University of Ioannina
Department of Economics

FAMILY TIES AND ECONOMIC SHOCKS: AN EMPIRICAL STUDY

Mitrogiorgou Efstathia

Master of Science in Economic Analysis
Supervisor: Litina Anastasia

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Contents

Abstract

The purpose of the present thesis is to examine the effects of economic crises on family ties. To study this survey data about family ties is collected through the *EVS Longitudinal Data File 1981-2008* and data about economic shocks is constructed using the World Bank. The results reveal statistically significance in the relation between economic crises and family ties. Analytically, if an individual is exposed to an economic shock, he/she is more likely to have stronger family ties. Even though the thesis does not examine the mechanism, it is likely that this effect is caused by the fact that family may be the supportive network that a person needs in order to cope with emotional difficulties and economic issues.

Economic shock, economic crisis, family ties, family and crisis

Περίληψη

Σκοπός της παρούσας εργασίας είναι να εξεταστούν οι επιπτώσεις των οικονομικών κρίσεων στους οικογενειακούς δεσμούς. Για να μελετηθεί αυτό συλλέχθηκαν δεδομένα σχετικά με τους οικογενειακούς δεσμούς από το *EVS Longitudinal Data File 1981-2008* και δεδομένα σχετικά με τις οικονομικές κρίσεις κατασκευάστηκαν με τη χρήση δεδομένων από τη World Bank. Τα αποτελέσματα που προέκυψαν έδειξαν ότι υπάρχει στατιστική σημαντικότητα στη σχέση μεταξύ των οικονομικών κρίσεων και των οικογενειακών δεσμών. Αναλυτικά, εάν ένα άτομο εκτίθεται σε οικονομική κρίση, είναι πιο πιθανό να έχει ισχυρότερους οικογενειακούς δεσμούς. Αν και η παρούσα εργασία δεν εξετάζει το μηχανισμό, είναι πιθανό το αποτέλεσμα αυτό να προκύπτει από το γεγονός ότι η οικογένεια λειτουργεί υποστηρικτικά για το άτομο, ώστε να είναι σε θέση να αντιμετωπίσει συναισθηματικές και οικονομικές δυσκολίες που βιώνει.

Οικονομική κρίση, οικογενειακοί δεσμοί, οικογένεια και κρίση

1. Introduction

During the past ten years until nowadays, economic crisis around the world affects different aspects of life. As a result, the recent crisis tends to attract many researchers' interest to examine the way that it is able to modify different fields. The same has happened also in the past, regarding other crises and economic shocks, which have become a popular research issue. In fact, everyday life aspects, such as employment, education and politics have changed during the years of economic crisis. Loss of job, poverty, difficulty in access to education due to economic reasons and political crisis are some examples of the consequences of economic crisis, leading to lower standards of living.

The theme of the present thesis resulted from my interest in this recent phenomenon and the impact on everyday life. Therefore, in the present thesis, I examine the impact of economic crises on family ties. The relationship among the members of a family may be weak or strong and this relationship can be affected by different factors. Many researchers have connected family ties with economic systems and culture, corruption, labour market and geographical mobility, as well as political participation. In previous literature though I did not find any research connecting clearly the strength of family ties with the recent financial crisis.

Precisely, with the present thesis I aim to find how the importance of family for its members may be affected by an economic shock. In order to compare the relationship between family ties and economic shocks, that each respondent has experienced during his/her life, I use and combine data by the World Bank and the European Value Surveys.

The results being statistically significant reveal that family ties and economic shocks are two positively related variables. It is also found that family ties and respondents' age are two negatively related variables. The main result answering to the purpose of this thesis underline the fact that as economic shocks that a person has experienced during his/her life increase, family ties becomes stronger.

Concluding, this thesis is separated in three main parts. The first one is a literature review about family ties and economic shocks. The second part is the empirical part, including the description of the data I use in my study, my approach, the main results and the robustness tests. The last part includes the conclusions of the study.

2.   Literature Review

2.1 Family ties and socio-economic impact

Many researches have been conducted in the wider field of economics, focusing on the impact of different social factors and structures on a country's economy and other related outcomes. Nevertheless, family, as a social structure, often tends to be excluded, even if it is "the most primitive societal institution" (Alesina & Giuliano, 2014) and its relevance to development and other macroeconomic outcomes cannot be questioned.

The relation between family ties and economic development started being enlightened and reported quite long ago. Specifically, Weber (1904) connected family and the values observed within family systems with a whole country's economic system and also with culture. According to Alesina and Giuliano (2014), Weber supported that capitalistic societies may originate from loose family values, due to the characteristics, namely individuality, that those kinds of families' members tend to develop. Although Weber may be one of the first researchers who reported in a way the importance of family on the economy, in late '60s and early '70s this area of research had become more popular. More scientists and researchers focused on the family members' emotional bonds, as well as on the different family forms observed in different societies.

Quite later than Weber, Banfield (1958) argued as well that the bonds among a family's members have an essential impact on societies. Other researchers (Alesina & Giuliano, 2010, 2014; Coleman, 1990; Ermisch & Gambetta, 2010) also confirmed this idea, supporting that weak family ties and the promoted good conduct outside the family or relatives' system or other strongly related persons has as a result the possibility of promoting a society of abstract individuals or abstract institutions. Alesina and Giuliano (2014) support this idea, giving the example of a typical agricultural society, which usually includes large extended families, related to the fact that farming (as the main source of income) requires support and cooperation by many people, mostly children and close relatives. In addition, it seems that main values taught to

children of this kind of societies are responsibility, compliance, obedience and respect to elders.

The aforementioned example of extended agricultural family is only one type. Different types of families have been reported in the literature related to social sciences, while as family can be considered the group of people who are related to each other, focusing on the relationship between parent and child. Independently of the type, all families have something in common, the relationship among the family's members.

In fact, the strength of family ties is measured based on the relationship existing among the family members, as well as the love and respect that children are expected to have towards their parents. Specifically, within quite extensive existing literature (e.g. Alesina & Giuliano, 2010; Giuliano & Alesina, 2007; Litina & Varvarigos, 2018), the strength of family ties may be measured through specified questions, according to worldwide known databases, on which the collected data is published. WVS (World Value Survey) or EVS (European Value Survey) are this kind of databases, both extending over several years.

In particular, Giuliano and Alesina (2007) used three WVS variables, in order to measure the strength of family ties. The first variable was about the beliefs on the importance of the family in one person's life. The second variable meant to capture the respondent's agreement or disagreement on the love and respect that children are expected to show to their parents, independently of the parental behavior. Last, the third variable concerned the respondent's belief on the independence and the well-being of the parent's own life instead of the expectation of sacrificing all this for the well-being of the child. Additionally, Litina and Varvarigos (2018) used these variables as well, collected by EVS.

The measurement of the strength of family ties in the above-mentioned papers, as well as in even more existing literature, tends actually to be used, in order to study the family's influence on social and economic values. Particularly, Litina and Varvarigos (2018) look over the connection between family ties and corruption. They accordingly refer to existing evidence on the impact of family ties on various economic and social outcomes, such as labour

market, economic system and reform, ideology and political participation, education, geographical mobility, gender roles and trust.

The impact of family ties may be analyzed through these economic and social outcomes. In particular, family ties can be considered as a determinant factor regarding labour market and geographical mobility. According to Alesina and Giuliano (2010), strong family ties are associated with larger families and consequently higher home production. At the same time, it seems that they may be related to lower participation of women and youth in the labour market, as well as lower geographical mobility of families or family members, seeking for better work and living conditions. Low geographical mobility may derive from the difficulty of individuals with strong family ties to take the decision to move away from home. As a result, even if the labour market may need workers who are able and available to move from one place to another, sometimes workers are observed to choose lower wages, in order to be able to live near their families and preserve their emotional bond with them.

Except the availability of potential workers for geographical mobility, as well as the participation of women and youth in the labour force of a country's economy, Brumm and Brumm (2017) drew their attention to the economic reforms in the labour market, based on political participation. By using a political economy model, they showed that family ties and the resulting intra-family transfers can affect the behavior of the voters. For example, in Southern European countries, which tend to have strong family ties, the high levels of the unemployment rates have not led to major reforms in the labour market, while austerity measures may be able to block additional structural reforms. Alesina and Giuliano (2010) referred also to political participation and the role of family ties as a determinant factor, supporting that the much stronger family ties are, the less the political participation of the individual, due to the role of family ties as a substitute for generalized trust. In fact, it is obvious that the interest about political issues is affected and consequently the motivation of voters to elect politicians.

2.2 Economic shocks and recent economic crisis

Economic shocks are unexpected and unpredictable events that are able to result to drastic economic changes. These changes may be either positive or negative, but in any case, they may affect deeply the economy of a country. Economic shocks and the resulting changes can be caused due to many reasons, including among others wars or natural disasters ("economic shock", n.d.). In parallel, a person can be said that he or she has experienced an economic shock, if he or she has passed at least one year, during his or her ''impressionable years'', in which the real regional per capita GDP growth was lower than -3.4% (Giuliano & Spilimbergo, 2014).

Focusing on economic shocks of the past, it is interesting to refer to the worst financial disaster of the 20th century, which may be considered the "Great Depression" of the 1930's. According to Termin (2016), the shock, causing that destabilization of the world's economy, was the World War I. The "Great Depression" began in 1929 in the United States of America, as an economic collapse including banking failures, and lasted approximately for 10 years, affecting the entire world.

During that period of time, unemployment rate in the United States of America reached 25%, while at the same time the income amounts reduced to almost the half (particularly 42%) and industrial production and real GDP declined respectively by 37% and 30% (Clavin, 2000; Termin, 2016). The main effects of the "Great Depression" in the rest of the world concerned mostly the industrial production and purchase prices.

Another interesting example of economic shocks of the past concerns the oil price shocks. Different researchers (Burbidge & Harrison, 1984; Gisser & Goodwin, 1986; Hamilton, 1983; Jones, Leiby & Paik, 2004) brought their attention on the period after the end of the World War II, after Hamilton's (1983) demonstration that an oil price increase preceded the recessions in the United States, referring to the 1973 and 1979-1980 oil price shocks. Similar evidence exists also in relation to other economies, such as the United Kingdom and Japan.

In addition, Kilian (2009), focusing also on the United States, argues that oil price shocks are related to exogenous events to the United States macroeconomy. Particularly, regarding the oil price shock of 1973-1974, Kilian (2009) declares that it followed the Yom Kippur War and the embargo proclaimed by the OPEC (Organization of the Petroleum Countries). The oil price had globally risen from 3$ per barrel to 12$, affecting many economies and the production in countries such as Canada, Japan and the United States of America. Similarly, major increases were observed due to the oil price shock of 1978-1979 followed the Iranian Revolution and the one of 1990 followed the outbreak of the Persian Gulf War (Kilian, 2009).

 The most recent economic shock is the "Great Recession", also known as the financial crisis of 2008. The existing literature is growing gradually, as several researchers seem interested in the causes and effects for different countries and economies around the world. Verick and Islam (2010) connect in a way the food and energy price shock of 2007 with the "Great Recession". On the one hand, the food and energy price shock affected mostly fast-growing emerging economies, such as China and India, as well as developing, low and middle-income countries and it has resulted to food protests and most importantly to increase of poverty by 100 million people worldwide. On the other hand, the "Great Recession" started from the developed countries and the banking system, affecting at first more severely rich, highly globalized economies, according to Verick and Islam (2010).

According to Greenglass and his colleagues (2014) the causes of the financial crisis of 2008 can be summarized in poorly timed monetary contraction, the grown trade protectionism and the government interference. Additionally, they are referring to subprime credit risk and the banking system, offering loans to people who could never pay back. Even if government and media may not be considered among the factors causing the crisis, it is shown that they both had an important role in worsening the situation, by introducing austerity programs in order to reduce the debt and the second panic and misinforming the people.

Focusing on the impact of this recent economic shock, the financial crisis of 2008, seems to be obvious not only on the economy of different countries

globally, but also on different populations' lifespan and psychological conditions (Giotsa & Mitrogiorgou, 2014). Labour force is one of the first areas most affected by the crisis. Unemployment rates increased rapidly between 2007 and 2010, in many countries, including Greece, Portugal, Spain, Estonia, Latvia etc. (Karanikolos, Mladovsky, Cylus, Thomson, Basu, Stuckler et al., 2013). Especially the unemployment rates of youth (15-24 years old) during the first years of the "Great Recession" were really high, reaching for example in 2009, 25.8% in Greece, 37.8% in Spain and 25.3% in Italy (Tanveer Choudhry, Marelli & Signorelli, 2012).

High unemployment rates, as well as income reduction and taxes increase in countries struggling with recession, such as Greece, Spain, Portugal, Italy etc. were all obvious outcomes of that economic shock. Nevertheless, researchers tend to connect also poverty and geographical mobility with the crisis. Giotsa and Mitrogiorgou (2014) summarize evidence regarding increased poverty and homelessness rates in Greece between 2009 and 2011, while Khaleeli, Smith and Smith (2013) refer to geographical mobility, aiming to better work and living conditions. Namely, Australia was found to be the most frequent choice for Greek people in 2012, while whole families, as well family members tended to have chosen to move to different cities within their country, seeking for better options.

Coming to the psychological outcomes of financial crisis, there is evidence (Murphy & Athanasou, 1999; Paul & Moser, 2009) connecting unemployment with psychological difficulties, as well as mental health issues, such as stress, depression feelings, psychosomatic symptoms and low self-esteem. Even more worrying is the data which relates the economic crisis with suicide rates. Specifically, increased suicide rates of men were observed in European and American countries, after the crisis of 2008 (Chang, Stuckler, Yip & Gunnell, 2013). Bouras and Lykouras (2011) confirm that men tend to be more vulnerable than women also in Greece, while young people (18-30 years old) seem to be more and more affected, facing severe stress, due to their feeling of insecure future and professional failure.

2.3 Family within financial crisis - The present thesis

Focusing on the family and the impact of the most recent economic shock of the "Great Recession" on it, all the aforementioned effects, including wages reduction and taxes increase, threats to physical and mental health due to pressure and stress, as well as severe depression incidents or even suicidal tensions, may be obvious also within a family system. The emotional bond among the family's members is able to act in fact as help for the individuals, in order to cope with the living conditions and the situation and to overcome the difficulties.

As it can be seen through the literature review, there is quite extended evidence regarding the family ties and the connection with a country's economy. Similarly, discussing about economic shocks, the literature is quite extensive mostly regarding the shocks of the past, while still growing regarding the "Great Recession" of 2008. In addition, there is data connecting the strength of family ties with more general economic issues and outcomes, such as corruption (Litina & Varvarigos, 2018), but there was found no researches connecting clearly the strength of family ties with the recent financial crisis.

As a consequence, the present thesis' main goal is to examine if family ties change as a result of crises, namely economic shocks. With this main purpose, I limit the present study concerning time, examining the economic shocks and their impact on family ties, between 1981 and 2014, on worldwide level.

3.   Benchmark Empirical Analysis

3.1 Data description

I use two datasets in order to measure how the economic crisis affect family ties. The first dataset is the *EVS Longitudinal Data File 1981-2008*. It is a dataset which includes individual level data from national surveys on a variety of topics. Indicatively it refers to topics, such as education, religion, family, employment, leisure time and voluntarism. For the purpose of my study, I use information regarding family ties, as well as information regarding education, religion and work status as control variables.

The second dataset is the *World Bank dataset* which encloses information about economic issues as per country and year (1961-2014), such as GDP growth, unemployment and income per capita. For the purpose of the present study, I specifically use information about GDP growth and income per capita as well as some other variables as controls, such as unemployment.

Both datasets were combined in one dataset, including, information about respondents' family ties, educational level, religion and work status, as well as the GDP growth rate and income per capita. Based on the GDP growth rate, I construct a new variable, "shock", which refers to economic shocks per country during the time period between 1961 and 2014. I combine micro and macro data together to find out how aggregate economic shocks affect the individual attitudes towards family ties. Below I describe analytically the construction of my variables.

Family ties

This is one of the main variables I use in the present study. Aiming to measure the strength of family ties, I use three components of the EVS dataset. Namely, I use three questions responded by the participants, concerning the importance of family for each person.

The first question asks how much important the family is for the respondent and the range of answers is among the values 1 to 4 (with "1" being very important and "4" being not at all important).

The second question is about love and respect to parents and if it should be taken as given or if it is something that parents should earn. This question has two answers: "1" always should love and respect parents and "2" love and respect parents if they earned it.

The third question concerns the responsibilities that parents have towards their children. This question has two answers: "1" indicating that parents' duty is to do their best for their children even at the expense of their own well-being and "2" indicating that parents have a life of their own and should not be asked to sacrifice their own well-being for the sake of their children.

As also Alesina & Giuliano (2010), as well as Litina & Varvarigos (2018) do, I combine the three variables in a single variable, named "PCA_Family_Ties". I also construct another measure, i.e., the sum of the respondent's answer to all three components, after making the metric similar (I also sum the variables without taking a similar metric).

I thus use in my analysis all the different measures of family ties, i.e., each question separately about family ties, the principal component of all the three questions and the sum of the three questions in a separate index.

In Table 1, I present the correlation between the three original variables, their sum with similar metric, their sum without similar metric and the first principal component. There is high and positive correlation among the variables and the sum of the three original variables is almost perfectly correlated with the principal component analysis. Given the correlation between the sum and the principal component analysis I will use the principal component analysis as the main variable which represents the family ties (and the other measures will be used as robustness).

	Family_Ties (PCA)	Sum_Family_Ties	Sum_Family_Ties_1	Family important	Respect for Family	Parents Duty
Family_Ties (PCA)	1.0000					
Sum_Family_Ties	0.9334	1.0000				
Sum_Family_Ties_1	0.9941	0.9047	1.0000			
Family important	0.5401	0.2351	0.6108	1.0000		
Respect for Family	0.6946	0.7038	0.6206	0.0992	1.0000	
Parents Duty	0.6881	0.7974	0.6965	0.0942	0.1721	1.0000

Table 1. Correlations among the family ties variables.

Economic shocks

This is the basic explanatory variable that I use, and it refers to the possibility a country has or has not suffered an economic shock. In order to construct the variable which concerns global economic shocks during a specific period, first, I use data by the World Bank. Precisely, I use the annual percentage of GDP growth for every country of the sample and I merge this information with the EVS dataset, i.e., I associate each individual with the growth rates of his/her country.

I then proceed to construct a simple shock variable. This variable refers to economic shocks around the world, from 1961 until 2014. In the dataset that I use, time is separated into six waves (1: 1981-1984, 2: 1989-1993, 3: 1994-1998, 4: 1999-2004, 5: 2005-2009, 6: 2010-2014). For the first wave I create a dummy variable that takes the value of 0 if a shock never occurred during the period 1961-1984 (i.e., during the first wave). If a shock emerged this variable takes the value 1. Similarly, I do the same procedure for each wave. The final variable named "shock" is possible to have two values: "0", which indicates that the country referring to has not suffered an economic shock during the period associated with each wave, and "1", which indicates that the country has suffered an economic shock during this period. In the robustness sections I use some additional definitions of shocks.

A shortcoming of this index is that the age of each respondent is not taken into account when constructing this variable, i.e., all respondents from e.g., Greece that participate in round 1 of the EVS will be associated with the same

shock variable. In the robustness section this is partly addressed by taking constraints concerning the age of the respondents (e.g., respondents older than 20 years old, less than 50 years old, less than 60 years old).

Another shortcoming of the index is that it does not take into account the number of shocks in which an individual is exposed to. It simply takes 0 for not exposure to a shock and 1 otherwise.

Variable	Obs	Mean	Std. Dev.	Min	Max
shock	109004	.8462809	.360681	0	1

Table 2. Summary statistics of the "shock".

Control variables

Except from the two main variables, "PCA_Family_Ties" and "shock", I also use some additional variables, as controls. The variables refer mostly to demographic data of the respondents (age, gender, education, religion and employment status) where I use the information by the EVS dataset (Table 2). Additionally, I use another important aggregate control for the country, i.e., the country's economic situation in each wave, i.e., the income per capita by the World Bank dataset.

Variable	Obs	Mean	Std. Dev.	Min	Max
Family_Ties (PCA)	109004	-.0272177	1.097504	-.7151317	6.569161
shock	109004	.8462809	.360681	0	1
age	109004	39.36335	15.44331	15	99
age_squared	109004	1787.967	1393.379	225	9801
code_num	109004	143.9241	83.83599	6	266
Education	109004	4.662407	2.234321	1	8
Gender	109004	1.508183	.4999353	1	2
Religion	109004	44.39575	23.57374	0	86
Work status	109004	3.380647	2.218859	1	8

Table 3. Summary statistics as per main or control variable.

3.2 Empirical Approach-Specification

I estimate the equation

$$\text{PCA Family Ties}_{ict} = a_0 + a_1 \text{Shock}_{ct} + a_2 X_{ict} + \varepsilon_{ict}$$

where *PCA Family Ties* is the principal component variable that I use in order to measure family ties, constructed including the three original variables referring to the opinion of the respondents of their family. It refers to the strength of family ties of individual **i,** who lives in country **c,** at time **t** (EVS round). *Shock* is the binary variable, which indicates if the individual has experienced a crisis or not while responding in this particular wave. *Code_num* represents the country fixed effect for the country in which each individual lives. This captures factors, such as common history, geography, etc. *X* is a set of individual controls such as age, age squared, Education, Gender, Religion dummies and Employment status. Finally, ε represents the error term. Errors are clustered at the country level.

3.3 Empirical Findings-Results

Table 4 reports my estimates on the impact of economic shocks on family ties. The dependent variable in Columns 1 to 5 is the variable "*PCA Family Ties*". Column 1 reveals the results by the regression I run, using only the two main variables, *PCA Family Ties* and *shock*. In Column 2, the results refer to the regression that I run, after I have added also country fixed effects. Column 3 reports the regression results using additionally two control variables, *age* and *age squared*. Column 4 shows the regression results using also the rest of relevant demographic, socio-economic and household characteristics (i.e. *gender*, *education*, *religion* and *employment status*). Last, Column 5 presents the results of the regression, adding the *aggregate income*.

In regard to the variable *shock*, it seems that the results are not statistically significant in the first columns. Nevertheless, while I gradually add the control variables in my regressions, the results reveal statistically significant relation between the two main variables (Columns 3, 4 and 5). I examine more closely the final results (Table 4, Column 5), regarding the impact of shock on family ties. As I may see, the result is statistically significant ($p < 0.01$). What is more,

examining the coefficient, the negative sign reveals that *shock* and *PCA Family Ties* are two inversely related variables. As the values that *PCA Family Ties* variable may take are reversed (i.e. "1" indicating great importance to "4" indicating absence of importance), I am able to observe that the more economic shocks the respondent has experienced, the stronger his/her family ties become.

With concern to the control variables (only the main results are reported), I observe that they also have an impact on family ties. Specifically, the results reveal statistically significant coefficients for *age* and *income per capita* ($p<0.01$). Age and PCA Family Ties are inversely proportional as well, according to the coefficients resulting in all three regressions including age (Columns 3, 4, 5). It indicates that the older the respondent is, the less strong he/she evaluates family ties. This could be related to the actual loss of a father or a mother, thus the family ties become weaker.

	Family_Ties (PCA)	Family_Ties (PCA) – Country fixed effects	Family_Ties (PCA) – age	Family_Ties (PCA) – all individual controls	Family_Ties (PCA) – aggregate income
shock	0.059	0.076	-0.221***	-0.230***	-0.230***
	(0.114)	(0.123)	(0.077)	(0.077)	(0.077)
age			-0.014***	-0.012***	-0.012***
			(0.002)	(0.002)	(0.002)
age_squared			0.000***	0.000***	0.000***
			(0.000)	(0.000)	(0.000)
Income per capita (1961-2014)					0.000***
					(0.000)
Constant	-0.077	0.068	0.440***	0.630***	0.028
	(0.104)	(0.136)	(0.098)	(0.095)	(0.093)
Country FE	No	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	Yes
Obs	109004	109004	109004	109004	109004
R-squared	0.000	0.008	0.094	0.103	0.103
Standard errors in parentheses					
* p<0.10, ** p<0.05, *** p<0.01					

Table 4. Impact of economic shocks on Family ties.

3.4 Robustness

After examining the main results, I test robustness, using different measures of Family ties, as it is presented in Table 5. Precisely, I aim to examine how the original variables of Family ties and the sum of them may be affected by shocks. In Columns 1 to 4, I use the same control variables, i.e., aggregate *income per capita*, *age*, *age squared*, *code number*, *education*, *gender*, *religion* and *employment status*. The dependent variable is different in each Column, i.e. in Column 1 I use the first original component, the variable which measures the importance of family ties, in Column 2, I use the second original component, love and respect towards the parents, and in Column 3, I use the third original component, parents' duty. At last, in Column 4, I use the sum where the metric is similar of all the aforementioned components.

The results in Table 5 show a statistically significant relationship among a shock and all four original variables regarding family ties. The negative sign of all coefficients represents the inversely proportional relationship that the main shock variable has not only with each one of the original variables, but also with their sum. This result supports my finding for the inversely proportional relationship between *shock* and *PCA Family Ties* as well. The results are a bit weaker (statistical significance drops to 10%) but the result is still present.

	Family important	Respect for Family	Parents duty	Family_Ties (sum)
shock	-0.038*	-0.037**	-0.056*	-1.693***
	(0.022)	(0.018)	(0.032)	(0.148)
Obs	262783	116364	110595	267519
R-squared	0.042	0.075	0.088	0.335
Standard errors in parentheses				
* p<0.10, ** p<0.05, *** p<0.01				

Table 5. Impact of shock on the original family ties component variables.

In Table 6, I repeat the analysis in Tables 4 (Column 4) and Table 5 using a Probit model. This will allow me to examine the probability of an increase or decrease to the family ties variables, if the *shock*'s value changes from "0" to

"1". The results are statistically significant in Columns 2 to 5, suggesting that each (family ties) variable may decrease while the *shock*'s value changes. This result and especially regarding the *PCA Family Ties* variable is in line with my finding of the inversely proportional relationship between *shock* and *PCA Family Ties*.

	Family important	Respect for Family	Parents duty	Family_Ties (sum)	Family_Ties (PCA)
shock	-0.149	-0.170**	-0.242**	-3.017***	-0.322***
	(0.091)	(0.074)	(0.123)	(0.789)	(0.080)
Obs	262783	116364	110595	267519	109004
Standard errors in parentheses					
* p<0.10, ** p<0.05, *** p<0.01					

Table 6. Family ties variables and shock probit regression.

As I see in Table 7, I test robustness, using *PCA Family Ties* and all individual control variables, but differentiating this time the variable "*shock*". At first, I use the main *shock* variable, as I constructed it. Then I am having an indicative age breakdown on the *shock* variable, selecting cases. Particularly, firstly, I use an age limited version of the *shock* variable, named "*shock1*", which concerns respondents who are older than 20 years old. Analytically, I make the assumption that the shock may have an actual effect only to people that are older than 20 years old. This could be perhaps because this is the age where they study or work, in which case the shock can affect them a lot.

Secondly, I use another age limited version, named "*shock2*", which concerns respondents who are younger than 50 years old. In this case I assume that people who are older than 50, the crisis may not affect their family ties perceptions a lot because they lost their parents.

Thirdly, I use a variable named "*shock3*", which concerns respondents who are younger than 60 years old. The reason is the same as above.

The results in Column 1 and in Column 4 indicate statistical significance between *PCA Family Ties* and the variable *shock* and *shock3* respectively. In other words, even if I limit the respondents' age range, the inversely

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proportional relationship between *shock* and *PCA Family Ties* remains for the wider age groups (i.e. (a) older than 20 years old and (b) younger than 60 years old). These results support my findings for the inversely proportional relationship between *shock* and *PCA Family Ties,* as the 1st and 4th Columns refer to the widest age groups.

	Family_Ties (PCA)	Family_Ties (PCA)	Family_Ties (PCA)	Family_Ties (PCA)
Shock	-0.229***			
	(0.077)			
Shock1 (be more than 20 years old)		-0.007		
		(0.032)		
Shock2 (be less than 50 years old)			-0.039	
			(0.025)	
Shock3 (be less than 60 years old)				-0.061*
				(0.035)
Obs	111831	111831	111831	111831
R-squared	0.101	0.101	0.101	0.101
Standard errors in parentheses				
* p<0.10, ** p<0.05, *** p<0.01				

Table 7. Family ties and shocks in different age groups.

3.5 Mechanism

Nowadays economic crisis affects a variety of aspects in everyday life. The present study's theme resulted by the query if it is possible for economic crises or shocks to affect family ties. As through the literature review it is obvious that there is an impact of shocks on families, the actual question could be why shocks affect family ties. Even though in the present study I do not empirically examine this question, I discuss here some thoughts about the potential mechanism of the thesis result.

An example of the consequences of economic crisis is unemployment. Relationships among the members of a family may be influenced by that, deriving to emotional issues for the unemployed persons, movement for work away from home and problems within the family context. Occasioned by that, at the beginning of this study, one could expect that family ties and economic shocks are two negatively related variables and as a result family ties become weaker due to economic crisis.

In contrary to those negative thoughts though, previous literature refers to young people who are unemployed and continue to live with their parents. What is more, when people try to cope with emotional difficulties, even due to economic reasons, they tend to turn to the people closer to them, as the close family. Therefore, it is obvious that family seems to be a way for people facing difficulties and people who have experienced economic shocks to cope with them. On the other hand, it brings the person closer to his/her family though, empowering the relationships with parents and relatives.

In the present study, the empirical analysis did not focus on the direct examination of the mechanism, but just on the examination of the direct effect of economic shocks on family ties. As it is obvious in the results, family ties become stronger, while the person experiences more economic shocks within his/her lifetime. The stronger emotional bond with the family in contrast to the economic difficulties show that the positive effects of crises dominate, empowering the family members' relationships.

4.   Discussion-Conclusions

The present thesis aimed to examine economic shocks and their impact on family ties on worldwide level, between 1961 and 2014. For this purpose, I combined data from two sources (World Bank dataset and EVS Longitudinal Data File 1981-2008) and I constructed two main variables.

The first variable was *PCA Family Ties* and it derived from specific questions as other researchers have also suggested in previous literature (Alesina & Giuliano, 2010; Giuliano & Alesina, 2007; Litina & Varvarigos, 2018). Litina and Varvarigos (2018) have also used this variable in their research, connecting it with corruption. The second variable was *shock* which was a combination of two datasets (World Bank dataset and EVS dataset) and it was constructed based on GDP growth rates as per country (Giuliano & Spilimbergo, 2014).

My most important conclusion concerns the relation between family ties and economic shocks. PCA Family Ties and shock were found to be two inversely related variables in my study. In fact, as the measure of family ties is reversed, it means that family ties tend to become stronger, in cases that the respondents have experienced more economic shocks in their lifetime. This conclusion is answering to my study's initial purpose regarding the impact of economic shocks on family.

However, the aforementioned result appears to be statistically significant when also individual and other characteristics (i.e. age, gender, education, religion, employment status and income per capita) are involved in the equation. Among these control variables, the results reveal statistically significant coefficients for age and income per capita, while age is inversely related to PCA Family Ties as well. Indicating that the older the respondent is, the less strong he/she evaluates family ties, this conclusion may be connected to the actual loss of a parent and consequently to weaker family ties.

At last, it must be mentioned that the conclusions resulting by the robustness procedure supported my initial empirical results. At first, even if the results are a bit weaker, shock variable appeared to be inversely related also to the different components of Family Ties, as well as the sum of them and not only to my constructed variable (PCA Family Ties). Then, the same finding

derived by the probability of a change in the shock values. It was found to be able to affect the strength of family ties. Finally, and accordingly to all these, the empirical findings concerning the respondents' age and the relation to PCA Family Ties were found to be supported by the robustness results as well.

To sum up, based on my initial purpose, it seems that the experience of economic shocks is able to empower the strength of family ties. Stronger emotional bonds among the family members may be a way for the people to cope with the economic difficulties, due to the economic shocks they experience through their lifetime. Age seems to be another factor with an impact on people's perceptions on family ties, as while a person turns older, he/she tends to perceive the family ties as less strong, maybe due to the independence from the family environment or the actual loss of a parent or any close family member.

Closing, the present thesis is an effort to add a new aspect in the existing literature regarding economics and family ties, correlating the latter with economic shocks. Future analysis could extend the types of shocks that are being examined as well as a detailed examination of the potential mechanisms.

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6.   Appendix: Variable Definitions and Sources

I.   *Definitions regarding Main Variables (EVS Variables)*

Family Ties (Principal Component). We construct the family ties index using three questions from the EVS. The first question is "How important is family in your life". The range of answers is between 1 to 4 with 1 indicating "very important" and 4 indicating "not at all important". The second question is about love and respect to parents and if it should be taken as given. There are two answers for this question, 1 indicates that love and respect to parents should be taken as given and 2 love and respect to parents should be earned. The third question is about responsibilities that parents have towards their children. It has also two answers, 1 indicates that parents' duty is to do their best for their children even at the expense of their own well-being and 2 indicates that parents have a life of their own and should not be asked to sacrifice their own well-being for the sake of their children. Higher values indicate weaker family ties in all three questions. We conduct a Principal Component Analysis in order to reduce the number of variables and to combine the three components to a single variable.

Family Ties (Sum). As an alternative measure of family ties we use the sum of the same three questions from the EVS. We give to all the variable the same scale, i.e., from 1 to 2 in order to take their sum. Higher values indicate weaker family ties.

Economic shock. This variable is constructed using the GDP growth rate of each country for the period 1961-1984 (for the first wave of the EVS data), 1961-1993 for the second wave, 1961-1998 for the third wave, 1961-2004 for the fourth wave, 1961-2009 for the fifth wave and 1961-2014 for the sixth wave. The source is the World Bank dataset.

A shock is defined by negative values of the growth rate in one particular year. It is a binary variable. It takes the value 0 if the respondent of each country has not suffered an economic shock during the period associated with each wave and it takes the value 1 if his/her country has suffered an economic shock during this period.

II. *Definitions regarding Individual and Aggregate Controls (EVS and World Bank Variables)*

Age. The age of each respondent. The source is the EVS.

Education. Education is an ordered variable. It takes values from 1 to 3 with 1 denoting "tertiary completed", 2 denoting "secondary completed" and 3 denoting" primary completed". The source is the EVS.

Religion. Religion takes nine different values. Each one is associated with a different religious denomination. The source is the EVS.

Employment Status. The employment status of each respondent is a categorical variable values from 1 to 4 with 1 is "full-time", 2 is "part-time or self-employed", 3 is "not participant (student, retired, other)" and 4 is "unemployed". The source is the EVS.

Aggregate income. It is the income per capita of the country in which each respondent lives in one particular way. The source is the World Bank dataset.