

15. THE MECHANISMS OF ARREARS IN ROMANIA

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Abstract

The phenomenon of arrears is difficult to capture due to its complexity. In this context, the paper aims at providing a unified perspective on the phenomenon by building a picture of the network of arrears in Romania which reflects the relations between the main economic actors involved.

The relevance of the study stems from the analysis of the mechanism of arrears that made them a persistent phenomenon even after more than 20 years since the transition from the centrally-planned economy to the market economy, and from the analysis of the impact of financial crisis which reduced the accessibility of the Romanian agents to bank credit and, consequently, generated an increase in arrears.

Keywords: network of arrears, persistence, mechanisms

JEL Classification: H30, H31, H32, H39

1. Introduction

The literature focused on arrears issues is large and shows the interest of the experts in this topic, especially in the countries that experienced the transition from the centrally-planned economy to the market economy. Among them we find the studies focused on the analysis of arrears in Romania, which describe the dimension of this phenomenon. Nonetheless, only a small part of them are focused on the persistence of the phenomenon even after more than 20 years from the transition to the market economy and 6 years after joining the European Union.

There are many papers regarding arrears in Romania that treat this phenomenon on the basis of trade credits (Calvo and Coricelli, 1994; Dobrescu E, 1998, 2002; Luodana Santarosa, 2001; Hildebrandt, 2002) or soft budget constraints (Daianu, 1999, 2000; Croitoru, Schaffer, 2002), which provide a big picture of arrears in different periods trying to reveal their mechanism, their dimension and the factors that could explain the specific aspects as compared to other transition countries. In this respect, some papers investigated the role of overdue trade credit in a transition economy and its importance as part of the financial deepening process, and its expected impact on monetary aggregates and money velocity. As for soft budget

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constraints, two models tried to explain two types of arrears: one focused on the collusion between economic agents (they collude and voluntarily expand the arrears because they expect that government will come with a collective bail-out) and another explicit model based on creditor passivity (Schoors and Sonin, 2002).

The importance of this topic derives from the consequences of the soft budget constraint (SBC), manifested as: a) soft loans; b) budgetary subsidies; c) tax arrears; d) credit arrears; e) wage arrears; f) the renegotiation of administrative prices which differ from the immediate negative impact on allocative efficiency, excess demand for labor and other inputs and, related to this, the phenomena of shortages (e.g. Kornai, 1980; Quian 1994); lack of fiscal consolidation; lack of innovation, and, not least, a negative impact on overall economic growth (e.g. Kornai, 2001; Huang and Xu, 1999; Bain ad Wang, 1999; Quian and Xu, 1998; Brücker, Schröder, 2006, p. 6). Other macroeconomic consequences were expressed by Clifford and Kahn (1993, p. 681-682): "First, arrears can undermine monetary control and thus limit the effects of tight credit policy on inflation and the balance of payments. More specifically, recourse to arrears to finance expenditures can lead to shifts in the demand for bank credit and in the income velocity of money, making it more problematic for the authorities to design and implement monetary policy. Second, inter-enterprise arrears can lead to inefficiencies, and the eventual breakdown of the payments mechanism, with obvious adverse effects on production and output. As enterprises bypass the banking system and arrears begin to reach a level they consider undesirable, cash transactions become more and more prevalent. This "cash-in-advance" constraint on transactions becomes binding and, if the authorities are unwilling to provide the needed currency, production begins to suffer. Finally, the arrears of state-owned enterprises represent a potential fiscal liability of the government. At some point in time, the government would have to cover these quasi-fiscal deficits, thereby affecting private sector behavior both now and in the future". Dalia Marina and Monika Schnitze (2005) proved, based on firms' surveys, how arrears and barter affect output growth of firms in 1997 in Ukraine.

The analysis in this paper starts by focusing on the studies that describe the phenomenon of arrears in Romania (Clifford and Kahn, 1993; Dobrescu, 1998, 2002; Daianu, 1999, 2000; Croitoru and Schaffer, 2002; Luodana Santarosa, 2001) or on Romania and other countries such as Bulgaria (Everaert, Hilderbrandt, 2001), Hungary (Schoors and Sonin, 2002), Russian Federation (Rostowski, 1993, 1994); Russian Federation and Ukraine (Nikitin, 2000). A synthesis of the main approaches, objectives and methodologies used in analyzing arrears is given. This is included in the second chapter, namely the literature review.

The third chapter analyzes the persistence of arrears in Romania concentrating on the causes of the phenomenon as they are reflected in the economic data.

The fourth chapter describes the network of arrears in Romania focusing on: a) the relations between government and economic agents, mainly state enterprises, b) the relations between government and the banking system; c) the relations between the banking system, economic agents and population; d) the relations among the economic agents.

The relevance of the study comes from the analysis of the mechanism of arrears that made it a persistent phenomenon even after more than 20 years since the transition to the market economy and from the analysis of the impact of the financial crisis which reduced the accessibility of the Romanian agents to bank credit and, consequently, had a growth effect on the arrears. In this respect, we agree with the perspective of Calvo and Coricelli (1994) that the arrears “stumbling block in the reform process” and “have become a major impediment for the recovery of the economy” especially after the financial crisis.

2. Literature Review

The arrears phenomenon is not new, either for the market economies or for the centrally-planned ones, but the differences in the two cases are given by the dimension and cyclical evolution and, in the case of Romania, by dimension and persistence. In Romania, this phenomenon was present during the centrally-planned system and reappeared and even amplified after 1989 “because of the new restrictions and determinations implied by changed economic environment and objective functions² of the firms in this period” (E. Dobrescu, 1998, p. 24).

The phenomenon can be described according to Dobrescu (1998, 2002) as arrears (from the point of view of debtors) or as overdue payments among economic agents: firms, banks, government institution and households (from the point of view of creditors). Understanding the arrears mechanism implies to connect it with the “effective transaction” of goods and services and the “monetary evaluation (prices) at the given moment in the economies”. As overdue payment obligations, the dimensions of arrears depend on the time of delay³ that usually may be extended by bilateral agreements. This offers a different picture of the real amount⁴ of the phenomena and makes comparison and analysis more difficult.

Taking into consideration different criteria, Gilles Alfandari and Mark Schafer (1996) distinguish three kinds of arrears: the first one, associated with “*late payment*”, which could eventually be paid by the firms, the second one, “*bad debt*”, associated with the financial distress, that will not be paid on short or medium term, and the third one, “*strategic arrears*” or “*collusive arrears*” (in Perotti’s, 1994, terminology) as a result of the strategic behavior (bail out, clearing measures, etc.). All these types of arrears were present in the Romanian economy during the transition period.

² E. Dobrescu takes into consideration the five objective functions of the Romanian enterprises during the transition period: minimal solvency, intermediate solvency, full, but unprofitable solvency, full and partially profitable solvency and full and highly profitable solvency.

³ In Romania, the Ministry of Finance defines arrears as all payments overdue by 30 days, according to contracts or legal obligations, as compared to other transition economies which consider arrears as no contractual obligation based on sales/purchase agreement.

⁴ The IMF experts consider that in Romania a rough breakdown for 30, 60, 90 days exists with about a third of debts in each category, suggesting that the amount of truly bad loans is considerable lower (see the IMF Country Report No 04/220, July, 2004, Romania: Selected Issues and Statistical Appendix, p.7).

There are many explanations of the arrears phenomenon in the literature, some of them summarized by Clifton and Khan (1993, p. 681) and Dobrescu E. (1998, p. 25): “financial underdevelopment and credit failure, which cause enterprises to assume banking-type functions (Begg and Portes, 1992; Ickes and Ryterman, 1993); tight credit policies, which create a liquidity crunch (Calvo and Coricelli, 1992); lack of credibility of the government’s reform program (Rostowski, 1992); and the particular structure of industry in a command economy, which is based on chain links between enterprises (Dăianu, 1993). Dalia Marina and Monika Schnitze (2005) explain the arrears based on the disorganization that increased the arrears and barter exchanges between enterprises. We can add other explanations to the case of the Romanian economy, such as: liquidity squeezes in the absence of payment discipline; protected privatization, implicit subsidies by the state, rent seeking, chain effects (*IMF Country Report No.04/220*, 2004). D. Dăianu (1999) considers inter-enterprise arrears as an “outcome of *strain*”, that show “a structural problem” and a “resource misallocation”, and “both have put the system under tremendous *strain*”. All these prove the complexity of the arrears phenomenon and the diversity of the factors which favor its appearance and persistence and the difficulties to control its magnitude in the absence of strict financial constraints and contractual rules.

The literature regarding the arrears treats this phenomenon from two points of view: *macroeconomic*, based on trade credit (Rostowski, 1993; Dobrescu, 1998, 2002; Dăianu, 1999, 2000; Luodana Santarosa, 2001), or soft budget constraint (Croitoru, Schaffer, 2002, 2003) and *microeconomic*, starting from the behavior of firms (Begg and Portes, 1992; Dobrescu, Mereuță, Calvo and Coricelli, 1994). The instruments used to test different hypotheses regarding the impact of arrears are various and adapted to the main objectives, as shown in Table 1.

Table 1

Methodologies Used in the Studies regarding Arrears

Authors, paper	Objective	Methodologies applied
Clifton E. V., Kahn M.S., Inter-enterprise arrears in Transforming Economies. The case of Romania, <i>IMF Staff papers</i> , Vol. 40, No.3, September 1993	Extracting lessons from the Romanian experience useful for other countries	Empirical analysis of the data and measures to solve the arrears and not give rise to moral hazard problems.
Calvo G. A., Coricelli F, Inter-Enterprise Arrears in Economies in Transition, <i>Empirica</i> , 21:1994, pp. 37-53, Kluwer Academic Publishers, Printed in the Netherlands	Analyzing the link between bad equilibrium of the transition economies and the chain of arrears as a form of involuntary credit. The regression analysis evaluating the high degree of circularity of the phenomenon	A model of liquidity-constrained firms with inter-enterprise arrears A cross-section analysis based on OLS regression using a sample of 1655 firms.

Authors, paper	Objective	Methodologies applied
Dobrescu E., <i>Tranzitia în România. Abordare econometrică</i> , Editura Economică, București, 2002; <i>Macromodels of the Romanian transition economy</i> . Second edition MPRA Paper No 35825/1998	Building a conceptual restructuring of the arrears using the matrix analysis	Matrix analysis Econometric analysis to measure the level of arrears multiplier and the monetary equivalent and the „dollarization disturbance factor”
Perotti E. C., Inertial credit and opportunistic arrears in transition, <i>European Economic Review</i> 42, 1998, pp.1703-1725	Identifying the mechanism of arrears as a result of an unrealistic credit policy	A game/theoretical model with three players in the economies
Dăianu D., Structural strain in transformation economy, <i>Romanian Economic Review</i> , <i>Revue Roumaine de sciences économique</i> , Tome 44, Nr.1-2/1999	Explained inter-enterprise arrears as a symptom of systemic strain	A simple model based on short-run production function
Everaert G., Hildebrandt A., <i>On the Causes of Soft Budget Constraints: Firm-level Evidence from Bulgaria and Romania</i> , LICOS Discussion Paper 109/2001	Testing empirically the causes of the soft budget constraints	The regression equation of the panel non-balance data based on companies account for Bulgarian and Romanian economies
Croitoru L., Schaffer M.E, <i>Measurement and Assessment of Soft Budget Constraints in Romania</i> , Occasional Paper No. 2/2002, NBR	Comprehensive analysis of soft budget constraints in Romania during 1995-2000	Analysis of a comprehensive dataset of 9000 Romanian firms during 1995-2000, inflation adjustment recalculation of profit /losses and financial flows between firms and its creditors
Hildebrandt A., <i>Too many to fail? Inter-enterprise arrears in transition economies</i> , BOFIT Discussion Papers, No11/2001	Analyzing the arrears as an obstacle to economies in transition focusing on the way the firms might accumulate arrears	Simple empirical framework based on regression of panel data based on a survey of Hungarian and Romanian firms
Santarossa Luoana, <i>Arrears as a Sign of Financial Repression in Transition Economies. The Case of Romania</i> , Discussion Paper 2001/04, CERT	Studying arrears as a sign of financial repression and soft budget constraints	Ad hoc econometric investigation of determinants of M1 and M2 velocity; a simple money demand-supply model

Authors, paper	Objective	Methodologies applied
Schoors K., K. Sonin, 2002, <i>Passive creditors</i> , LICOS Seminar	Analyzing the adverse externality effects of bank passive creditors	A simple theoretical general equilibrium model
Wegener Friis Jakob, J. W., Payment arrears in Romania: Is a hard budget constraint yet to come?, in <i>ECFIN Country Focus</i> , Volume III, Issue 12 2006.	Analyzing the arrears as a result of soft budget constraint	Economic analysis of the amount and structure of Romanian arrears

In the case of Romania and the Russian Federation, because of the dimensions of this phenomenon, the explanation could come from both sides of the theory (Rostowski, 1993; Dobrescu E, 2002). In this respect, Dăianu (2000, p. 24) considers arrears as a "temporary substitute for inside money (bank credit), finance, without restraint, loss-making enterprise and budget deficit". A different opinion is expressed by Rostowski, who considers arrears "a systemic phenomenon, a sort of equilibrium response of the system to an initial liquidity crunch" and not a channel for financing "bad," non-viable firms, which are indeed kept alive by other firms in expectation of a government bail-out" (Rostowski, 1993, cited by Calvo and Coricelli, 1994, p. 3). Romania's experience shows that during 1990-1991, before the implementation of the privatization and restructuring, the arrears had been a way to finance losses or unviable firms, and the firms' accumulated debt based on expectations of future compensation and used the opportunities of the global anticipated compensation. So, based on this anticipation, the arrears e increased from about 21 percent of gross domestic product (GDP) in July 1991 to 50 percent of GDP by the end of that year (Khan and Clifton, 1992).

3. The Persistence of Arrears in Romania

The arrears phenomenon became persistent in Romania and fluctuated between 20-40% of GDP, except for 1991 (see Figure 1). This is a high level, "different from other transition countries where the empirical evidence showed that the levels of inter-enterprises arrears have been stable over time and, in fact, comparable to the level observed in the western market economies"⁵ (Brücker, Schröder, 2006, p.7). The policy makers, together with the IMF, World Bank and European Commission experts continued to monitor the arrears situation after 23 years from the transition to the market economy.

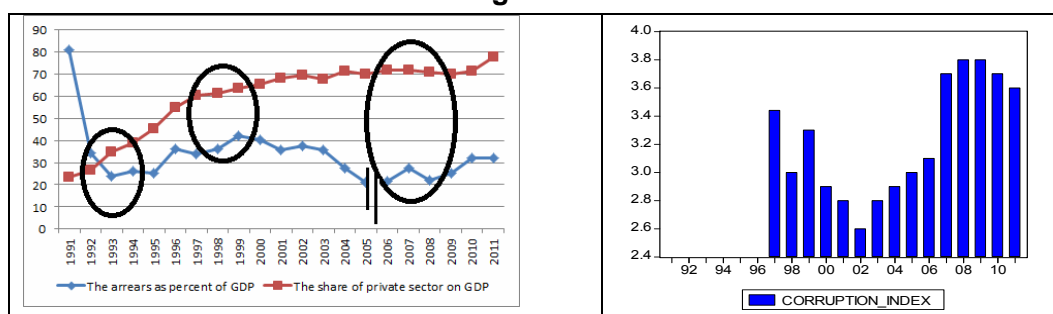
We can identify three periods that mark the evolution of arrears in Romania: the first characterized by the global compensation in 1991 and price liberalizations of the food; the second characterized by the acceleration of restructuring of the economy and the banking system and the second price liberalization (1997-1999) and the third

⁵ See the Belka et al., 1995, Bonin and Schaffer, 1995, Alfandari and Schafefer, 1996, Schafer, 1998, cited by Brücker, H, Schröder Ph, J.H., 2006, "EU Accession and the Hardening of Soft Budget Constraints: Some Macro Evidence", in *www.researchgat*.

influenced by the economic and financial crisis that started in 2008. One may see that at the end of 1991 the arrears accounted for 81% of Gross Domestic Product (GDP), a very high level as compared to the average evolution during 1992-2011.

Figure 1

The Evolution of Arrears and the Privatization Process in Romania during 1991-2011



Note: For 1995 stocks and flows some arrears were written-off as parts of the FESA: debt conciliations in fall 1995; For December 1997, an amount of 7875 billion lei has been added to adjust for the written-off associated with Bancorex and Banca Agricola; after 2005, the arrears only for government and for banks (unadjusted loan classified as watch, substandard, doubtful and loss).

Source: Table 12, *IMF Staff Country Report* 98/123, 1998 for 1992-2007, Statistical Appendix, p.17 and Table 10, Statistical Appendix p.63, *IMF Country Report* No. 04/220, July 2004, Jacob Wegener Friis, "Payment arrears in Romania: Is a hard budget constraint yet to come", *ECFIN Country Focus*, vol. III Issue 12/06.10.2006, *Raportul Curții de Conturi* 2012 and *Raportul Anual al Consiliului Fiscal*, 7 Aprilie 2011, Conferința de presă, Data from Monthly NBR Bulletin, The international Corruption Index.

The explanation derives from the accumulation of arrears before 1989, the liquidity crises after 1989 and the impact of the economic policy measures starting with the gradual restructuring process, the structural problems of the Romanian economy and the tolerance of contractual financial indiscipline in the absence of clear property rights. To these we may add the effects of announcement of the global compensations⁶ that increased the arrears level from 21% in July 1991 to 81% of the GDP at the end of 1991 (Croitoru, Schaffer, 2002). In order to solve the accumulation of arrears, the Government and commercial banks took over 138 billion lei in un-performing credits and losses from the enterprise portfolio⁷, and the level decreased to 34.6% in 1992, which solved only temporarily the overdue payments. The compensation policy of historical debt and/or loans directed to some sectors, the erosion effects of debt under the high inflation stimulated the belief that the delay in payment works in favor of the debtor which could use as an opportunity to move a part

⁶ The Law 80/1991, Law 76/1992, and Law 43/1993 and Ordinance 13/1995 for financial isolation program. For details see Croitoru L., Schaffer M.E., 2002, *Measurement and Assessment of Soft Budget Constraints in Romania*, Occasional Paper, 02/2002, NBR and Khan and Clifton, 1992.

⁷ The Annual Reports of NBR, 1991-1995

of the financial effort to the “weak creditors”. So, at the end of 1996 the overdue payments in Romania were estimated at 39400 billion lei, around 36% of the GDP⁸.

The second period coincides with the restructuring of the banking system, at the end of 1997, when an amount of lei 7875 billion of un-performing loans and interest payment associated with Bancorex and Banca Agricola were reallocated to public debt according to OUGs 48/1997 and 72/1997. Another amount of 13558 billion lei of arrears from the banking system restructuring process and 530 million dollars of un-performing credits were reallocated to the public debt in 1999 (by transfer to the newly established Bank Asset Recovery Agency)⁹ and the Ministry of Finance issued medium-term Treasury bonds in compensation. The acceleration of the privatization process, the new regulations regarding the bankruptcy that changed the non-payment culture of the economic agents, the efforts to eliminate the losses from quasi-fiscal deficit, including the second liberalization of food, and the contagion effects influenced the structure of arrears.

The third period of arrears evolution was influenced by the world financial and economic crisis that affected also the Romanian economy and the level of arrears. The austerity measures adopted by Romania in order to counteract the high increase in the fiscal budget deficit influenced the arrears evolution, many enterprises filed for bankruptcy or insolvency procedures because of their incapacity to pay their debt. According to the National Office of the Trade Register¹⁰, over 21700 companies became insolvent and other 66420 stopped their activity in 2010. The level decreased in 2011, when only 19651 became insolvent and 21221 suspended their activities and in 2012, when big companies like Hydroelectrica became insolvent.

We notice a negative correlation between the share of arrears in the GDP and the share of private sector in the GDP (-0.518579 correlation coefficient) and the corruption index (-0.389033 correlation coefficient). We applied the Granger causality test to the pairs of variables: 1) P (privatization as share of GDP, denoted by P) and A (arrears); 2) Corruption Index and A (arrears). The series were stationary. The results of the Granger causality test (see Annex 1) indicate that hypothesis H0 cannot be rejected at a 5% or 10% significance level for the pairs of variables: 1) P (at lag one and two) and A and 2) Corruption Index (at lag one) and A. Hypothesis H0 can be rejected at 10% significance level for the Corruption Index at lag two and A pair. This indicates that the Corruption Index is a causal factor, in a Granger sense, of the arrears (Annex 1). Also, if we look at the Corruption Perception Index, according to Transparency International, Romania remains among the most corrupt countries in Europe, the score index 3.6 ranks Romania 25th among the 27 European countries and 75th among the total of 182 countries that were monitored, on a par with China.

The accumulation of the arrears especially in the sectors with high structural problems and low competitiveness contributed to the deterioration of the structure of arrears by increasing the arrears to social security funds, unemployment funds, wage arrears, dividends, from less than 4% of GDP in 1995 to more than 10% in 2000, with a slightly

⁸ *The Annual Reports of NBR, 1996-2000, p.48*

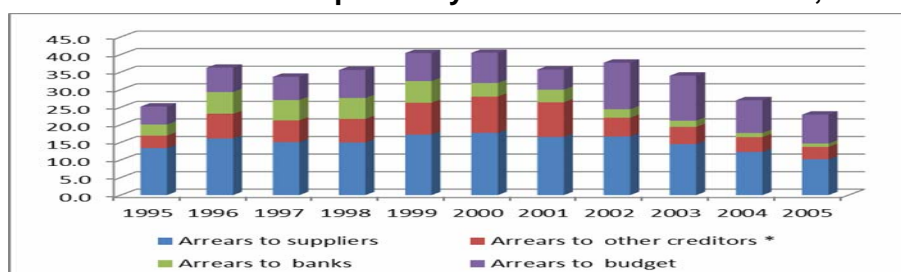
⁹ *The Annual Reports of NBR, 1996-2000, p.388*

¹⁰ See for other details: *Business 24.ro, Insolventa. Peste 19600 de firme au capitulat anul trecut, 24 Ianuarie 2012, <http://www.business24.ro/articole/numar+firme+insolventa+romani>.*

decreasing trend through 2005, as we may see in Figure 2. The structure was dominated by enterprise arrears that still covered more than 10% of GDP and budget arrears with a faster increase after 1997, which shows the inefficient allocation of resources and an “unequal playing field among enterprises¹¹”. The factors that contributed to the persistence of arrears to the budget were: the tolerance of the authorities to the arrears, especially to the inter-enterprises arrears of state-owned companies and the lack of rules regarding the state-owned enterprise budget, the small level of penalties in the case of overdue payment and a non-paying culture in relation to the authorities.

Figure 2

The Structure of Inter-Enterprise Payment Arrears in Romania, 1995-2005



* Other arrears, including wage arrears, dividend arrears, and arrears to the social security and unemployment funds.

Source: Statistical Appendix p. 63, *IMF Country Report* No. 04/220, July 2004, Jacob Wegener Friis, Payment arrears in Romania: Is a hard budget constraint yet to come?, *ECFIN Country Focus*, vol. III Issue 12/06.10.2006.

After 20 years, the problem of arrears continues to obsess the political authorities. In this respect, the memorandum with the FMI, the World Bank and the European Commission specify criteria for reducing the arrears of state-owned enterprises, of local and state budgets and of the social security system.

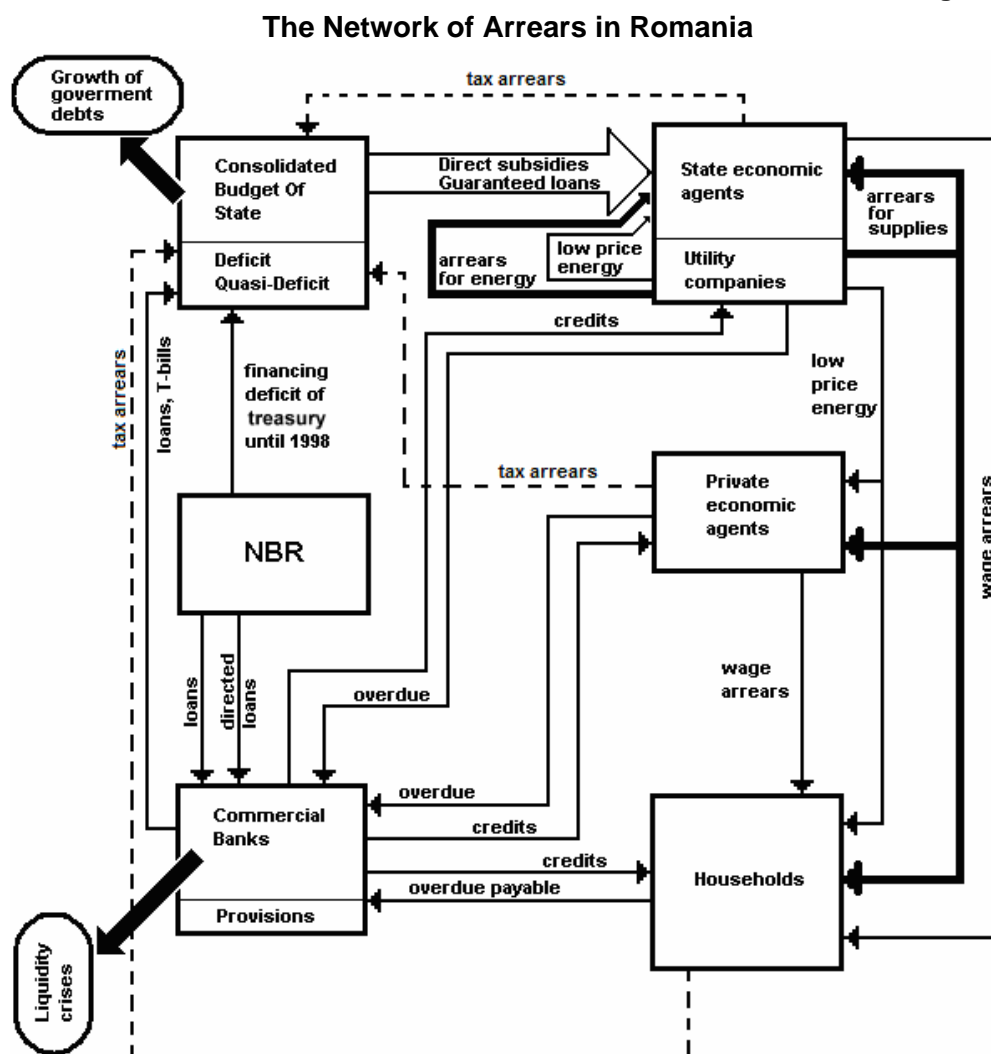
4. The Network of Arrears in Romania

In order to understand the persistence of arrears in Romania, we may look more closely to the arrears mechanism in Romania described by the network of interdependencies between different economic actors. We try to give an answer to the question “Which are the interdependencies that fuel the arrears in Romania?” In order to answer this question, we need to get the whole picture of the arrears mechanism. We simplified the approach taking into consideration six agents: government and the consolidated budget, the National Bank of Romania and the commercial banking system as a reflection of the banking system, the state sectors looking at the whole

¹¹ Romania: Ex Post Assessment of Longer-Term Program Engagement - Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Romania, *IMF Country Report* No. 04/113, April 2004, p.14.

state-owned enterprises, private enterprises as an expression of the private sector, and households, in order to capture the behavior of population regarding the overdue payments (see Figure 3).

Figure 3



We see in Figure 3 a real network of arrears between economic agents and consolidated state budget, between economic agents and banks, between economic agents and population, between population and the consolidate state budget, between population and economic agents and between population and banks. The magnitude and intensity of this phenomenon varied during the past 23 years in correlation with the measures taken by the government as reaction to its persistence.

4.1. Relations between Government and Economic Agents, Mainly State Enterprises

Romania has chosen a gradual reform for the transition to the market economy, in which the government offered subsidies (direct or indirect) to keep prices under control (the share of administered prices in total consumer baskets decreased from 1993 - first price liberalization - to 1997 - second price liberalization - until now¹²) or large lending to support some sectors. The subsidies to agriculture and forestry, some industrial sectors and transport, etc. represented around 40% of the GDP in 1992 and decreased to 36.5% in 1993 and to 33.4% in 1994¹³. At the end of 2002, the direct subsidies to the enterprise sector registered 2.6% of the GDP¹⁴, 0.4 percentage points lower as compared to 2001, and the implicit subsidies (net budgetary credits, tax debt, energy fund, loan guarantees paid) accounted for 5.5% of the GDP in 2002, increasing by 1.4 percentage points as compared to 2001. In 2012, the last 1000 state enterprises, which controlled 54% of the energy sector and 34% of the transport sector accounted for most of the aid for arrears and subsidies which represented 3.8% of the GDP in 2011 (22.07 billion lei decreasing to 21.41 billion lei in June 2012)¹⁵.

The policy makers often accommodated losses of enterprises by quasi-fiscal activities as a response of the system to an initial liquidity crunch and "the tolerance of large arrears"¹⁶ initially between enterprises and/or banks, and later to the budget and utilities, and large lending directed to agriculture, mining, energy and industry sectors. Consequently, the level of quasi-fiscal deficit was 8.2% in 1992 (Croitoru, 1995) and 6.5% on a cash basis and 8.4% on an accrual basis in 1996 (Albu, Pelinescu, p.12). As the result of efforts to reduce the budgetary deficit, the level of quasi-fiscal energy subsidies (low tariffs and non-payments) decreased from 3.3% of GDP in 2001 to 1.5% of GDP in 2002 and continues to decrease complying with the measures agreed by the Romanian government with international experts under the IMF agreement, focusing mainly on improving the corporate governance, reducing the policy intervention by imposing the professional managers, and by increasing the transparency and accountability.

According to the 2012 Report of the Court of Auditors (p. 313), the payment obligation of firms to the state amounted to 12% of GDP at the end of 2011. In the period December 2007 – December 2011, the unpaid arrears grew to 5.2% of GDP in 2008 and to 8.2% of GDP in 2011 because of the insolvency of debtors. It reached 47266.1 million RON in 2011. The paid arrears amounted to 70159.7 million RON in 2001,

¹² In 2012, the administered prices were for: medicines, electric energy, gas, heat energy, rent established by local government, water, sewerage, sanitation, urban transport, railway, transport by inland waterway, post services, radio-TV subscription, services for issuing identity cards, driving licenses and passports.

¹³ The Annual Reports of NBR, 1991-1995, p.175.

¹⁴ Report No. 29123_Ro, Romania Restructuring for EU Integration - The Policy Agenda, June 2004, World Bank, p. 21.

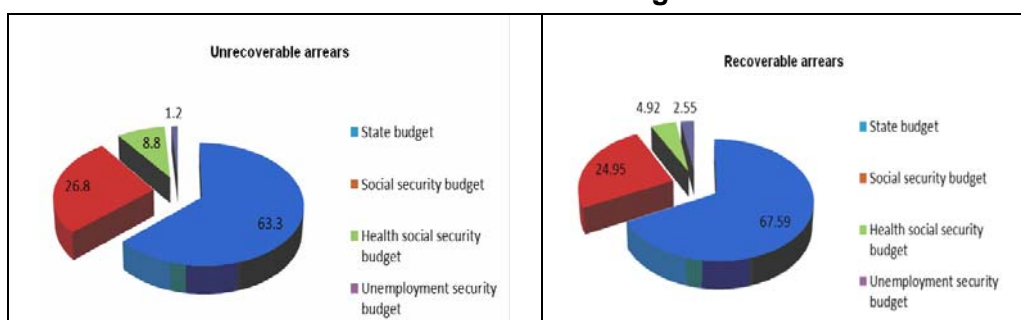
¹⁵ IMF Country Report No. 12/291, Romania: Selected Issues Paper, International Monetary Fund, October 2012, p.10-11.

¹⁶ Romania: Ex Post Assessment of Longer-Term Program Engagement - Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Romania, IMF Country Report No. 04/113, April 2004, p.8.

2.5% of them being the debt of individuals. The distribution of arrears by different components of the consolidated budget is presented in Figure 4. Most of the arrears are concentrated to the state budget.

Figure 4

The Distribution of Arrears by Different Components of the Consolidated Budget



Source: 2012 Report of the Court of Auditors, p.313.

4.2. Relations between Government and the Banking System

At the beginning of transition, Romania faced a liquidity crisis. Consequently, the access of enterprises to credits was limited and the government, by regulations, helped the economic sectors with directed loans at a preferential interest rate. The credit for agriculture at a 13% interest rate reached 105 billion lei at the end of 1993, as a form of implicit subsidies to agriculture (around 60-70 billion lei)¹⁷ taking into consideration the existence of state administered prices for many agricultural goods. Other direct credits were provided for the energy sector and the mining sector, and such credits continued to increase. At the end of 1995, the direct credits to agriculture reached 1400 billion lei and increased to more than twice at the end of 1996 (to a level of 3892 billion lei), and as a consequence the share of structured credits in the refinancing credits of NBR reached 50% at the end of 1996¹⁸. A part of the directed credits became bad loans and contributed to the difficulties of Bancorex and Banca Agricola.

The NBR had a special relation with the General Account of Treasury as administrator which must cover the temporary deficit in the case of debit balance. This was in place until the new regulation of the NRB Act Law 101/1998 regarding the independence of NBR. The development of the primary and secondary T-Bill market modified the relations of the Government with the NBR.

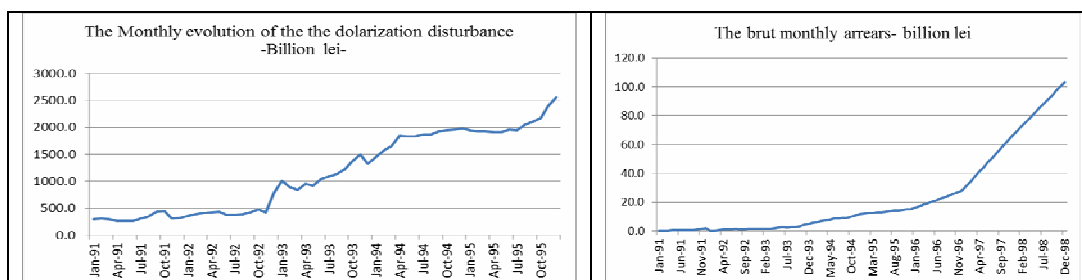
¹⁷ The Annual Reports of NBR, 1991-1995, p. 55.

¹⁸ The Annual Reports of NBR, 1996-2000, p. 69.

The arrears work as a substitute for money and “interact with the disturbing forms of the ‘dollarization’¹⁹”, so the money velocity increased under the normal evolution. Figure 5 presents the monthly evolution of these money disturbance factors that affected the efficiency of the monetary policy of NBR, especially at the beginning of the transition.

Figure 5

The Evolution of “Dollarization” Disturbance and of the Gross Arrears in Romania



Source: Dobrescu E., 2002, Emilian Dobrescu, 2002, *Tranziția în România. Abordări econometrice*, Editura Economică, București, pp. 386-387.

Luana Santarossa (2001, p. 3, *Conclusions and policy implication*) models the impact of real inter-enterprise arrears (IEA) on money velocity during the period 1991-1995 and concludes that “if we accept IEA as a substitute for transaction balance, the impact is very low²⁰ and could be transitory development in a transition economy, where institutional patterns of commercial trade credit are still uncertain”. The result must be accepted with reserve because of the difficulty to determine the monthly annualized GDP, but, the conclusion is consistent with the work of Dobrescu, which shows that the coefficient of the IEA (interpreted as the multiplier of IEA) in the velocity equation is 0.22464, which is positive and not too high (E. Dobrescu, 2002, p. 381).

4.3. Relations between the Banking System, Economic Agents and Population

In relation to the banking system the firms perceived the relative cost of arrears (penalties for delay) as cheaper than the cost of bank credits, so “no explicit, or implicit, interest rate was charged on arrears” (Calvo and Coricelli, 1994, p. 50). The evolution of the nongovernment credit in Romania shows that the behavior of tolerance to late payment in time of tight monetary policy has changed, so the level of overdue credit decreased from 6.2% of GDP in 1999 to 2.41% of GDP in 2002. The structure of these overdue credits shows a decreasing trend of overdue credits for the

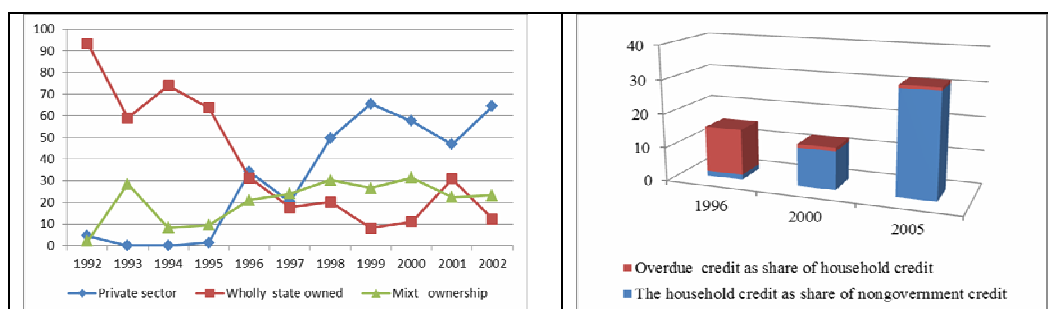
¹⁹ Dollarization is used in the Dobrescu acceptation as forex deposits of residents, evaluated at the Central Bank exchange rate and the foreign currency outside the banking system, estimated by Dobrescu .

²⁰ The influence is slightly stronger in the case of M2 velocity, see Luana Santarossa (2001, p. 3, Conclusions and policy implication).

state-owned enterprises, based on: a) the privatization process, b) bankruptcy and insolvency laws and c) some compensation scheme agreed by Government. After 1996, the level of overdue payment in the private sectors increased, based on transfers of the overdue payment, together with the new private stakeholders during the privatization process of state enterprises (see Figure 6).

Figure 6

Evolution of the Structure of Enterprise and Households Payment Arrears to the Banks



Source: Statistical Appendix p. 63, *IMF Country Report No. 04/220*, July 2004, *NBR Monthly Bulletin* 1996-2005.

Regarding the households, the share of households credit in the nongovernment credit (expressed in lei) increased from less than 1% at the end of 1996 to around 30% at the end of 2005, and the share of overdue decreased from 13.6% in 1996 to less than 1% in 2005. The financial and economic crisis had a negative influence on overdues, so the number of persons with overdue payment of more than 30 days reached 689906 at the end of 2011 and increased to 737652 persons at the end of 2012.

4.4. The Relations among the Economic Agents

At the beginning of transition, a small part of the firms did not respect their contractual arrangements and affected other firms that were not able to respect their contractual arrangements either²¹. Gradually, the firms started to tolerate the arrears and contributed to extending the network of arrears in the Romanian economy, so “agents may collude and voluntarily extend credit to each other knowing that it will not be repaid, because they expect that the government comes in with a collective bail-out if too many firms are threatened with a collapse” (see Perotti, 1998 and Koen Schoors and Konstantin Sonin, 2002, p. 3). This expectation was realized if we take into consideration the global compensation, the bilateral compensation and other compensation schemes were applied in Romania in order to reduce their net volume. So, they perceive a tolerance to arrears by the government, and the efforts to improve their performance by restructuring the activity and a better management had a slower

²¹ 80 percent of net arrears were concentrated in 100 firms, accounting for 27 percent of sales, while the largest 10 debtors accounted for 50 percent of net arrears. This implies that only for a small number of firms arrears involve a significant transfer of liquidity from other firms, see Calvo and Coricelli (1994, p. 52).

impact than desired. As a result, the enterprise payment arrears as percentage of GDP registered the following evolution (Table 2).

Table 2

The Evolution of the Enterprise Payment Arrears as Percentage of GDP in 1995-2002

	1995	1996	1997	1998	1999	2000	2001	2002
Private sector	4.5	7.6	7.62	8.5	9.65	8.9	10.2	10.2
Wholly state-owned	7.62	5.29	3.52	2.64	3.25	3.95	2.79	3.82
Mixed ownership	1.17	3.16	3.91	3.96	4.74	4.86	3.49	2.66

Source: Statistical Appendix p. 63, *IMF Country Report* No. 04/220, July 2004, Jacob Wegener Friis, Payment arrears in Romania: Is a hard budget constraint yet to come?, *ECFIN Country Focus*, vol. III Issue 12/06.10.2006.

After the privatization, some arrears moved to the private sector and others to the special agencies established in order to recover the arrears and the negative tendency decreased because of the combined efforts to reduce it. So, the number of monitored enterprises decreased from more than 500 state-owned enterprises to around 150. Many enterprises filed for insolvency, and the evolution of arrears for the 154 state-owned enterprises showed an increasing tendency. The arrears to the banks, private companies and other creditors grew from 6.1 billion RON in 2006 to 13.2 billion RON in 2010, and those to the public-owned companies grew from 1.8 billion RON to 4.4 billion RON²², which slowed the recovery from the economic crisis.

Conclusions

The complexity of interdependencies between economic agents reflected in the network of arrears indicates the difficulty in counteracting this phenomenon. The analysis of the available economic data for Romania showed numerous types of economic agents involved in the process, as well as different economic mechanisms and reasons specific to the creation and dynamics of arrears. In this regard, there is a need of understanding and modeling the observed interactions. They will be discussed further in a following paper, which will build on the results and the data analyses made in the current paper. The model will be an agent-based type of model incorporating the relevant types of economic agents as they are reflected in the network of arrears. It will also incorporate non-homogenous behaviors, so as to describe the complexity of the economic mechanisms and reasons specific to the creation and dynamics of arrears.

²² Fiscal Council Annual Report, *Press Conference 7 of April 2011*.

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The Correlation Matrix

A	1.000000	-0.389033	-0.518579
Corruption Index	-0.389033	1.000000	0.290993
P	-0.518579	0.290993	1.000000

Note: A= Arrears as percent of GDP; P=The share of private sector in GDP

Pair wise Granger Causality Tests

Sample: 1991 2011

Null Hypothesis	Obs.	lag 1		lag2	
		F-Statistic	Probability	F-Statistic	Probability
CORRUPTION_INDEX does not Granger Cause A	14	0.64798	0.43789	3.37336	0.08661
A does not Granger Cause CORRUPTION_INDEX	14	8.01536	0.01634	10.0846	0.00651
P does not Granger Cause A	20	1.18319	0.29189	0.32782	0.72588
A does not Granger Cause P	20	2.17095	0.15891	0.86138	0.44381
P does not Granger Cause CORRUPTION_INDEX	14	4.37921	0.06036	0.99875	0.41001
CORRUPTION_INDEX does not Granger Cause P	14	0.22940	0.64135	0.39467	0.68633