Some Determinants of the Inclusive Resilience of Solidarity Finance in Europe

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Abstract

This paper analyzes the alternative and complementary role of solidarity finance compared to classic finance. Particularly, we study, via the concept of inclusive resilience, the ability of solidarity finance to include individuals, projects and areas excluded from classic finance. From european data about the solidarity finance institutions (SFI), we construct an indicator that measures the inclusive resilience of SFIs via a scoring method. Then, we show, through an econometric analysis, that factors as territorial anchorage of SFIs, participatory governance within SFIs, governmental subsidies and an indicator of financial capacity, reinforce the inclusive resilience of SFIs.

Keywords: finance, resilience, solidarity finance, scoring, ordinary least squares (OLS).

JEL Classification: G29, C21, C87

1. Introduction

Finance contributes, via banking and financial intermediation, to the economic growth of national countries. Also aiming at optimal risk allocation based on available information, finance can cause economic crises and can increase uncertainties in the society. By refusing to fund economically viable but considered excessively risky market segments (individuals, projects, territories), it exacerbates social, societal and ecological risks. These segments excluded from classic funding, due to informational biases, relate to young people, ethnic minorities, women, former convicts, unemployed, beneficiaries of minimum livelihoods, etc. This concerns also some projects carried out by unconventional economic structures (associations, integration companies, cooperatives, etc.) and some urban or rural areas into deliquescence. Such a financial exclusion is a source of economic and social inefficiency. The allocation of funds and risks between the activities most useful to the economy and society then becomes sub-optimal.

The solidarity finance institutions (SFI) have been created to combat financial exclusion. They fund projects through small loans, equity contribution, guarantees while providing advice, follow-up and support. Solidarity finance is a local financial tool that often serves as a lever to unlock other more conventional financing. Beyond financing, it aims to strengthen both social cohesion, through the activation of bonds of solidarity, and democratic participation. In so doing, it questions the dominant representation of market society and the place of the human in that society. Our objective in this paper is to highlight factors that reinforce the capacity of SFI to include those excluded from the traditional financial system. Our framework of analysis is Europe from where was born the solidarity finance[1]. We use the concept of resilience to address this issue. The rest of the article is organized as follows: in section 2, we apply the concept of resilience to the solidarity finance by distinguishing a double dimension: the financial resilience and the inclusive resilience.

[1] In Europe, depending on the country, we use various names to describe the same reality that is reflected in the concept of solidarity finance used in France, Italy and Belgium. In Spain, we speak of « ethical finance ». Germany, Denmark, Scandinavia or the United Kingdom use the terminology of « social finance » or « sustainable finance » to design the concept of solidarity finance.

While the former relates to the capacity of SFIs to maintain their financial performance during a financial crisis, the latter concerns their capacity to maintain their social performance. After constructing an inclusive resilience indicator (section 3), we analyze, through an econometric method, the determinants of the inclusive resilience of SFIs in Europe (section 4). The section 5 concludes.

2. Solidarity finance and the concept of inclusive resilience

In the first sense, the concept of resilience is a term which expresses, in physics, the elasticity which allows the materials to recover their initial appearance after having absorbed a shock more or less important. This concept is also widely used in ecology (Holling, 1973; Folke, 2006) to designate the ability of a system to recover its functionalities following the occurrence of a shock. It is also the level of perturbation that a system can undergo without being profoundly modified in its functionalities. The state of equilibrium found by the system may be different from the initial state, which distinguishes the resilience from the stability, defined as the ability of the system to return to the initial state of equilibrium after a temporary disruption (Holling, 1973). Pimm (1984), on the other hand, does not oppose resilience and stability when it defines the former as the rapidity of return to a stable state following a disturbance. This concept of resilience has been extended by analogy to economic science to describe the capacity of an economy or an economic structure to overcome and to triumph from a critical situation.

In economics, the concept of resilience is often reduced to the notion of stability. The stability of the general and partial equilibrium is analyzed in the theoretical framework of the economy of order and disorder (Lesourne, 1991). The resilience is also perceived as the capacity of individuals and territories to self-organize despite the random trajectories presented to them (Arthur, 1994; Krugman, 1996). The concept is also used to analyze at a macroeconomic level the reaction of economies to shocks. In this context, the resilience is defined as the capacity of national economies to reach their growth potential after a shock that has displaced them (OCDE, 2008). The greater the loss of production associated with the shock and its resorption, the less the economy is judged to be resilient. Duval and Vogel (2008) highlight two key dimensions of resilience: the capacity of the policy and institutional framework to cushion the initial impact of shocks and reduce the persistence of the resulting output gap. Some determinants of the resilience of economies are: the fight against corruption and for transparency (Ormerod, 2016), reforms in financial, labor and product markets (Duval and Vogel, op. cit.), etc.

The concept of resilience is also used to analyze the performances of financial cooperatives[2] compared to classic banks. Here, the resilience is seen as the capacity of financial cooperatives to retain a good rating, to have more consistent margins and to continue making profits despite the crisis, to quickly compensate for the losses recorded and to quickly rebound after the crisis, all this without needing the rescue of the government (Birchall and Ketilson, 2009 ; Birchall, 2013; Rojas, 2015). The determinants of this strong resilience of the financial cooperatives are various: the collective ownership and the democratic decision-making, so characteristic of the cooperative model, the recycling of savings in loans, the non-dependence on money and financial markets, the setting aside of all profits realized, the risk aversion. Some studies about SFIs mention the presence of such resilience in the behavior of the SFIs (Cicopa, 2011; Demoustier and Colletis, 2012). We call this form of resilience of "financial resilience". This concept refers to their capacity to safeguard their financial sustainability in a crisis context. However, the resilience of such institutions should not be limited only to their financial performances. It must extend to their social performances, that is, their ability to maintain their original mission of financing excluded individuals, projects and territories.

Thus, funding to increase the resilience of communities and territories is an important aspect of the resilient capacity of the SFIs. Put another way, when the SFIs fund disadvantaged groups, local development, social economy, microbusiness and make the accompaniment of the promoters, they reinforce the resilience of the societies. They enable the communities to adapt to the uncertainty (Glémain, 2004). By financing the populations and areas excluded from classic finance, the SFI take charge of social costs of changes, depreciation costs and the search for correction of imbalances (Demoustier and Vallat, 2005). We call "inclusive resilience" this second dimension of the resilience of the SFI. Its refers not only to their ability to maintain their financial performances but also to their inclusive capacity with regard to on individuals and territories.

[2] Financial cooperatives consist of cooperative banks, mutual funds, mortgage companies and banks hold by farmer or consumer cooperatives.

The financial resilience of SFIs has been the subject of theoretical and empirical studies in economic literature. On the other hand, very few studies have been undertaken on the subject of the inclusive resilience of SFIs.
Some empirical studies identified concern the measure and the determinants of the social performances of microfinance in developing countries (Lapenu and al., 2004; Boujelbene and Halouani, 2013; Cull and al., 2007) and in Europe (Lapenu, 2007).

In the general field of solidarity finance, some studies explore a number of factors that enhance the inclusive resilience of SFIs (Artis, 2007; Glémain, 2008) but the significant stylized facts highlighted are not rigorously quantified. Among these factors are the territorial anchorage of SFIs, the participatory governance and the governmental subsidies. The territorial anchorage corresponds to the predominance of a territory in the processes of decentralized financing. Solidarity finance is a local finance. This closeness, more closely related to an organized proximity than a geographical proximity (Rollet and Torre, 2004), is a space conducive to the emergence of relations of belonging and similarity (Dupuy and Burmeister, 2003). Such a territorial identity preserves SFIs from the nomadization so characteristic of classical finance (Prades, 2006) and allows them to rely on local resources: local actors, local savings, short circuits between savers and borrowers, etc. (Artis, 2007). This guarantees them a direct link with the local economy, enabling them to target endogenous local development.
This objective of local community development generally encourages SFIs to develop participatory governance, especially since the existence of better collective learning and collective identity is conducive to the creation of a socio-territorial capital (Levesque, 2007). This participatory governance that helps to preserve the balance between financial intermediation and solidarity intermediation is the fruit of a citizen's approach that refers to the free association of people, within a public space of proximity, to lead together actions contributing to the management of a common. That citizen's approach links, in a largely unprecedented way, the economic and social spheres, the market and the State, the private and the collective, while at the same time breaking down the traditional divisions between spheres of so-called economic, political and social activities (Prades, 2006). The foundation of participatory governance within the SFIs is the solidarity impulse from which one meets individual interest and collective interest.

The links between SFIs and the government allow them to maintain their social mission. On the boards of directors of certain SFIs sit local elected representatives and representatives of local authorities. The government can also provide support to SFIs in formulating laws that promote their development. Such a regulatory shift in favor of SFIs played an important role in the growth of solidarity finance in Europe. Otherwise, the government provides support to SFIs by supplementing their financial resources through direct and indirect subsidies. In summary, the territorial anchorage of SFIs, the participatory governance within SFIs and the governmental subsidies are seen as so many conditions that enable the SFIs to finance individuals, communities, projects and territories excluded from classical finance. Although these stylized facts have been established as a result of case studies and field studies, it is useful to analyze them on data collected in the sector of SFIs in order to confirm or invalidate this inclusive resilience. We evaluate, through an econometric analysis, the relevance of these three determinants as factors enhancing inclusive resilience of SFIs. But above all, it is necessary to construct an indicator that effectively measures the inclusive resilience of SFIs.

3. The construction of an inclusive resilience indicator

In that section, we build an inclusive resilience indicator based on the scoring method. The scoring is both a science of the questionnaire and a science of the exploitation of the collected information. The idea is to determine which are the fundamental variables which make it possible to measure the phenomenon of the inclusive resilience of SFIs. The database used is that collected by INAISE, a structure that federates ISF at the level of Europe. They are SFI-specific data that deal with their solidarity specificities and are collected very occasionally. In general, the official data collected about les activities of SFI relate to classical financial variables. Our data have been collected during a 1997 survey (data collection and questionnaire) carried out with 49 SFI operating in the European Union.

The selected SFIs are those which are intended to finance projects with a social added value and which belong to the environment, culture, integration or job creation sectors. The vast majority of the selected financial instruments are lending instruments (credit lines, guarantee funds) and venture capital instruments. In fact, a total of 45 among the 49 financial instruments selected in this study give access to a credit, and only 15 are involved in the balance sheet, namely in the venture capital.

To build the inclusive resilience indicator, we use a subset of indicators that each represents a dimension of this resilience. The best method for doing so would have been the Principal Component Analysis (PCA). Let X^* be the indicator sought and X_1, X_2 and X_3, the subset of indicators determined as the factorial axes. This method consists in assigning a weight to the indicators X_1, X_2 and X_3 in a standardized and rigorous way and to adjust the weights to each situation. The PCA method is used to determine which subset of indicators can measure the most precisely the inclusive resilience, when these indicators are linearly combined. The indicator X^* explains the maximum of the total variance of the origin indicators: $X^* = w_1X_1 + w_2X_2 + w_3X_3$ where the w_i are the weights and X_i the indicators. This index X^* has for average 0 and a standard deviation equal to 1.

The fact that the database comprises only the target SFIs, and does not represent a reference population in which the SFIs are chosen, limits the possibility of defining a "principal component" representative of the inclusive resilience. To use the PCA method, it would have been necessary to have data or to collect them on a large number of SFIs throughout the world. For all these reasons, the manual method was favored. This method consists in subjectively choosing the weights and the principal components. But it nevertheless has the advantage of being able to visualize exactly to what correspond the scores. In addition, this method is in line with international poverty measurements, and it is widely used for the construction of social performance indicators in microfinance (Lapenu and al, 2004; Lapenu, 2007).

The data from INAISE describing the 49 SFIs cover nearly 22 variables. The selected subset of indicators by the manual method is composed of the two following factorial axes: the axis related to the vocation of the instruments regroups the variables Financing social economy (FSE), Financing local development (FLD), Financing environment (FE), Financing disadvantaged groups (FDG), Financing microbusiness (FM). The axis related to characteristics of loans, regroups the variables Required classic guarantee (RCG), required return (RR), Accompaniment service (AS). The other variables don't make it possible to determine another "principal component" useful to measure the inclusive resilience.

We assign to these qualitative variables a score that reflects the use or absence of a financial instrument within the SFIs. The higher the score, the higher the degree of inclusive resilience. The scores are shown in the table below:

Table 1: table of scores

Score FSE = 1 when the target is funded; score FSE = 0 otherwise
Score FLD = 1 when the target is funded; score FLD = 0 otherwise.
Score FE = 1 when the target is funded; score FE = 0 otherwise.
Score FDG = 1 when the target is funded; score FDG = 0 otherwise.
Score FM = when the target is funded; score FM = 0 otherwise.
Score RCG = 1 when the target is funded; score RCG = 0 otherwise.
Score GCE = 1 in the absence of a guarantee; score GCE = 0 otherwise.
Score RR = 2 if the required return = 0; Score RR = 1 if the return < market return;
Score RR = 0 if the return > market return.

Given the nature of the data, manually choosing an equal weighting for the two factorial axes makes it possible to measure the inclusive resilience. In addition, this equal weighting is extended to each variable making up each axis, so that the total score is the sum of all scores assigned to each selected variable. We obtain:

$$Total\ Score = Score\ FES + Score\ FDL + Score\ FE + Score\ FGD + Score\ FM + Score\ SAP + Score\ GCE + Score\ RE \quad (1)$$

(maximal total score= 9 ; minimal total score = 0)

From this total score, we determine the inclusive resilience indicator of SFI (IR^{SFI}) by taking into account the lifetime of the SFI up to the date of data collection (1997 – date of creation of the SFI). Consider two SFI, one having a *total score = 7* with a lifetime of 5 years, the other having a *total score = 7* with a lifetime of 20 years, we can say that the inclusive resilience of the second SFI is stronger than that of the first. In order to take into account this temporal characteristic of inclusive resilience, we determine it by weighting the total score by a temporal factor $Dmax\ /\ (Dmax - D)$ where D is the lifetime of SFI and $Dmax$ the maximal lifetime of SFI. $Dmax$ is normalized to 100. The inclusive resilience indicator of SFI, noted IR^{SFI}, is as follows:

$$IR^{SFI} = Total\ Score \cdot \frac{Dmax}{(Dmax - D)} \quad (2)$$

The longer the lifetime of SFIs, the more the weighting factor increases and the more resilient capacity increases. We generate, from this formula, the inclusive resilience indicator of each SFI, within the database. Therefore, it is possible, through an econometric test, to highlight the determinants of the inclusive resilience of SFIs in Europe.

4. The determinants of the inclusive resilience of SFIs : a cross-sectional econometric analysis

Our objective in this section is to verify empirically the effect of territorial anchorage of SFIs, participatory governance within SFIs and governmental subsidies, on inclusive resilience indicator. A proxy for the variable "territorial anchorage" is the variable "investment in local development" *(ILD)* that we generate by multiplying the number of local development projects that can be financed per year by the average investment per project. A proxy for the factor « participatory governance" is the variable « percentage of volunteers » *(PV)*. The variable" governmental subsidies" is denoted *SUB*. All these variables are specific to solidarity finance.

Noting $(\beta_1, \beta_2, \beta_3)$ the triplet of parameters to be estimated and ε_i the residue, the econometric equation to be estimated and tested is written in the following way:

$$IR_i^{SFI} = \beta_1 ILD_i + \beta_2 PV_i + \beta_3 SUB_i + \varepsilon_i \quad i = 1, \dots, n \qquad (3)$$

There is no constant in this equation. This suggests that if all these variables are simultaneously zero, the indicator IR_i^{SFI} is at its lowest level which is zero. We use the ordinary least squares method (OLS) to estimate this equation. The difficulty of obtaining SFI-specific data forces us to focus on a cross-sectional econometric analysis. What matters most to us in this estimation are the signs of the parameters. All signs are expected to be positive. The results obtained via the Eviews 8 software are as follows:

Table 2: Estimation of model 1

	Model 1		
	Coefficient	Student stat.	Prob.
ILD	$1.54.10^{-6}$*	2.417371	0.0204
PV	0.075237*	6.9299	0.000
SUB	$1.18.10^{-6}$	0.8414	0.4052

Reading: (*) significant at 5% level;
Source: the author

The estimated equation is:

$$\widehat{IR}^{SFI} = \underset{(2.417371)}{1.54.10^{-6} ILD} + \underset{(6.9299)}{0.075237\, PV} + \underset{(0.8414)}{1.18.10^{-6}\, SUB} \qquad (4)$$

The diagnostic tests about the residue (heteroscedasticity test, autocorrelation test, normality test) and the completion tests (Cusum stability tests) confirm the validity of the estimates. See Appendix 1 for the results of these tests. Note that when there is no constant in the regression, we cannot interpret the coefficient of determination R^2 in terms of proportion of variance explained.

All the estimated coefficients are positive in line with what was theoretically foreseen. The estimated coefficients of variables ILD and PV are statistically significant at 5% level. The estimated coefficient of SUB is not statistically significant. So we don't accept the hypothesis of an influence of the public subsidies on the inclusive resilience of SFIs. Only ILD and PV influence statistically the inclusive resilience indicator. The fact that SUB has no influence on the inclusive resilience may be due to the use made of the public subsidies. They may be used, not to increase directly social value-added financing but to hire workers or make operating and administrative expenses. Even though the variable SUB had positive influence on the inclusive resilience, this should not lead indiscriminately to the promotion of public subsidies. These funds are socially efficient as long as they encourage SFIs to seek financial autonomy.

An interesting question to be studied concerns the effect of the financial capacity of SFIs on their inclusive resilience capacity. The variables of financial capacity we use are "Average investment per project" (*AIP*) and "Capital" (*CP*). The variable SUB is dropped and the regression equation becomes:

$$IR_i^{SFI} = \beta_1 ILD_i + \beta_2 PV_i + \beta_3 AIP_i + \beta_4 CP_i + \varepsilon_i \quad i = 1, \dots, n \quad (5)$$

The results are summarized in the following table:

Table 3: Estimation of model 1 and model 2

	Model 1		Model 2	
	Coefficient	Student	Coefficient	Student
ILD	$1.54.10^{-6*}$	2.417371	$1.12.10^{-6**}$	1.623188
PV	0.075237^{*}	6.9299	0.073609^{*}	7.957717
AIP			$8.43.10^{-6*}$	2.770274
CP			$2.45.10^{-8}$	0.719893

Reading: * significant at 5% level; ** significant at 10% level
Source: the author

The estimated equation, according to model 2, is:

$$\widehat{IR}^{SFI} = \underset{(1.6232)}{1.12.10^{-6} ILD} + \underset{(7.9577)}{0.073609\, PV} + \underset{(2.7702)}{8.43.10^{-6} AIP} + \underset{(0.7199)}{3.4.10^{-8} CP} \quad (6)$$

The diagnostic tests and the completion tests confirm the validity of the estimates. See Appendix 2 for the results of these tests. All the estimated coefficients have the expected positive sign. The coefficients of ILD, PV and AIP are statistically significant. Only the coefficient of CP is not significant. The amount of capital of the SFI does not statistically influence the inclusive resilience indicator. The only variable of financial capacity that affects the inclusive resilience is the "Average investment per project" (*AIP*). Thus, the financial capacity of SFIs can also reinforce their inclusive resilience. In addition, the introduction of variables of financial capacity has the effect of reducing the value of the coefficients of variables specific to solidarity finance. Put another way, when the financial capacity variables are explicitly taken into account, as in model 2, this reduces the effects of variables specific to solidarity finance. This could be the sign that in model 1, the effect of variables specific to solidarity finance implicitly incorporates a small part of the effect of financial capacity variables.

5. Concluding remarks

The resilient capacity of SFIs (financial and inclusive) concerns their ability to invent solutions when crises (economic, social, ecological, etc.) impose an environment marked by uncertainty. Solidarity finance is thus an alternative to capitalist finance that relies on neoliberalism and occupies the ideological space. It treats money and its multiples facets (savings, investment, loan, account management, etc.), conscious of a responsibility and common interests that entail for some the will to help others.

This paper is an attempt to construct an inclusive resilience indicator and to identify factors that reinforce it. An econometric estimation shows that territorial anchorage, participatory governance, public subsidies and an indicator of financial capacity increase the inclusive resilience of SFIs. However, these results must be put into perspective. Even though the variable SUB had positive influence on the inclusive resilience, this should not lead indiscriminately to the promotion of public subsidies. These funds are socially efficient as long as they encourage SFIs to seek financial autonomy. Otherwise, it is not a question of increasing the territorial dimension of solidarity finance to the extent that this may increases the risk of community-based withdrawal. In order to overcome this risk, it is necessary to promote the replicability of these initiatives (Jaillet, 2007). The notion of territorial logic must propose a global and transversal approach of the territory. It is therefore possible to refine, in further research, the variables "territorial anchorage" and "public subsidies" to include the above findings. This requires data that are not yet available.

More generally, it would be desirable to have SFI-specific panel data in order to capture not only the inter-individual variability among SFIs but also the temporal (intra-individual) variability. This implies taking into account, in the more regular official statistics, variables specific to solidarity finance. Our work is only a step towards evaluating, on the basis of available data, the inclusive resilience of SFIs in Europe.

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Appendix 1

- **Heteroskedasticity Test: White test**

Heteroskedasticity Test: White

F-statistic	0.877049	Prob. F(9,26)	0.5573
Obs*R-squared	8.384039	Prob. Chi-Square(9)	0.4960
Scaled explained SS	3.113818	Prob. Chi-Square(9)	0.9596

$Prob\,F(9,26) > 0{,}05$: we accept the nul hypothesis of homoskedastic model

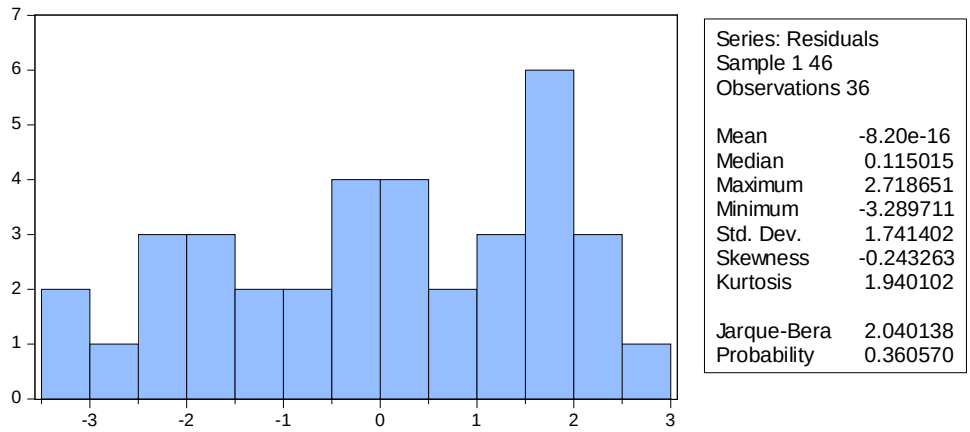
- **Autocorrelation test: Breusch-Godfrey Serial correlation LM test**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.770622	Prob. F(2,30)	0.0076
Obs*R-squared	10.00174	Prob. Chi-Square(2)	0.0067

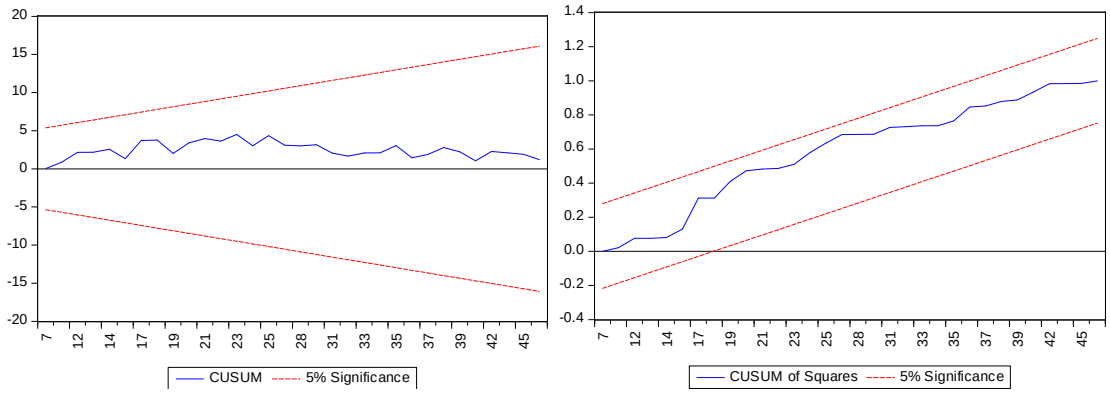
$Prob\,F(2;\ 30) < 0{,}05$: we accept the nul hypothesis of no autocorrelation

- **Normality test of the residue**



The Jarque-Bera statistic is $JB = 2.040138 < 5.99$: we decide the normality hypothesis at level 5%.

- **Stability test: CUSUM and CUSUM square**



In both cases (CUSUM and CUSUM square), the curve does not leave the corridor, so we accept the hypothesis that the coefficients of the model are stable.

Appendix 2

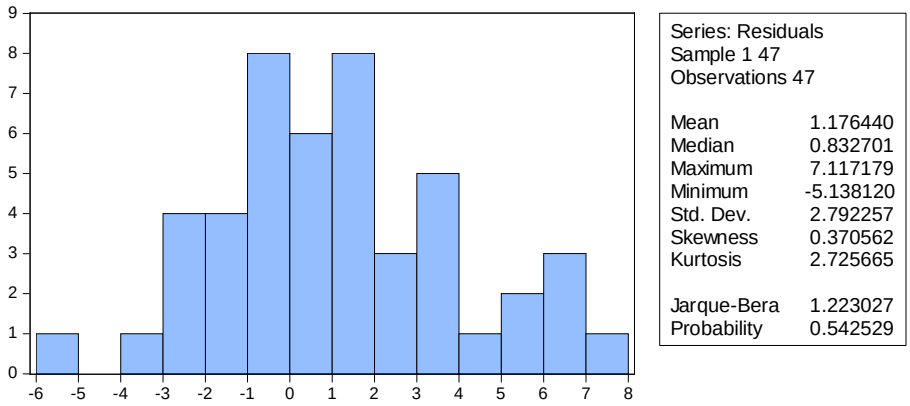
- **Heteroskedasticity Test: White test**

Heteroskedasticity Test: White

F-statistic	1.817620	Prob. F(10,36)	0.0926
Obs*R-squared	15.76857	Prob. Chi-Square(10)	0.1065
Scaled explained SS	14.57540	Prob. Chi-Square(10)	0.1483

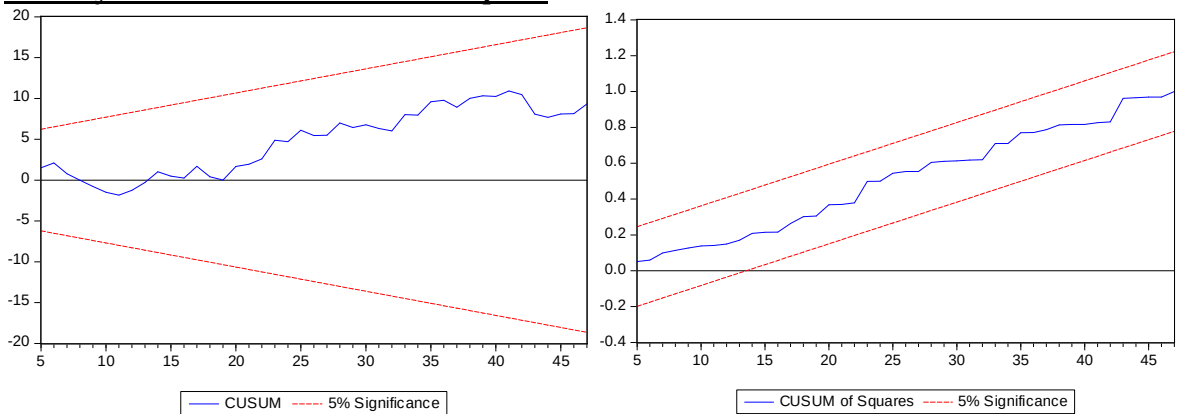
$Prob\,F(10;\ 36) > 0{,}05$: we accept the nul hypothesis of homoskedastic model

- **Normality test of the residue**



The Jarque-Bera statistic is $JB = 1{,}223027 < 5.99$: we decide the normality hypothesis at level 5%.

- **Stability test: CUSUM and CUSUM square**



In both cases (CUSUM and CUSUM square), the curve does not leave the corridor, so we accept the hypothesis that the coefficients of the model are stable.