THE PROPAGATION OF INSOLVENCY AMONG BUSINESS IN ROMANIA

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Abstract: *In the light of the current economic climate, the business insolvency phenomenon gained major attention due to its widespread consequences. Given the broad topic of research, the present study aims to identify whether a domino effect exists among companies filing for insolvency during 2006 - 2013. The interest in this narrow aspect derives from the assumption that default companies propagate shocks throughout the activities of their suppliers, creditors, customers, shareholders, society and the economy. For this purpose, an ARIMA(p,d,q) model has been estimated, as it provides insight on how own lagged values and innovations influence the present occurrence of the phenomenon.*

Keywords: insolvency; ARIMA(p,d,q) model; economic crisis; propagation effect

Introduction

In the current economic context, the risks associated with entrepreneurial activity multiply as a result of the destabilizing factors and uncertainties propagated due to the economic crisis. The impact on business dynamics has been visible worldwide, as the largest economic crisis in the last 80 years, triggered by in the US banking sector in 2007, has inevitably expanded later in an economy characterized by globalization, and the recession of economies was only a matter of time.

As mentioned in the OECD (2009) report, the economic and financial crisis has not only an impact on the cash flow and demand in goods and services of business, but also generated a cut back in credit financing and financing in general, both by financial institutions or by alternative financing sources, undermining existing enterprises alike discouraging formation of new business. However, other determinants, except market conditions and access to finance, affect business dynamics during economic slowdown, which can be grouped, according to Eurostat report (2012), in 6 major classes (Figure 1). Each factor is being interconnected and acts both as incentives for encouraging entrepreneurial activity and as barriers for entrepreneurial activity.

Aterido *et al*. (2009), Loazya *et al*. (2005) consider that the regulatory framework represents a key factor in encouraging and developing a favourable

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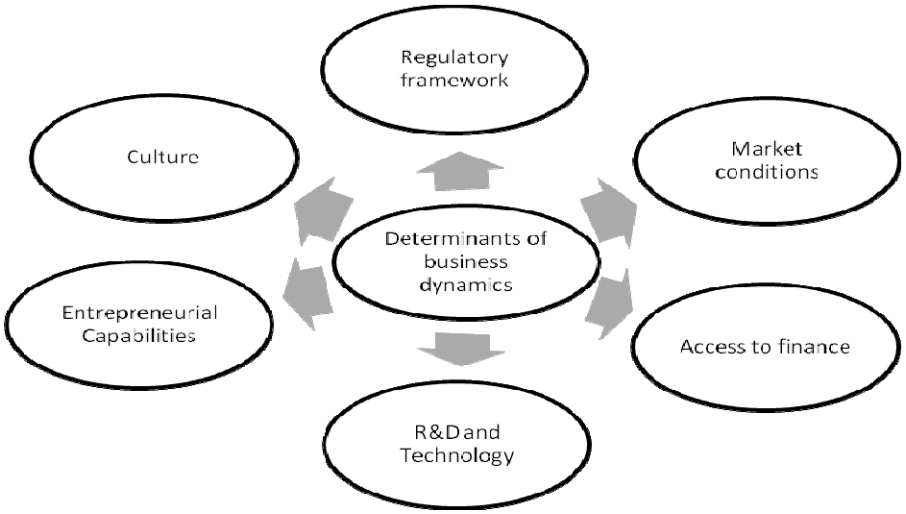
business environment, in particular product market regulations and labour market regulations (Scarpetta *et al*., 2002), represent an important aspect in encouraging a dynamic entrepreneurial climate. Ciriaci (2014) finds that red tape barriers, such as the cost of entry, number of procedures needed to start a business and time needed for the procedures of exporting, influence the firm entry dynamics. Klapper *et al*. (2006) also show that entry regulation and the number of entry procedures can have a negative impact on business formation in "high-entry industries", and that business entry is positively influenced also by the cost of bankruptcy. Moreover, the birth rate of enterprises is higher if the tax rates on corporate income are lower than the tax rates on personal income and if there is access to finance and capital.

Figure 1. Determinants of business dynamics and entrepreneurship



Source: Eurostat (2012)

As mentioned before, factors that may boost the business environment can equally cause major imbalances and destabilize the economic activity of a company. Ooghe and DePrijcker (2008) distinguish five factors that can cause major imbalances at enterprise level, even bankruptcy. Three of these factors refer to micro- level peculiarities of the companies, like the characteristic of the management, the corporative policy and the characteristics of the company (size, year of activity, industry, structure of shareholders, etc.), while two features relate to the proximity of the company and the economic environment in which the company is active. Liu (2004) shows that macroeconomic environment and insolvency regulation can act as determinants of corporate failures; both on the long run and short run an increase of the interest rate and inflation cause a raise in corporate business failure. Access to credit and birth rate of enterprises determine on the short run a drop in rate of companies filing for insolvency, but on the long run an increase. Similar results reports also Platt and Platt (1994) who show that prime interest rate, labour costs and new business formation rate are positively

correlated with business failure, and growth rate in profits and employment are negatively correlated.

In the framework of business dynamics, business failure comes as a natural event, along with business formation and business survival. According to McKenzie and Lee (2003) and Ciriaci (2014), business failure is both an output and an input of the economic activity. In general, through business failure, defined in this article as insolvency, companies that are not able to use their resources optimally exit the market, leaving space for more competitive business that have a greater capacity to use their resources so as to produce a greater added value.

Though, economic distress has negative repercussions not only for those companies which were not viable or competitive in a given economic context, but also produces collateral damage among companies which survive.

Edison *et al.* (1998) consider that during economic slowdown, prudent companies – defined as companies which "partly levered", have the necessary resources to overcome the initial shock, however when faced with shocks coming from imprudent firms – "fully levered", their stability could be put on great risk. Such a case may account for a domino effect, defined by the authors as the collapse of companies which triggers "a fall in asset values sufficient to overwhelm prudent firms and force them into liquidation" (Edison *et al.*, 1998). According to Cheung and Levy (1998), there is also evidence that the bankruptcy phenomena is characterized by the "domino effect", as they identified an existing correlation between the bankruptcy rate among industries. Gatti *et al.* (2009) argue that insolvency of one economic agent can propagate throughout the market, and that the impact is correlated with the size of the agent and the connections it has with other agents within the network. Nevertheless, an increase in business failure can be absorbed by the network, depending on "the amount of bad debts" (Gatti *et al.*, 2009). This is also supported by Stiglitz and Gallegati (2011) who show that insolvency of a business, whether SME, large enterprise or financial corporation, could lead to distress of other actors in the economy, if the shock generated is too strong and cannot be absorbed by the network – defined by the authors as consisting of 3 level structure, households, enterprises and financial institutions, in particular banks. If the insolvent company is highly interconnected within the network, than systemic risk could occur. Also, Daianu *et al.* (2004) mentioned that bankruptcy affects not only the creditors, but also employees, shareholders, customers, etc., thus we can assert that the propagation of shocks is extends much wider than the network of economic agents.

One important aspect which this paper brings into discussion is the propagation effect of insolvency. The domino effect, or insolvency avalanches, although analyzed within this paper only at aggregate level, has repercussions in the national context both on macro- and microeconomic level, alike within and among economic sectors of activities. Hence, the purpose of the present study is to determine whether a propagation of insolvency can be identified in Romania, in particular if a domino effect exists among companies filing for insolvency. This is done using time series analysis, for a monthly time series from January 2006-December 2013.

In order to facilitate better understanding of the analysis, we consider relevant to make a brief review on the role of the insolvency law and the definition of business insolvency, which is also used in the current analysis, then continue with presenting the research methodology and discuss the results of the analysis.

1. Review on the role of the insolvency law and definition of business insolvency

The Insolvency Laws are heterogeneous both worldwide and in Europe, however according to the World Bank report (2011) all systems should aspire to achieve 11 aims and objectives, such as:

"(i) integrate with a country's broader legal and commercial systems; (ii) maximize the value of a firm's assets and recoveries by creditors; (iii) provide for the efficient liquidation of both nonviable businesses and businesses whose liquidation is likely to produce a greater return to creditors and reorganization of viable businesses; (iv) strike a careful balance between liquidation and reorganization, allowing for easy conversion of proceedings from one proceeding to another; (v) provide for equitable treatment of similarly situated creditors, including similarly situated foreign and domestic creditors; (vi) provide for timely, efficient, and impartial resolution of insolvencies; (vii) prevent the improper use of the insolvency system; (viii) prevent the premature dismemberment of a debtor's assets by individual creditors seeking quick judgments; (ix) provide a transparent procedure that contains, and consistently applies, clear risk allocation rules and incentives for gathering and dispensing information; (x) recognize existing creditor rights and respect the priority of claims with a predictable and established process; and (xi) establish a framework for cross-border insolvencies, with recognition of foreign proceedings" (World Bank report, 2011, p. 7).

The Romanian Insolvency Law no. 85/2014 articulates these principles and integrates them, as over the past years efforts has been done to harmonize the Insolvency Law in line with the European Commission recommendations.

According to the above-mentioned law, insolvency is the state of the debtor's assets which is characterized by lack of funds available for creditors' payment. Although it is highly linked to the economic activity, insolvency has legal implications as well, and as mentioned before, currently in Romania, is regulated by the Insolvency Law no. 85/2014.

Given the risk and uncertainty conditions in which businesses operate, debt default situation of business can arise. In these circumstances, creditors will seek to regain the capital / assets lent, and because insolvency involves not just one creditor, each one will strive to recover their debts first. This may lead to a division of the company's assets, and thus to a decrease in assets value. Consequently, the insolvency procedure stipulates the process to pay creditors, aiming on one hand to maximize the assets' value so that debts can be recovered by creditors, and on the other hand trying to avoid liquidation of viable business which have transitory cash-flow problems. As stated in the above-mentioned law, the insolvency procedure aims to establish a collective procedure in order "to cover the liabilities

of the debtor, granting, if possible, the chance of reorganization" (Insolvency Law no. 85/2014). As the current insolvency act recognizes the importance of reorganization, it addresses one of the challenges posed by Cirmizi *et al*. (2010), namely to encourage reorganization of viable firms. Thus, a company filing for insolvency can either fall under reorganization or under bankruptcy. The fact that the central role of insolvency proceedings should be to encourage reorganization of viable companies and that such a procedure should ensure a better allocation of resources is also outlined by Daianu *et al*. (2004).

Moreover, the current insolvency law aims also to simplifying the bankruptcy proceedings, in order to reduce the time period of deployment and a reduction of the cost that it entails. Effects of functional procedures can be noticed, according to the Doing Business reports developed by the World Bank. Following the Romanian Insolvency Act no. 85/2006, an improvement of the insolvency process is observed, such as a decrease of the time period needed for business closure, from 4.6 years in the previous years to 3.3 years. Thus, if the time allocated is shorter, the assets of the default companies getting "free of debt" and the reallocation of resources in the economy can be done more quickly and optimally. The same World Bank report shows that although the costs entailed by such a process have increased from 9% of estate to 10.5% in 2014, the rate of recovery has improved from 19.9 cents for a dollar to 30.7 cents in present. According to the same reports, the improvement made by Romania regarding the regulatory framework of business closure can be seen also from the information on the "distance to frontier" defined as the distance (in percent) compared to the best ranked country. Since 2004, the first year for which data are available, a decrease can be notice of the distance to the frontier, which show an improvement of the legal and regulatory framework with respect to market exit of companies.

Figure 2. Distance to frontier for resolving insolvency, Romania

Source: World Bank Group, Doing Business Report, available at: http://www.doingbusiness.org/reports

2. Methodology and dataset

In order to highlight the extent to which the historical values of the aggregate number of insolvencies influence the present values of the variable discussed, the Box-Jenkins procedure has been applied. By estimating an ARIMA(p,d,q) model, we aim to better understand the evolution in the number of insolvencies, by testing the hypothesis that the trend of the studied phenomenon can be explained through a linear combination of own past values and past innovations.

Let Y be the variable of the aggregate number of insolvencies in Romania, and Y_t be the observed value of the variable Y at time t, where $t = \overline{1,n}$ for the timeframe January 2006 to December 2013.

The general ARMA(p,q) model can be written as:

$$\left(1 - \sum_{i=1}^{p} \emptyset_i L^i\right) Y_t = \left(1 - \sum_{i=1}^{q} \theta_i L^i\right) \varepsilon_t$$

where p represents the order of the autoregressive term and q the order of the moving average term, $\emptyset_i$ and θ_i are the parameters of the of AR(p), respectively MA(q), and L^i is the lag operator.

According to Andrei (2008) The Box-Jenkins procedure implies several steps, summarized as follows:

1. Model identification

Testing and computing the stationarity of the time series, determining degree of differencing (d), and identifying the autoregressive and moving average order (p and q) by examining the autocorrelation (ACF) and partial autocorrelation function (PACF). If the time series is not stationary, the series should be transformed to become stationary with $E(Y_t) = \mu$, $Var\ (Y_t) = \sigma^2$, and $Cov\ (Y_t, Y_{t-k}) = \gamma_k$.

2. Model estimation

Considering the abovementioned AR and MA order identified, the parameters of the ARIMA(p,d,q) model are estimated.

3. Diagnosis checking

Further tests are done so as to determine if the parameters of the ARIMA(p,d,q) are significant. Also the residuals are examined to test for white noise (with $E(\varepsilon_t) = 0$, $Var\ (\varepsilon_t) = \sigma^2$, and $Cov\ (\varepsilon_t, \varepsilon_k) = 0, where\ t \neq k$), whether these are random, uncorrelated so they do not hold additional information for explaining the phenomenon, and normal distributed.

4. Forecasting – by reason of the aim of the present paper, forecast has not been done.

The dataset covers the monthly aggregate number of companies filing for insolvency in Romania from January 2006 to December 2013. The data source is the National Trade Register Office.

3. Evolution of the number of companies filing for insolvency

In the analyzed timeframe, the number of companies falling under the insolvency law has known an ascendant trend, more pronounced beginning with 2008. In 2006 and 2007 on average 428 companies per month, respectively 706 companies have opened the insolvency proceedings, while in 2008 the average monthly number has increased significantly to 1227 companies, as a result of the economic crisis and the economic slowdown. Even though a decrease is noticed in 2011, the number of companies filing for insolvency has an increasing trend and remains greater compared to 2008.

Table 1. Descriptive statistics of number of companies filing for insolvency in Romania, by year

Year	Mean	Max	Min.	Sum.	Std. Dev.
2006	428.3	599.0	161.0	5140.0	138.5
2007	706.8	1312.0	412.0	8481.0	276.4
2008	1227.0	1932.0	319.0	14724.0	435.7
2009	1535.1	2115.0	331.0	18421.0	535.1
2010	1807.7	2170.0	900.0	21692.0	384.1
2011	1637.6	2189.0	562.0	19651.0	528.7
2012	2233.9	2971.0	1536.0	26807.0	454.0
2013	2464.9	3576.0	1028.0	29579.0	688.8

Source: Author's calculations

Looking more closely at the monthly fluctuations, a seasonal pattern can be noticed in August and September (Figure 3), due to the seasonal characteristic of the economic activity. However, the seasonal adjusted time series outlines a decrease in the third quarter of 2009, and in 2011. Possible explanation for such outcomes might be the fact that in 2009 the agreement with the IMF was signed and the first two installments have been made in May and September. The year 2011 was the first year of economic recovery, after the outburst of the economic crisis in 2008, which might have had a contribution to a more entrepreneurship friendly environment, considering the studies which identify a correlation among the evolution of GDP and the rate of bankruptcy or insolvency (Salman *et al.*, 2009; Bunn and Redwood, 2003, Everett and Watson, 1998). Also, in 2011 a new preventive stand-by agreement with IMF has been signed.

Figure 3. Evolution of number of companies filing for insolvency in Romania, raw and seasonal adjusted data

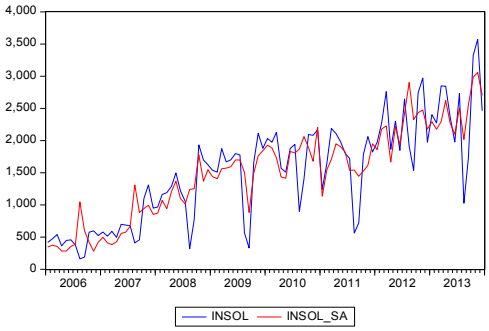
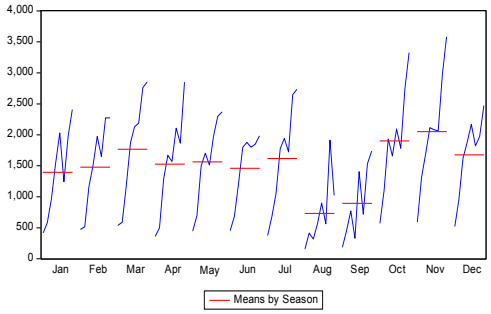


Figure 4. Evolution of number of companies filing for insolvency in Romania, by season

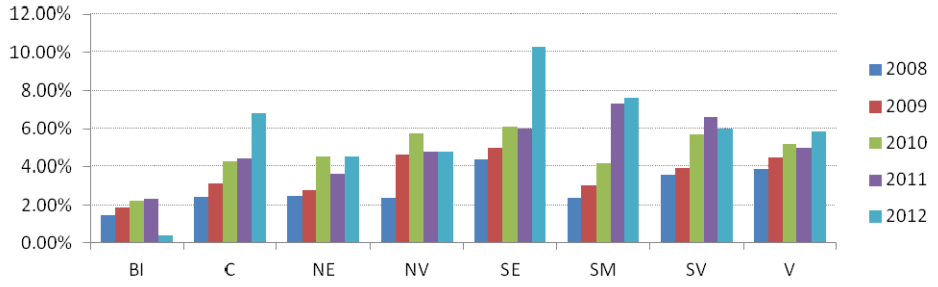


Source: Author's representations

The aggregate number of companies that fall under the Insolvency Law varies also by NUTS II regions. Due to the availability of data, the time span for which the distribution by age and NUTS II region is analyzed is 2008 to 2012. Moreover, for a better comparison at regional level, the insolvency rate has been computed by dividing the number of companies which have opened the insolvency proceedings have been to the number of active companies in the respective regions. The data source for the number of active companies has been the National Institute of Statistics.

At regional level, the insolvency rate varies and is not homogeneous. Compared to other regions, the insolvency rate in Bucharest-Ilfov region is lower; this situation could be explained by the fact that this region solely contributes with over 25% to the Romanian GDP. Most insolvencies, as share of total active companies, are recorded in the South-East region for the entire time period analyzed, except 2011, when the South-Muntenia region recorded the highest rate of insolvencies, with about 60% higher than in 2010.

Figure 5. Number of companies filing for insolvency as share of total active companies in the region, % at regional level



Source: Author's representation

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The economic recovery from 2011, this being the first year of economic growth since 2008, is noticeable also from the number of insolvencies recorded at regional level. In most regions there was a decrease in 2011 compared to the previous year, excluding South Muntenia and South-West regions. Furthermore, in 2012 the descending trend persists only in Bucharest-Ilfov region. However, relative to 2008 the phenomenon remains more pronounced, except Bucharest-Ilfov for which the insolvency rate, calculated as the ratio between the companies filing for insolvency and active firms, is significantly less.

Table 2. Rate of change in insolvencies

Region	Base year	2008	2009	2010	2011	2012
BI	Previous year	100.00%	26.89%	9.24%	-3.85%	-82.16%
	Year 2008	100.00%	26.89%	38.62%	33.28%	-76.23%
C	Previous year	100.00%	23.97%	22.62%	-5.05%	58.28%
	Year 2008	100.00%	23.97%	52.01%	44.34%	128.46%
NE	Previous year	100.00%	8.36%	45.06%	-26.04%	27.40%
	Year 2008	100.00%	8.36%	57.18%	16.25%	48.11%
NV	Previous year	100.00%	85.05%	11.12%	-23.39%	5.25%
	Year 2008	100.00%	85.05%	105.63%	57.53%	65.79%
SE	Previous year	100.00%	12.04%	11.24%	-9.74%	76.95%
	Year 2008	100.00%	12.04%	24.63%	12.49%	99.05%
SM	Previous year	100.00%	25.32%	25.49%	63.09%	8.22%
	Year 2008	100.00%	25.32%	57.26%	156.49%	177.57%
SV	Previous year	100.00%	6.80%	34.91%	6.81%	-4.51%
	Year 2008	100.00%	6.80%	44.08%	53.89%	46.95%
V	Previous year	100.00%	12.04%	4.30%	-11.77%	22.16%
	Year 2008	100.00%	12.04%	16.86%	3.10%	25.95%

Source: Author's calculations

The distribution of the number of insolvencies by sectors of activity reveal that most companies which have opened the insolvency proceedings have been active in the manufacturing (20% in 2008 and 13% in 2012), construction (10% in 2008 and 14% in 2012) and wholesale and retail trade (47% in 2008 and 41% in 2012). However, when considering the insolvency rate for each sector of activity, computed as percentage of number of companies in insolvency divided by the number of active companies, the results illustrate a more homogenous distribution, nevertheless Figure 6 shows that sectors of activity such as industry, manufacturing, construction, trade, transport, hotel industry and the real estate transactions have been most hit by the economic crisis.

Figure 6. Number of companies filing for insolvency in Romania, raw data by sector of activity

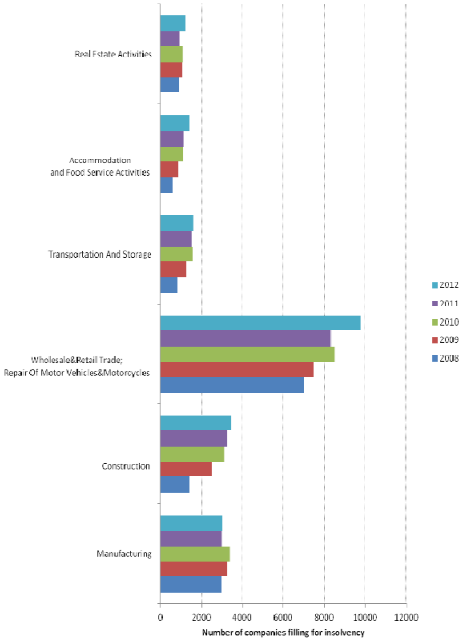
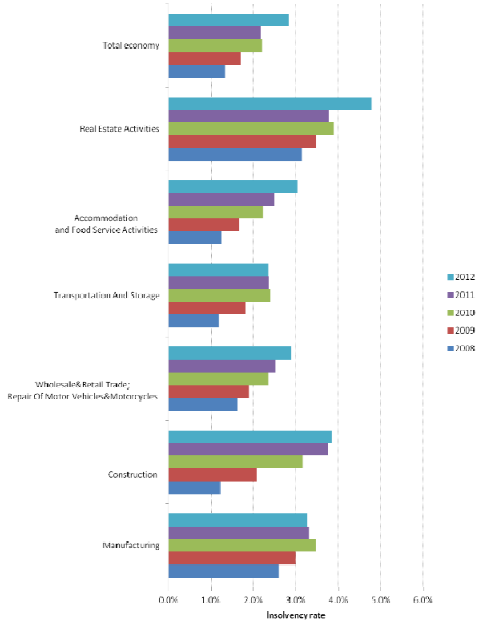


Figure 7. Insolvency rate in Romania, by sector of activity



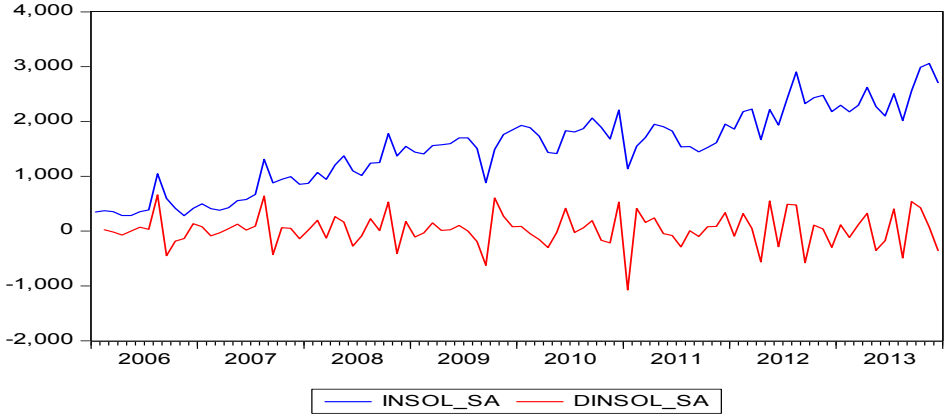
Source: Author's representations

4. ARIMA(p,d,q) model specification

In the following paragraphs all reference to the number of companies filing for insolvency will take into account the seasonal adjusted series.

The first step in specifying the ARIMA(p,d,q) model is to test whether the time series is stationary or not. For this purpose, the ADF test has been applied, with $H_0: a_1 = 1$, meaning that the series is not stationary, with the alternative $H_1: |a_1| < 1$ that it is stationary. Given the fact that ADF test statistic = -1.33, p-value = 0.6091, for $\alpha = 0.05$ we accept the null hypothesis that the seasonal adjusted time series is not stationary and has a unit root. The first order integration of the time series becomes stationary, as the ADF test statistics = -7.807, p-value = 0.0000, for $\alpha = 0.05$.

Figure 8. Seasonal adjusted series and first order integrated series of the number of companies filing for insolvency in Romania



Source: Author's representations

The correlogram of the 1st order integrated time series indicates that the model has both AR (p) and MA (q) terms. Although several models have been estimated, for which the parameters are significant at a significance level of $\alpha = 0.1$, the best model ARIMA(p,d,q) model is an ARIMA(4,1,8), which explains about one third of the variability of the time series analyzed (adjusted R^2=35.79%).

Table 3. Estimated ARIMA(p,d,q) models

Variable	ARIMA(13,1,0)	ARIMA(0,1,8)	ARIMA(4,1,4)	ARIMA(4,1,8)
C	27.243 (2.324)**	24.822 (3.751)***	25.154 (2.027)**	24.981 (4.337)***
AR(1)	-0.498 (-4.623)***			0.161 (1.726)*
AR(2)	-0.231 (-2.241)**			
AR(4)	-0.332 (-3.099) ***		-0.591 (-7.028)***	-0.494 (-4.875)***
AR(5)	-0.217 (-1.839) *		-0.165 (-2.024)**	
AR(13)	-0.184 (-1.779) *			
MA(1)		-0.608 (-7.876)***	-0.689 (-29.877)***	-0.857 (-17.925)***
MA(4)		-0.285 (-3.312)***	0.528 (29.518)***	0.345 (7.108)***
MA(8)		0.138 (1.674)*		-0.204 (-3.775)***
Adj. R^2	0.2750	0.2716	0.3532	0.3580
F-statistic	7.146	12.682	13.155	11.036
p-value(F-statistic)	0.0000	0.0000	0.0000	0.0000
Akaike info criterion	14.039	13.958	13.905	13.897

Variable	ARIMA(13,1,0)	ARIMA(0,1,8)	ARIMA(4,1,4)	ARIMA(4,1,8)
Schwarz criterion	14.215	14.066	14.044	14.062
Hannan-Quinn criterion	14.110	14.002	13.961	13.963

$***\alpha$=0.01, $**\alpha$=0.05, $*\alpha = 0.1$

Source: Author's calculations

Having the ARIMA(4,1,8) model specified, in the next paragraphs the validity of the model is verified by testing if $\varepsilon_i = iid(0, \sigma^2)$.

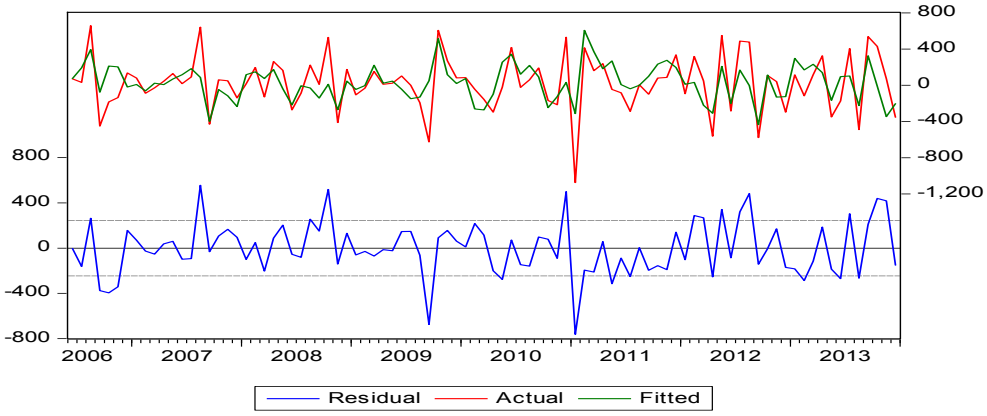
The first order autocorrelation of the residuals has been tested by applying the Durbin-Watson test. The null hypothesis of the test is H_0: $\rho = 0$ in the equation $\varepsilon_t = \rho\varepsilon_{t-1} + \epsilon_t$, with the alternative hypothesis $H_1: \rho \neq 0$. According to the DW test statistics =2.040, we appreciate that there is no first order autocorrelation among the residuals. When testing for high-order serial correlation, by computing the serial correlation Breusch-Godfrey Serial Correlation LM test, we test the null hypothesis that there is no serial correlation up to lag 12:

$H_0: \rho_1 = \cdots = \rho_{12} = 0$ in ecuatia $\varepsilon_t = \rho_1\varepsilon_{t-1} + \cdots \rho_{12}\varepsilon_{t-12} + \epsilon_t$,

$H_1: \rho_i \neq 0, i = \overline{1,12}$.

The LM test statistics equals 9.613 (p-value = 0.649), hence for $\alpha = 0.05$ we accept the null hypothesis that there is no high-order serial correlation among the residuals up to lag 12.

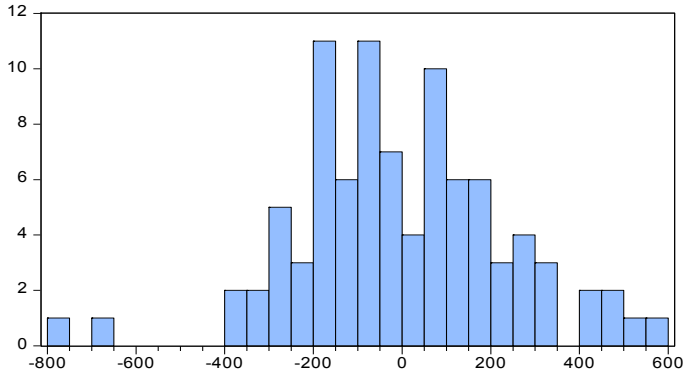
Figure 9. Evolution of the estimated values versus actual values



Source: Author's representations

The normality of the distribution of residuals is tested with Jarque-Bera test, with the null hypothesis that the residuals are normally distributed. The JB test statistics of 2.672 (p-value = 0.262) shows that we have enough evidence to accept the null hypothesis for $\boldsymbol{\alpha = 0.05}$ and to consider the errors as having a normal distribution.

Figure 10. Histogram of residuals



Source: Author's representations

Heteroskedasticity of residuals is verified by computing the ARCH test, assuming that errors are homoskedastic.

$H_0: \rho_1 = \cdots = \rho_{12} = 0$ in the equation $\varepsilon_t^2 = \rho_1 \varepsilon_{t-1}^2 + \cdots \rho_{12} \varepsilon_{t-12}^2 + \epsilon_t$,

$H_1: \rho_i \neq 0, i = \overline{1,12}$

As the test statistic equals 7.810 (p-value = 0.799), we can accept the null hypothesis, thus there is no ARCH effects up to lag 12.

Analyzing the structure of the of the ARIMA (4,1,8) shows that both for AR roots and MA roots, all roots lie in the unit circle and that the model is stationary and invertible.

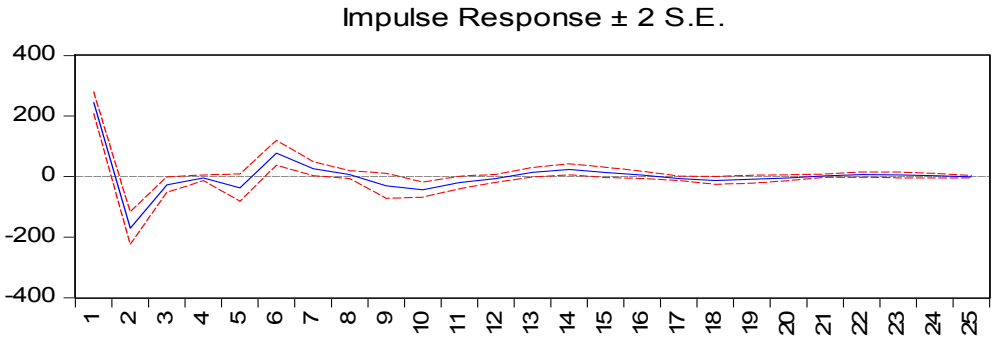
Table 4. Inverse Roots of AR/MA Polynomial(s)

AR Root(s)	**Modulus**	**Cycle**
0.635015 ± 0.590433i	0.867095	8.388386
-0.554439 ± 0.590805i	0.810218	2.703084
MA Root(s)	**Modulus**	**Cycle**
0.814358 ± 0.550872i	0.983178	10.56450
0.871218	0.871218	
-0.532013 ± 0.611927i	0.810859	2.748009
0.058800 ± 0.725251i	0.727630	4.217194
-0.696110	0.696110	

Source: Author's calculations

Moreover, the impulse response (Figure 9) shows that an innovation in the evolution of the insolvency phenomenon in the first months drives a decrease in the number of insolvencies, yet this trend changes as such impulse impel an increase in the number of companies. However, the shocks are absorbed over time by the economy.

Figure 11. Impulse response function of ARIMA(4,1,4) model



Source: Author's representations

Conclusions

In the attempt to identify if there is a propagation of insolvency in Romania, in particular if a snowball effect exists among companies filing for insolvency, the Box-Jenkins methodology has been applied. The results show that the past values and shocks or innovations explain around 35% of the variation of the aggregate number of insolvency in Romania. This outlines the fact that in the process of explaining the evolution of the number of companies filing for insolvency, other determinants should be also considered in the analysis, factors characterizing the macroeconomic climate, microeconomic environment, and social context.

Relative to the aim of the present article, the results confirm a propagation effect of the insolvency phenomenon in the Romanian economy, as past values, for which coefficients have proven to be significant. As resulting from ARIMA(4,1,8) model and the impulse response function, own past values and innovations generate a decline during the first months, though during the subsequent months the number of companies filing for insolvency radiates. Nevertheless, over time the propagation becomes diffuse and the shocks are absorbed by the economy. The decrease in the first months could be explained by the reallocation of resources from the market to companies that are able to provide a substitute for the goods and services offered by companies filing for insolvency. A reason for the increase of the phenomenon in the medium-term might be the fact that insolvency of companies triggers a financial distress in the microenvironment and activity of their suppliers, creditors, customers, etc. and the inability to recover the credit offered alter their financial stability. Moreover, considering the significance of the constant term of the ARIMA(4,1,8) equation, the assertion that economic failure is a natural economic event is acknowledged.

From legal and economic point of view, reorganization of companies represents one alternative to counterbalance the negative effects of insolvency and bankruptcy. However, the number of companies which go into reorganization is low, under 5% of total companies opening the insolvency proceedings. The causes may be various, and are not the purpose of this paper to identify them, nevertheless we might mention here the limited number of specialists, given the magnitude of the phenomenon, the late opening of insolvency proceedings which makes it harder

for reorganization, the lack of financial resources for implementing reorganization plans, the lack of trust shown by creditors in the organization plan, etc. It is could be also favorable for entrepreneurs to monitor and evaluate their activity so as to allow them to identify the problems at an early stage, to take the necessary actions to remedy in time the problems, to communicate constantly with business partners, creditors, suppliers, to have a good knowledge of the business laws and regulations, to appeal to professional consulting services, etc.

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