the Bonferroni index

We can also try to define a "Bonferroni concentration index" C_B. This time, however, the "conditional means" would be based on a ranking of the health variable by increasing

income rather than by increasing values of the health variable.

To compute this "Bonferroni concentration index," we could also draw a graph (see Graph 3) called a "Bonferroni concentration curve." Note that this curve may at times lie above the equality line (horizontal line at height 1) and, in such a case, the area above such an equality line would be given a negative sign.

Graph 3:
The Bonferroni Concentration Curve
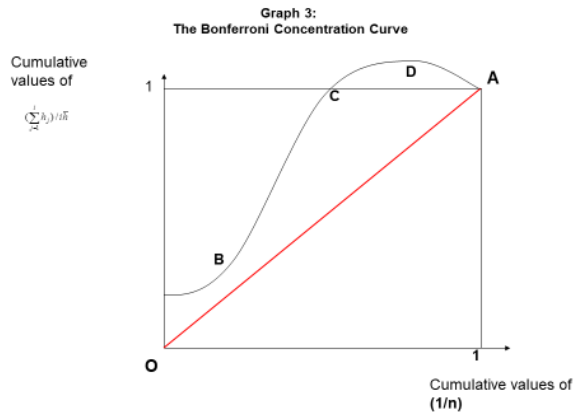
2.3. Measuring Health Achievements

2.3.1. *Health achievement as a measure of welfare*

Following earlier work by Kolm, 1968, and Atkinson, 1970, Sen, 1974, suggested an index of welfare combining per capita income and the inequality of incomes. This index corresponds to the concept of "equally distributed equivalent level of income" proposed by Atkinson, 1970, a notion identical to that of "equal equivalent income" defined by Kolm, 1968. The "equally distributed equivalent level of income" is in fact equal to the product of the average income times the complement to one of the inequality index (e.g., Gini or the Atkinson indices of inequality) which can be derived from the social welfare function selected by some social planner.

An extension of this idea to the field of health was proposed by Silber, 1983, who defined what he called "the equivalent length of life." Silber, 1983, suggested using the "equivalent length of life" as a measure of development, on the basis of a recommendation made by Hicks and Streeten, 1979, to use life expectancy as a measure of

development because "…some measure of health, such as life expectancy at birth, would be a good single measure of basic needs."

Calling $\bar{l}$ the life expectancy at birth and $I(l)$ some measure of the inequality of the durations of life (life expectancy corresponds evidently to the average duration of life) derived from a life table, Silber defined the "equivalent length of life" ELL as:

$$ELL = \bar{l}[1 - I(l)] \qquad (16)$$

As indices of inequality in the durations of life (for a very recent survey of length of life inequality in the world, see Smits and Monden, 2009), one may use, as proposed by Silber, 1983, those suggested by Atkinson, 1970, or Kolm, 1976. One can also use the Gini index, as was stressed by Silber, 1988.

While the "equivalent length of life" was originally introduced as a measure of development, it can naturally be used also as a measure of health achievement (see Kolm, 2002, for a thorough analysis of the application of concepts of justice to the domain of health). Expression (16) may in fact be applied to any indicator of health and will then measure health achievement on the basis of such an indicator. One would then assume that a measure of health achievement should be an increasing function of the average level of the health indicator selected and a decreasing function of the degree of inequality of the distribution of this health indicator. This would in fact imply that in computing the measure of health achievement, the weight of an individual would be higher, the lower the value for this individual of the health indicator selected.

First graphical interpretation: The Generalized Lorenz Curve

We know that in the case of income inequality analysis, the Lorenz curve is obtained by plotting on the horizontal axis the cumulative population shares and on the vertical axis the cumulative income shares. If, on the vertical axis, we now multiply the product of the cumulative income shares by the average income, we will obtain what has been called a *Generalized Lorenz curve* (see Shorrocks, 1983). This curve will therefore

start at point (0,0) and end at point $(1, \bar{x})$ where $\bar{x}$ is the average income. As the area lying between the diagonal and a Lorenz curve is known to be equal to half the Gini index I_G, the area lying between a generalized Lorenz curve and a line starting at point (0,1) and ending at point $(1, \bar{x})$, will be equal to half the product $\bar{x} I_G$. As a consequence, the area lying below a generalized Lorenz curve will be equal to half the product $\bar{x}(1 - I_G)$. One may remember that Sen, 1974, suggested, in fact, to use the product $x_{EG} = \bar{x}(1 - I_G)$ as a measure of welfare.

One can naturally apply the concept of generalized Lorenz curve to measure the welfare derived from some health attainment. Such a welfare measure x_{EG} would in fact give a greater weight to an individual, the lower the level of his or her health.

A second graphical interpretation: Defining a generalized Bonferroni curve

We can similarly derive a generalized Bonferroni curve. In the case of health, one would plot on the horizontal axis the cumulative population shares and on the vertical axis the cumulative values $\{(h_1), ((h_1 + h_2)/2), ..., ((h_1 + h_2 + ... + h_n)/n)\}$. Such a generalized Bonferroni curve, like the generalized Lorenz curve, will start at point (0,1) and end at point $(1, \bar{h})$. As the Bonferroni index I_B is equal to the area lying above the Bonferroni curve, the area lying above the generalized Bonferroni curve will be equal to $B\bar{h}$ and therefore the area lying below the generalized Bonferroni curve will be equal to $h_{EB} = \bar{h} - B\bar{h} = \bar{h}(1 - B)$. The measure h_{EB} can therefore be considered a measure of welfare similar to the index x_{EG} defined by Sen, 1974. This measure h_{EB} gives in fact a greater weight to an individual, the lower the level of his health.

However, one may think of an alternative approach, one where the weight of an individual, when measuring health-related welfare, would be higher, the lower his/her income, rather than the

lower his/her health. This is in fact the approach taken by Wagstaff, 2002, in his definition of health achievement. We will call such an approach the pro-poor approach to the measurement of health achievement.

2.3.2. A pro-poor approach to the measurement of health achievement

Using what was defined previously as the bivariate approach to health inequality measurement, Wagstaff, 2002, proposed to define health achievement as the weighted average of the health levels of the various individuals, the weights being higher, the poorer the individual. More precisely the health achievement A_v is defined as follows:

$$A_v = (1/n) \sum_{i=1}^{n} h_i v (1 - \tilde{r}_i)^{(v-1)} \qquad (17)$$

and it can be proven (see Wagstaff, 2002) that

$$A_v = \bar{h}(1 - C_G(v)) \qquad (18)$$

Note that if h_i refers to "ill-health," so that higher values of A_v refer to a worse situation, and if the concentration ratio $C(v)$ is negative (implying that ill health is higher among the poor), we will end up with an achievement index A_v which will be higher than $\bar{h}$. In other words, health achievement turns out to be worse than what we would have concluded on the basis of only the mean level of "ill-health" $\bar{h}$.

A relevant illustration of health outcomes in the present case could be, for example, the hemoglobin levels expressed in grams per deciliter (g/dl). Maasoumi and Lugo, 2008, used this indicator in their analysis of multivariate poverty in Indonesia, the reason being that low levels of hemoglobin indicate deficiency of iron in the blood, and iron deficiency is thought to be the most common nutritional deficiency in the world today (see Thomas et al., 2003, p. 4). Given that normal values of hemoglobin depend on sex, age, altitude, and eventually also on the ethnic group to which the individual belongs, one

generally has to use adjusted individual values of levels of hemoglobin.

A graphical interpretation: Defining a generalized Gini concentration curve

In the same way as we derived generalized Lorenz curves, we can now derive generalized Gini concentration curves. We simply have to order the vertical coordinates of the generalized Lorenz curves not by increasing values of the health variable but by increasing income (see Graph 4). It is then easy to derive that the area under such a generalized Gini concentration curve will be equal to half the product $\bar{h}(1 - C_G)$. One may then observe that this product $\bar{h}(1 - C_G)$ is in fact identical to what we labeled before the health achievement index A_2.

Graph 4:
The Generalized Gini Concentration Curve
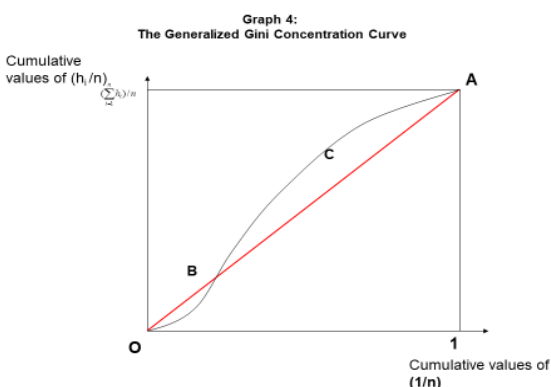
A second graphical interpretation: The generalized Bonferroni concentration curve

One can similarly show (see Graph 5) that the area under a generalized Bonferroni concentration curve will be equal to the product $\bar{h}(1 - C_B)$. This product is, in the case of health, evidently identical to the health achievement index A_B that was previously defined.

Graph 5:
The Generalized Bonferroni Concentration Curve
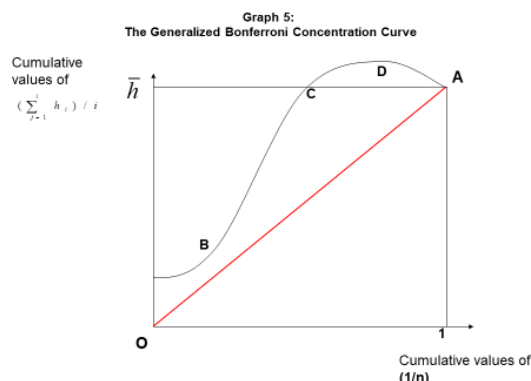
3. AN EMPIRICAL ILLUSTRATION: SURVIVAL RATES AND SURVIVAL GROWTH RATES IN SEVEN EAST AFRICAN COUNTRIES

The database on which the empirical investigation is based is the Health Equity Monitor of the Global Health Observatory Data Repository of the World Health Organization (see W.H.O., 2015a). The health indicator we use (infant mortality, from which we derive infant survival) and the dimension of inequality we analyze (socioeconomic status) were originally obtained from Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS). DHS and MICS are large-scale, nationally representative household health surveys that are routinely conducted in low- and middle-income countries. Standardized questionnaires are used to collect information through face-to-face interviews with women aged 15 to 49 years. These surveys provide all the data required for health inequality monitoring. DHS and MICS data have high comparability between settings and over time (for more details, see W.H.O., 2015b).

Economic status is described in terms of a household wealth index. Country-specific indices were based on owning selected assets and having access to certain services, and constructed using principal component analysis. Within each country, the index was used to create quintiles, thereby identifying five equal subgroups, each accounting for 20% of the population.
In Table 1, we compute for seven East African countries (Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, and Uganda) during various years, the five Gini-related indicators

defined previously. These are the Gini index I_G of inequality of survival rates, the Gini Concentration ratio C_G of survival rates, the average survival rate $\bar{h}$ (per thousand), the "equivalent survival rate" h_{EG} (per thousand), and the "pro-poor survival rate" $A_2 = \bar{h}(1 - C_G)$ (per thousand).

First, as far as the Gini index of survival rates is concerned, we observe that the values of the Gini index are much lower than those observed when analyzing income inequality. The highest value equal to 0.018 is observed for Mozambique in 1997. Hence, it is clear that differences in survival rates between the five socioeconomic groups distinguished are relatively small. Also note that the Gini index of survival rates generally decreased over time but there are exceptions. Thus, there was some increase in Ethiopia between 2005 and 2011, in Rwanda between 2000 and 2005, and in Uganda between 2000 and 2006.

Second, as far as Gini's concentration ratio is concerned, we see that it is almost always positive, indicating that infant survival is higher if the economic status of the subpopulation (quintile) is also higher. The only exceptions are Ethiopia and Uganda in 2000 where the concentration ratio is negative but extremely small in absolute value.

Third, the average survival rate increased regularly over time in all countries except Kenya. In Ethiopia, the survival rate increased by 4.5% between 2000 and 2011. In Madagascar, between 1997 and 2008, there was an increase of 4.7%. The increase in Malawi between 2000 and 2010 was 3.2% while, between 1997 and 2011, it was 8% in Mozambique. In Rwanda, between 2000 and 2010, the increase was equal to 6.6% while it was equal to 2.4% in Uganda between 1995 and 2011. Finally, in Kenya there was a decrease

between 1993 and 2003 but between 1993 and 2008 there was still a small increase (0.3%) in the infant survival rate.

If we now compute the rate of increase in what we called the equivalent growth rate h_{EG}, we observe that the increase was of 4.9% in Ethiopia between 2000 and 2011, of 5.7% in Madagascar between 1997 and 2008, of 5.1% in Malawi between 2000 and 2010, of 9.5% in Mozambique between 1997 and 2011, of 7.2 in Rwanda between 2000 and 2010, of 2.8% in Uganda between 1995 and 2011, and of 0.9% in Kenya between 1993 and 2008. Clearly, the rates of increase in the equivalent survival rates h_{EG} are always higher than those in the average survival rates because, in all countries, there was generally both an increase in the average infant survival rates and a decrease in the inequality in survival rates.

Let us finally compute the rates of increase in the "pro-poor survival rates" $A_2 = \bar{h}(1 - C_G)$. This increase was equal to 3.7% in Ethiopia between 2000 and 2011, of 5.7% in Madagascar between 1997 and 2008, of 4.8% in Malawi between 2000 and 2010, of 9.4% in Mozambique between 1997 and 2011, of 7.3% in Rwanda between 2000 and 2010, of 2.6% in Uganda between 1995 and 2011, and of 1.0% in Kenya between 1993 and 2008. We note that in all countries except Madagascar, the rate of increase in the "pro-poor infant survival rate"

$A_2 = \bar{h}(1 - C_G)$ was smaller than that of the "equivalent infant survival rate" h_{EG}. In Madagascar, the rates of increase were identical. These results clearly indicate that if we give more weight to the infant survival rates, the poorer (in terms of standard of living) the quintile, the smaller the improvement over time in survival rates .

Table 1: Computing inequality in survival rates and health achievements in seven East African countries on the basis of Gini index

Country and year	Gini index I_G of inequality of survival rates	Gini Concentration ratio C_G of survival rates	Average survival rate $\bar{h}$ (per thousand)	Equivalent survival rate h_{EG} (per thousand)	Pro-poor survival rate $A_2 = \bar{h}(1 - C_G)$ (per thousand)
Ethiopia 2000	0.0108	-0.0006	887.7	878.1	888.2
Ethiopia 2005	0.0052	0.0035	920.9	916.1	917.7
Ethiopia 2011	0.0074	0.0069	927.7	920.8	921.3
Kenya 1993	0.0117	0.0113	939	928.1	928.4
Kenya 1998	0.0116	0.0115	932	921.2	921.3
Kenya 2003	0.0092	0.0078	926	917.5	918.8
Kenya 2008	0.0054	0.0036	941.5	936.4	938.1
Madagascar 1997	0.0146	0.0146	905.3	892.1	892.1
Madagascar 2003	0.0126	0.0122	933.8	922.1	922.4
Madagascar 2008	0.0056	0.0056	948.3	943	943
Malawi 2000	0.0095	0.0056	898.1	880.6	884.1
Malawi 2004	0.0083	0.0083	908.5	900.9	900.9
Malawi 2010	0.0018	0.0002	927.1	925.4	926.1
Mozambique 1997	0.0179	0.0173	860.8	845.4	845.9
Mozambique 2003	0.0172	0.0168	881	865.8	866.2
Mozambique 2011	0.0048	0.0044	929.7	925.3	925.6
Rwanda 2000	0.0096	0.0093	882	873.5	873.8
Rwanda 2005	0.0107	0.0064	898.4	888.8	892.7
Rwanda 2010	0.0038	0.0024	939.8	936.2	937.6
Uganda 1995	0.0092	0.0075	914.5	906.2	907.7
Uganda 2000	0.0034	-0.0009	910.8	907.7	911.6
Uganda 2006	0.0074	0.0074	917.9	911.1	911.1
Uganda 2011	0.0053	0.0053	936.3	931.3	931.3

A similar study can be conducted on the basis of the five Bonferroni-related indices that are presented in Table 2. The results turn out to be very similar and therefore, we will not repeat the detailed analysis made previously on the basis of the Gini-related indices

Table 2: Computing inequality in survival rates and health achievements in seven East African countries on the basis of Bonferroni index

Country and year	Bonferroni index I_B of inequality of survival rates	Bonferroni Concentration ratio C_B of survival rates	Average survival rate $\bar{h}$ (per thousand)	$h_{EB} = \bar{h}(1 - I_B)$ (per thousand)	$A_B = \bar{h}(1 - C_B)$ (per thousand)
Ethiopia 2000	0.01431	-0.004355	887.7	875.0	891.5
Ethiopia 2005	0.00547	0.002798	920.9	915.8	918.3
Ethiopia 2011	0.00976	0.009369	927.7	918.6	919.0
Kenya 1993	0.01508	0.01485	939.0	924.9	925.1
Kenya 1998	0.0148	0.01469	932.0	918.2	918.3
Kenya 2003	0.01162	0.01033	926.0	915.3	916.5
Kenya 2008	0.005873	0.004306	941.5	936.0	937.4
Madagascar 1997	0.0168	0.0168	905.3	890.1	890.1
Madagascar 2003	0.01506	0.01412	933.8	919.8	920.7
Madagascar 2008	0.00631	0.00631	948.3	942.4	942.4
Malawi 2000	0.01149	0.007421	889.1	878.9	882.5
Malawi 2004	0.009842	0.009842	908.5	899.5	899.5
Malawi 2010	0.002527	0.000333-	927.1	924.7	927.4
Mozambique 1997	0.02339	0.02263	860.8	840.7	841.3
Mozambique 2003	0.01977	0.01868	881.0	863.6	864.5

Mozambique 2011	0.006258	0.00607	929.7	923.9	924.1
Rwanda 2000	0.0117	0.01125	882	871.6	872
Rwanda 2005	0.01245	0.007374	898.4	887.2	891.8
Rwanda 2010	0.004579	0.003089	939.8	935.5	936.9
Uganda 1995	0.01177	0.009969	914.5	903.8	905.4
Uganda 2000	0.004916	0.001077-	910.8	906.3	911.8
Uganda 2006	0.009004	0.009004	917.9	909.6	909.6
Uganda 2011	0.006444	0.006444	936.3	930.3	930.3

4. CONCLUDING COMMENTS

In this paper, we defined three indices that summarize the extent of infant survival in a given country. The first one is simply the average infant survival rate, that is, the complement to 1000 of the infant mortality rate (expressed in per thousand births). The second indicator takes into account the inequality in infant survival rates between population subgroups, in the same way as Sen, 1974, suggested a measure of welfare which would be an inequality adjusted per capita GDP or income. Finally, a third indicator was defined, based on a bivariate approach to the measurement of health inequality. This indicator adjusted the average infant survival rate by giving more weight to a population subgroup whose socioeconomic status is lower. The computation of the last two indicators requires the use of an inequality index and of a concentration ratio. We selected two measures of inequality, the Gini and Bonferroni index, as well as two concentration ratios, derived from the Gini index and related to the Bonferroni index.

The empirical illustration of this paper looked at infant survival in seven East African countries (Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, and Uganda) mainly during the first decade of the 21st century. It appears that there was an increase over time in the average infant survival rate and that this improvement was stronger when taking into account changes in the inequality in infant survival rates. Giving a greater weight in the computations to population subgroups with a lower socioeconomic status did not show as strong an improvement in infant survival than when taking into account the inequality in infant survival. These findings have some important implications as they show how policy makers should look at infant mortality before reaching any conclusion concerning its evolution over time and how it is affected by the standard of living.

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An Analysis of Exports and Imports and Their Effect on the Economic Growth in Iraq

Shene Mohammad Kamaran Abdulla[1], Hazhar Khalid Ali[2*]

[1]Department of Technical Public Relations and Marketing, Technical College of Administration, Sulaimani Polytechnic University, Sulaimani, Kurdistan Region - F.R. Iraq

[2]Department of Banking and Financial Sciences, College of Administration and Financial Sciences, Cihan University Slemani, Sulaimanyia, Kurdistan Region - F.R. Iraq

*Corresponding author's email: hazharbox@gmail.com

A B S T R A C T

The Iraqi economy faces more challenges than opportunities, especially in recent years due to the civil war, while basic reforms for merging the private and public sector have commenced. This paper examines the causal relationship between exports, imports, and Iraq's economic growth. The data are annual time series for the period 1980-2017. Thereafter, the data are stationary in different levels. Johansen cointegration is applied to figure out the long-run association among the variables. Moreover, Granger causality test has been used to direct the causality among variables. This paper finds that in the long run, exports and imports on gross domestic product are co-integrated and variables have a long-run association. The Granger causality result shows that exports affect economic growth, while imports also have a positive impact on Iraq's economic growth. On the contrary, the relationship between exports and imports show that any increase in the volume of exports will increase the volume of imports. However, the converse is not true as the volume of imports does not influence exports in Iraq.

Keyword: Economic growth, Exports, Imports, Johansen co-integration, Granger causality

1. INTRODUCTION

An increase in the percentage of exports is considered to improve the country's production which will lead to increased employment and growth in the economy. Din et al., 2003, used the Export-Led Growth (ELG) hypothesis to figure out the causal relationship between exports and economic growth. First, export growth and international trade play important roles in enhancing growth in the economy in view of the fact that they provide positive benefits to externalities. For instance, companies engaged in trading exports can appreciate advantages in the areas of productivity, asset diversification, more prominent asset utilization, improper use of economy of scope and scale, and expansion of technology and its development through competition with foreign traders. Second, expansion in export also leads to participation in the foreign exchange market and thus permits imports of capital to the country which transfers potential income and production to the country in the long term. Third, the competition in the international market affects the economy's scope and scale and speeds up productivity.

Given the hypothetical contentions mentioned, the observed solid correlation between export and growth in production is described in the empirical evidence for the export-led growth (ELG) hypothesis. Whereas, Import-Led Growth (ILG) proposes that the development of the economy can be obtained principally by expansion in import. Endogenous growth models (EGM) demonstrate that import could be a critical factor for growth of economy in the long term as it gives the companies access to the intermediate requirement factors and foreign innovation (Coe, 1995). An expansion in the volume of imports can fill in as a mechanism for developing countries to exchange of foreign

information from developed countries (Ball & Mazumder, 2011).

The gross domestic product (GDP) is the market value of all produced goods and services of a country during a period. The GDP of Iraq has increased over the years, with its present percentage estimated at 0.32% of the world economy. The GDP of Iraq increased from US $1.70 billion in 1960, recorded as its lowest, to US $197.72 billion in 2017. The highest figure of US $234.65 billion was recorded in 2014. Further information is presented in Figure 1 and Table 1.
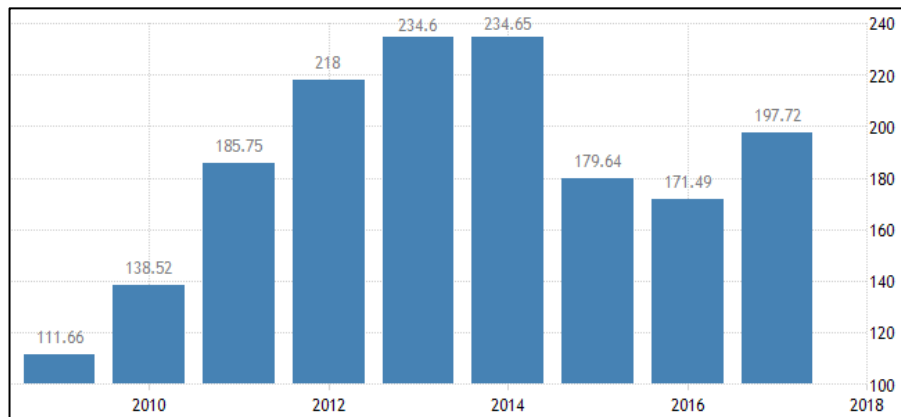

Figure 1. The Gross Domestic Product in Iraq

Table 1: Growth domestic production in Iraq						
Iraq GDP	Last	Previous	Highest	Lowest	Unit	
GDP Annual Growth Rate	-0.50	11.00	54.16	-56.40	Percent	[+]
GDP	197.72	171.49	234.65	1.70	USD Billion	[+]
Gross National Product	224153528.60	240917008.90	240917008.90	20594974.80	IQD Million	[+]
GDP per capita	5545.90	5750.60	5750.60	1427.90	USD	[+]
GDP per capita PPP	15663.99	16242.10	16242.10	4033.00	USD	[+]

With regard to exports, Iraq takes 43rd place in the world economy. It exported $60.8 billion and imported $29.7 billion in 2017, resulting in a positive trade balance of $31 billion. The GDP was about $192 billion and the per capita income was $16.9 thousand in 2017. Its main exports were crude oil ($57.5 billion), refined oil ($1.47 billion), pure gold ($1.4 billion), gas ($92.5 million), and

tropical fruits ($66.7 million). While the main imports were jewelry ($960 million), medicine ($677 million), meat ($643 million), cars ($629 million), and gold ($621 million) (Gabriela, Zaqeer, & Al-saedi, 2016). Further information is provided in Figure 2, where the blue and red lines represent the amount of exports and imports, respectively.
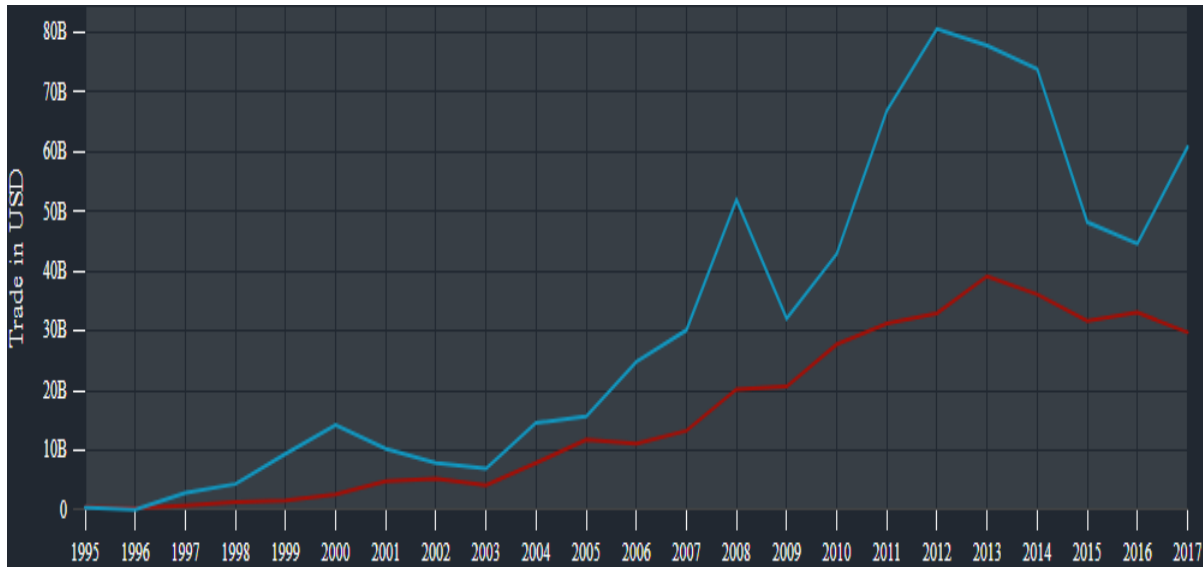
Figure 2. Exports and imports in Iraq.

This paper analyzes the causal correlation among exports, imports, and economic growth in Iraq. Conflicting with the most recent studies of ELG hypothesis, this investigation indicates an expanded generation to test for the impact of export and import to the GDP to figure out the causality and long-term correlation between them. Moreover, the data are annual time series from 1980 to 2017 undertaken in Iraq, using the methods of co-integration and Granger tests (Manamperi, 2016; Todshki & Ranjbaraki, 2016; Sciencedirect, 2013).

The paper is classified in the following manner. In the following section, Literature Review, previous results are provided, Section 3 provides data and methodology, Section 4 provides details on the empirical models and results of the analysis and finally, Section 5 provides discussions and conclusion to the paper.

2. LITERATURE REVIEW

Fojtíková, 2014, used quarterly data for Slovakia for the period 2001 - 2010, where Granger causality test was utilized. To begin with, the data were arranged for calculation. Export and GDP were adjusted. Test outcomes demonstrated that exports, imports, and GDP are stationary at first difference. This outcome required further investigations, and Johansen cointegration test was applied. The test showed positive long-term correlation between

foreign direct investment (FDI) and GDP, in addition to a long-run association between exports and GDP. Awokuse, 2007, adds to this study by utilizing a model of neoclassical growth and multivariable co-integration VAR method to research the impacts of imports, exports, and GDP in Poland, Czech Republic, and Bulgaria. The test result for Bulgaria showed the existence of empirical evidence for both hypotheses of ELG and ILG. In the case of Czech Republic, the result of the Granger causality test driven from export and import to GDP provides the empirical evidence for ELG and ILG. Interestingly, just the ILG speculation is upheld in the case of Poland. In conclusion, this current examination's findings show the rejection of import and the particular focal point of numerous previous investigations simply on the impact of export as the key for economic growth.

On the contrary, the outcome of an investigation by Neves et al., 2016, of more than 340 companies over the period 2006 - 2012 demonstrates that there is a direct correlation between the companies' decisions to export, and take part in Research and Development (R&D). Hence, increased participation in Research and Development (R&D) leads to an increase in the companies' exports. Such outcomes propose the existence of correlation between exports and R&D, and this outcome is in accordance with the latest studies in that field, most

strikingly with that by Oum et al., 2018. The causality between imports and economic growth is additionally explored by Burchart-Korol et al., 2018, for Indian manufacturing companies by testing the self-determination hypothesis for large volumes of import

In the study by Demir et al., 2014, the economic growth of Turkey declined due to the crisis in Iraq as it had been importing goods and services from Turkey, as well as due to the significant changes that occurred in Turkey in 1980. Assessment was carried out from 1988 which was the year break down between Iraq's and Turkey relations when exports of Turkish influenced, until the prohibition of Iraq has terminated by United Nations in 2003. Finally, expected returns were discounted from the realized returns from the exports to figure out the economy's depreciation in that period in Turkey. Todshki & Ranjbaraki, 2016, found the existence of causality between export, import, and economic growth in Iran for the period of 1995 to 2016. It is shown that the association of economic growth with export is bidirectional, and imports also have an impact on economic growth. On this premise, the theory of gross domestic product has a significant and positive effect on the GDP of Iran.

As the foreign investments concerned in business relationships with the Arabic country face more challenges than opportunities, corruption remains to be the principal obstruction for making an appropriate atmosphere for drawing in potential partners and cultivating ties with foreign investors.

3. DATA AND METHODOLOGY

3.1. Data

The data are annual observations of Iraq's real GDP (y), real exports (x), and real imports (m), time series data are used from 1980 until 2017, which is 38 observations to investigate how the exports and imports affect the economic growth over the period. The data include Iraq's economic growth rate as represented by GDP, y, which is constant as a dependent variable and the exports and imports as independent variables over a period, with data gathered from World Bank and central bank of Iraq.

3.2. Methodology

In this study, three different types of tests are used and all of them were tested by the EViews 10 software program. In the first step, unit root test was applied to figure out the stationarity of the data, with GDP as a constant and dependent variable and exports and imports as independent variables. Second, Johansen cointegration test has been applied to identify co-integration among. Lastly, Granger causality test was employed to figure out the existence of causality among the variables or the variables' effect on each other during the period. Furthermore, one dependent variable was used in the model and other variables are independent variables illustrated as follows:

$$\ln GDP_t = \beta_0 + \beta_1 \ln E_t + \beta_2 \ln M_t + \varepsilon_t \qquad (1)$$

where lnGDP represents the logarithmic term of Economic growth, lnE represents the logarithmic term of real exports, and lnM represents the logarithmic term of real imports.

4. EMPIRICAL MODELS AND ANALYSIS RESULTS

4.1. Unit Root Test

The Phillips Perron (PP) and the Augmented Dickey Fuller (ADF) tests were applied in the models to determine the stationarity of the data, meaning the null hypothesis, H0, is not stationary or have unit root and alternative hypothesis stationary, or H0 is stationary meaning that as it does not have unit root, we can reject null hypothesis (H0) rather than accept an alternative hypothesis (H1). The results show that the data are stationary in different levels. Moreover, in case of the ADF, there may be a problem of autocorrelation because of the process for ADF test there are several different decisions, such as whether our models walk with trend and drift or just drift or none of them (trend and intercept). A sample model for ADF test is stated as follows (equations 2, 3, and 4), and further information is provided in Tables 2, 3, 4, and 5.

$$\Delta y_t = \beta1 + z y_{t-1} + \alpha_i + \epsilon_t \qquad \text{Intercept only} \quad (2)$$

$$\Delta y_t = \beta1 + \beta2_t + z y_{t-1} + \alpha_i + \epsilon_t \quad \text{Trend and Intercept} \quad (3)$$

$$\Delta y_t = z y_{t-1} + \alpha_i + \epsilon_t \qquad \text{No Trend no Intercept} \quad (4)$$

Table 1: ADF test results for the Unit Root (intercept)

Variables	Level						At the First difference				
	Prob.	Test statistic	Critical values			Prob.	Test statistic	Critical values			
			1%	5%	10%			1%	5%	10%	
GDP (y)	0.9851	0.5181	-3.62	-2.94	-2.61	0.0000	-7.322	-3.62	-2.94	-2.61	
Exports I	0.3283	-1.9008	-3.62	-2.94	-2.61	0.0001	-5.517	-3.62	-2.94	-2.61	
Imports (m)	0.2797	-2.0141	-3.62	-2.94	-2.61	0.0000	-6.253	-3.62	-2.94	-2.61	

Table 2: ADF test results for the Unit Root (intercept and trend)

Variables	Level						At the First difference				
	Prob.	Test statistic	Critical values			Prob.	Test statistic	Critical values			
			1%	5%	10%			1%	5%	10%	
GDP (y)	0.5547	-2.0515	-4.22	-3.53	-3.20	0.0000	-7.863	-4.23	-3.54	-3.20	
Exports I	0.4075	-2.3314	-4.22	-3.53	-3.20	0.0005	-5.408	-4.23	-3.54	-3.20	
Imports (m)	0.5647	-2.0328	-4.22	-3.53	-3.20	0.0000	-6.217	-4.23	-3.54	-3.20	

Table 3: Phillips-Perron (PP) test results for the Unit Root (intercept)

Variables	Level						First difference				
	Prob.	Test statistic	Critical values			Prob.	Test statistic	Critical values			
			1%	5%	10%			1%	5%	10%	
GDP (y)	0.9977	1.2133	-3.62	-2.94	-2.61	0.0000	-7.322	-3.62	-2.94	-2.61	
Exports I	0.2448	-2.1026	-3.62	-2.94	-2.61	0.0001	-5.517	-3.62	-2.94	-2.61	
Imports (m)	0.2250	-2.1561	-3.62	-2.94	-2.61	0.0000	-6.248	-3.62	-2.94	-2.61	

Table 4: Phillips-Perron (PP) test results for the Unit Root (intercept and trend)

| Variables | Level | | | | | First difference | | | | |
| | Test | | Critical values | | | Test | | Critical values | | |
	Prob.	statistic	1%	5%	10%	Prob.	statistic	1%	5%	10%
GDP (y)	0.6341	-1.9005	-4.22	-3.53	-3.20	0.0000	-9.579	-4.23	-3.54	-3.20
Exports I	0.3187	-2.5169	-4.22	-3.53	-3.20	0.0005	-5.408	-4.22	-3.53	-3.20
Imports (m)	0.4937	-2.1659	-4.22	-3.53	-3.20	0.0000	-6.226	-4.22	-3.53	-3.20

Note: All of the variables are at their normal logarithms.

Both ADF and PP tests were accomplished from broadest to the slightest explicit model which is taking out trend and intercept over the models. The unit root test has been conveyed in EViews.

4.2. Johansen Cointegration Test
After the unit root tests of variables which is GDP, E, and M were not stationary at level but when they are converted into first difference I (1), they will be stationary and should run the model by testing Johansen cointegration to determine whether variables move together and have a direct or indirect relationship, meaning that there should be co-integration among variables also. A Trace test shows the number of co-integrations that exist among variables. The methodology for Johansen cointegration is illustrated as follows in the VAR model:

$$X_t = \Pi_1 X_{t-1} + ... + \Pi_K X_{t-K} + \mu + e_t \quad \text{(for } t = 1, ... T) \quad (5)$$

Where Xt and Xt-1,…Xt-K represent the vectors and lagged values of probability variables;

Π1,….,ΠK represent coefficient matrices (number of assumptions that were not auto correlated in terms of error); μ represents an intercept vector and et represents a vector of random errors.

In this case, 1 to 4 lags interval has been used. First, the result of P value is less than 5%, so according to the P value, H0 can be rejected and H1 value, accepted. Regarding the trace statistic, H0 value is rejected which is greater than critical value. Second, according to the At most 1 (At most 1 means at least one co-integration equation or every rest variable is co-integrated having one co-integrating equation), if the P value is more than 5% H0 cannot be rejected rather than accept null hypothesis otherwise H1 can be rejected meaning that there is at least one co-integrated vector that exists. On the contrary, the test can check trace value here its smaller than critical value in this case null hypothesis cannot be rejected but accepted as null. Moreover, according to the trace statistic and Max-Eigen statistic, all variables are co-integrated, and they have a long-run association and move together. The results are shown in Table 5.

Table 5: Johansen test for co-integration

Hypothesis LNGDP LNE LNM	Trace Statistic	Critical Value		Prob.**	Result H0
		5%	1%		
None **	35.28567	29.797	35.45817	0.0105	Rejected
At most 1	8.453542	15.494	19.93711	0.4182	No rejected
At most 2	1.471422	3.841	6.634897	0.2251	No rejected

Note: Lags interval (at the first differences): from 1 to 4.

The Trace test demonstrates one co-integration at both 5% and 1% levels.

* (**) defines the hypothesis rejection at the 5% and 1% levels.

4.3. Granger Causality Test

After the Johansen cointegration test was applied, the Granger Causality test was applied to the model to determine whether the variables are related to each other or causality exists among the variables. Another factor to be considered in this stage is that the data should be stationary before running the Granger Causality test. The unit root test results confirmed that the data are stationary in different levels. The criterion for the Granger Causality test is to ensure that the null hypothesis can be rejected based on F-statistic approach. If the result of P value is more than 10%, the null hypothesis cannot be rejected rather accepting the alternative hypothesis should be rejected, otherwise the result of the P value if less than 10% null hypothesis can be rejected and accept alternative. If the null hypothesis is rejected, it means that GDP, which is a dependent variable, causes exports (E) and imports (M), which are independent variables. The model for the data is shown as follows, and the results of the Granger Causality test is shown in Table 6.

$$\ln GDP_t = \sum_{i=1}^{n} \alpha \; InE_{t-i} + \sum_{t-i}^{n} \beta \; InjGDP_{t-j} + U1_t$$

$$\ln E_t = \sum_{i=1}^{n} \lambda \; InE_{t-i} + \sum_{t-i}^{n} \delta InjGDP_{t-j} + U2_t$$

$$\ln GDP_t = \sum_{i=1}^{n} \alpha \; InM_{t-i} + \sum_{t-i}^{n} \beta \; InjGDP_{t-j} + U1_t$$

$$\ln M_t = \sum_{i=1}^{n} \lambda \; InM_{t-i} + \sum_{t-i}^{n} \delta InjGDP_{t-j} + U2_t$$

Where lnGDP represents the logarithm form of economic growth, lnE represents the logarithm form of exports, InM represents the logarithm form of imports, t represents the periods, t-1 represents the number of years of lag consumption variables, and Ut represents the residual of the fast model.

Table 6: Granger causality outcome

Lag levels	Lag 1		Result	Lag 2		Result
Null Hypothesis	F-Stat	P-value		F-Stat	P-value	
GDP and Exports E						

1	E Dose cause GDP	4.0728	0.0518	Reject null	3.0673	0.0614	Reject null
	GDP Dose not cause E	0.5275	0.4727	Do not reject null	0.3184	0.7297	Do not reject null
	GPD and Imports M						
2	M dose cause GDP	6.5175	0.0155	Reject null	4.1997	0.0247	Reject null
	GDP Dose not cause M	0.0901	0.7659	Do not reject null	0.0879	0.9160	Do not reject null
	Exports E ,Imports M						
3	M Dose not cause E	0.1235	0.7274	Do not reject null	0.1204	0.8870	Do not reject null
	E Dose cause M	1.8399	0.1842	Do not reject null	3.8985	0.0313	Reject null

5. DISCUSSION AND CONCLUSIONS

Nonetheless, the efforts of Iraq in world trade is admirable for the way in which it has managed to

the commencement of auxiliary changes for combining private and public area improvement is negotiable, the exports and imports, alongside with foreign direct investments, should back up the necessities of a nation like Iraq.

This study empirically applied the possible long-term associations and relationship of causality between economic growth, exports, and imports in Iraq. The findings of the Johansson cointegration test shows that all variables have a long-run association mean that economic growth in Iraq move in concurrence with exports and imports. Also, the Granger causality result shows that exports affect economic growth and imports have a positive impact on economic growth. On the contrary, imports caused by exports show that any increase in amount of exports will increase the amount of import. Moreover, the imports in Iraq do not cause exports.

Despite the fact that the parity of trade has balanced out in the recent years, Iraq still needs to improve its trade rules, as the foreign investors engaged in steady difficulties, as consistency and dedication to the common objective of recuperation and redevelopment of Iraq ought not to be underestimated by the international traders. While

business with the Arab nations face a larger number of difficulties than opportunities. Corruption is the primary obstacle in creating an atmosphere suitable for attracting potential accomplices and encouraging ties with the traders. While critical advancements in some trade sectors have been made, the government's failed attempts to execute anti-corruption policy have undermined the autonomy of Iraqi primary bodies as they struggle with corruption. With regard to the development of Iraq and the Levant because of untraceable subsidy, Iraq has acquiesced to the task of MENA's financial Action Force and focused on addressing insufficiencies in the framework by gathering the measures of the previously mentioned territorial body.

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