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Mihaela Carpus Carcea, Daria Ciriaci, Carlos Cuerpo Caballero,
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Abstract

This paper provides empirical support to the important role of efficient pre-insolvency frameworks in fostering a culture of early restructuring and second chances in EU Member States and the positive impact that this has on entrepreneurship, as well as the timeliness and cost of corporate and household deleveraging. The analysis is based on a set of composite indicators measuring specific efficiency aspects of rescue and recovery frameworks. These were built using principal component analysis applied on a comparison of the legal provisions they encompass. Econometric analysis carried out on the basis of these indicators suggests that, across the EU, efficient pre-insolvency frameworks are positively associated with relatively higher levels of entrepreneurship and deleveraging episodes with a relatively milder impact on financial stability and economic activity.

JEL Classification: C23, D02, G33, K20, K35.

Keywords: pre-insolvency, rescue and recovery frameworks, entrepreneurship, deleveraging, economic impact, panel data, principal component analysis.

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1. INTRODUCTION

Many EU Member States are at present dealing with the legacy of high private sector debt. In this context, efficient national insolvency frameworks – meant as including both pre-insolvency instruments as well as proper insolvency proceedings – can play a crucial twofold role: (i) fostering a culture of early restructuring and second chance that encourages economic agents to be entrepreneurial and take sound economic risk; and (ii) speeding up deleveraging and easing its economic adjustment costs for both households and firms. By the same token, inefficiencies in national pre-insolvency and insolvency frameworks may slow down deleveraging, delaying loss recognition, and impeding credit flows to solvent corporations and individuals.

An efficient insolvency framework should therefore enable early and cost-effective rescue of viable businesses in order to avoid subsequent liquidation (Djankov et al., 2008). Moreover, it could limit the economic and social consequences of bankruptcy for entrepreneurs, provided that business failure occurred in good faith (Fan and White, 2003, European Commission, 2011). Less adverse legal consequences of personal insolvency can in fact promote entrepreneurship by providing entrepreneurs with partial insurance against the consequences of failure (Jackson, 1985; Adler, Polack and Schwartz, 2000; Lee et al., 2007). Efficient insolvency regimes could also foster better ex ante assessment of the risks involved in lending and borrowing decisions by creditors and debtors, leading to an overall healthier development of credit markets (Djankov et al. 2007). Moreover, since several EU Member States are currently experiencing a challenging situation of private sector debt overhang¹ (Cuerpo et al., 2015), insolvency frameworks are crucial to smooth the adjustment and minimise its economic and social costs (IMF, 2013b).

Notwithstanding several EU initiatives aimed at ensuring harmonisation and better coordination of insolvency proceedings among Member States, insolvency remains an area where uniformity of approach is limited even in the presence of similar legal origin (Djankov, 2003). To further address some of these inefficiencies, the European Commission issued in March 2014 a Recommendation setting out a series of common principles for national insolvency frameworks, whose aim was to encourage the restructuring at an early stage of viable businesses in financial distress, as opposed to their insolvency and liquidation, as well as to give a second chance to entrepreneurs. This paper, as part of the analytical work underlying this Recommendation, delves into the crucial role played by efficient pre-insolvency regimes within national economies. It does so by investigating the extent to which cross-country differences in pre-insolvency efficiency could explain different levels of entrepreneurship and contribute to the development of credit markets and to smooth deleveraging.

To this end, we constructed twelve features of efficiency of preventive restructuring frameworks for all EU Member States, based on a comparison of the legal provisions encompassed by their pre-insolvency frameworks. The information provided by these indicators has then been summarised in four composite indicators proxying: (i) the ease of access to preventive restructuring proceedings; (ii) the existence of direct and indirect costs, such as reputational costs or red tape related to courts involvement; (iii) facilitations to continuation for the debtor's operations; (iv) the chances of effective debt restructuring. These composite indicators are then used to analyse the overall economic impact of the quantified efficiency of preventive restructuring frameworks on entrepreneurship and deleveraging processes, respectively. The analysis suggests that efficient preventive restructuring frameworks are positively associated with levels of entrepreneurship across Member States and, at the same time, could lead to less adverse outcomes of deleveraging episodes in terms of financial stability and economic activity.

The paper is organised as follows. Section 2 outlines the range of available insolvency proceedings, reviews the relevant dimensions of early restructuring mechanisms, and presents the construction of the four composite indicators of efficiency. Section 3 uses these indicators to analyse the economic impact of the efficiency of preventive restructuring frameworks on entrepreneurship and deleveraging processes, respectively. Section 4 discusses the results and concludes.

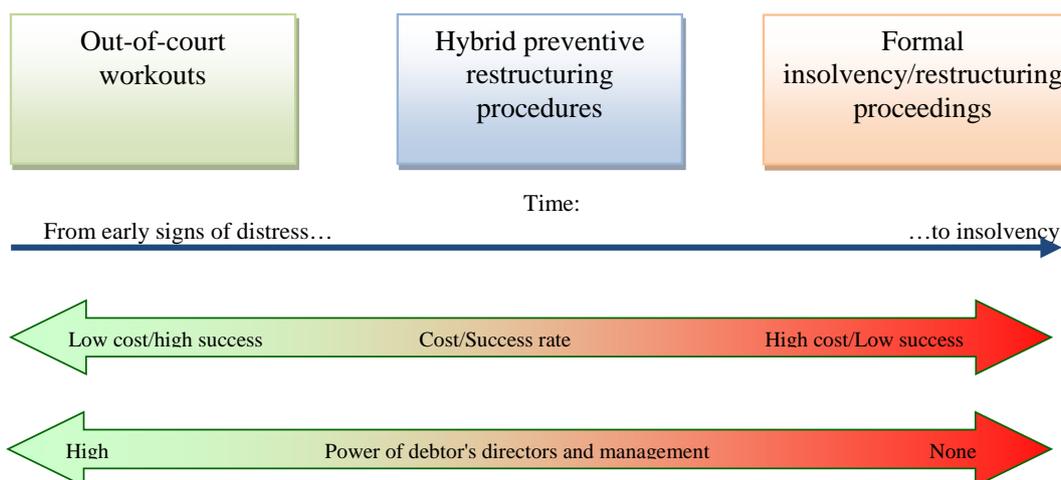
¹ Debt overhang indicates that the existing debt is too high to borrow more, even when this would be economically convenient.

2. METHODOLOGY: MEASURING THE EFFICIENCY OF EARLY RESCUE AND RECOVERY FRAMEWORKS

2.1. The range of restructuring and insolvency procedures

In general, the procedures through which firms can address their financial difficulties through debt restructuring fall into three main categories: (i) out-of-court procedures; (ii) formal in-court proceedings; and (iii) hybrid procedures combining the benefits of judicial supervision with the easiness and low cost of informal procedures. While almost all Member States have formal in-court restructuring proceedings,² the options of informal and/or hybrid restructuring are in many cases limited. Scarce availability of less formal procedures is a problem, particularly for smaller companies, given that the costs of legal proceedings are to some extent fixed and, in many cases, not affordable. This incomplete legal framework pushes some solvent firms in financial difficulties, actual or foreseen, into formal insolvency proceedings and ultimately into premature liquidation. This leads in turn to the closure of potentially viable firms, creating financial and non-financial losses (including avoidable job destruction), borne by firms' creditors, shareholders, employees, and public authorities across the EU.

Graph 2.1: Restructuring possibilities in time



Source: European Commission (2014a)

Debtors should be able to address their financial difficulties at different moments in time and by different means, which respond to their particular needs and those of their creditors. Graph 2.1 illustrates the existence of different options that may be used at different moments in time, depending on the situation, or that may be used as alternatives at a given moment, and which imply an increasing degree of judicial intervention and formality in general. As a general observation, the later a business initiates restructuring proceedings, the higher are the costs of restructuring and the lower the management powers as well as the success rate. Therefore, the existence of an option of early intervention increases the chances of survival of an ailing company and minimises the costs of the restructuring for the economy as a whole.

Some of the main features of the different restructuring options can be summarised as follows:

² With the exception of Bulgaria.

- **Out-of-court workouts:** debtors facing financial difficulties always have the option of renegotiating with their creditors the terms and conditions of their contracts without formal intervention by the courts. This may result, for example, in the rescheduling of payments, reduction of interest rates, or total/partial write-off of the debt or of new loan facilities. These are purely contractual transactions based on the individual consent of affected creditors, while no specific legal restrictions or criteria are required. This means that there is no possibility in purely out-of-court agreements of imposing a restructuring plan on dissenting creditors, who do not sign up to the agreement. For this reason, out-of-court restructuring usually involves the debtor and a very small number of creditors (often one or two).
- **Hybrid preventive restructuring procedures:** these combine the advantages of both informal agreements (e.g. ease of negotiation, debtor remaining in possession) and formal insolvency proceedings (e.g. stay on enforcement actions, binding effects of a restructuring plan on a dissenting minority of creditors). The economic function of these hybrid procedures is to reduce the risk that a minority of creditors could stop the restructuring process, without the need to incur the costs associated with formal insolvency proceedings. Binding the minority of creditors is a necessary condition for the success of restructuring, so as to avoid the company being forced into a formal insolvency process. In order to balance this sort of “expropriation of the individual consent” outside formal insolvency proceedings, legal systems lay down certain safeguards (e.g. approval by a majority of creditors and confirmation by a court).
- **Formal insolvency/restructuring proceedings:** these are collective proceedings (involving all creditors) subject to the control or supervision of a court and/or an insolvency administrator, which means that the debtors can lose control of their assets or are greatly restricted in their actions. This procedure implies an automatic moratorium (stay of individual enforcement actions) and can result in either restructuring (where this is possible) or, more often, liquidation. The restructuring plan is binding on all creditors, whether they are in favour of it or not.

2.2. Dimensions of pre-insolvency efficiency

The estimation of the impact of preventive restructuring regimes hinges upon the construction of a quantitative indicator reflecting the efficiency of the existing regulations across EU Member States. Several attempts to quantify or compare the efficiency of different insolvency frameworks exist in the literature. A number of previous studies rely, for instance, on the construction of a score from legal provisions of bankruptcy acts (index of secured creditors' rights by La Porta et al., 1997, later enhanced and used by Djankov et al., 2007), the calculation of an index based on a survey of insolvency practitioners regarding the expected outcome of a fictitious insolvency case (Djankov et al., 2008), or the assessment of cross-country samples of insolvency cases (such as the study of insolvency outcomes by Davydenko and Franks, 2008). Somewhat similar to the first approach, we construct indicators of efficiency of preventive restructuring frameworks in EU countries based on the comparison of the legal provisions in their insolvency frameworks.

In principle, a preventive restructuring procedure should contain certain features to be effective. In the following, we compare Member States according to twelve major pre-insolvency legislative framework dimensions (see Table 2.1). These have been identified on the basis of international best practices, lessons drawn from a comparative study of Member States systems, the analysis of reforms of restructuring laws in the Member States, as well as from the conclusions of the Commission Expert group on Insolvency, the results of the Public Consultation on the Commission Recommendation “A New Approach to Business Failure and Insolvency”³ (July-October 2013), and dedicated evaluations.

The twelve identified dimensions are: (a) existence of early restructuring possibilities; (b) conditions for initiating the early restructuring process; (c) existence of alternative preventive procedures; (d) debtor remaining in possession of its assets in preventive procedures; (e) possibility of a

³ Recommendation C(2014)1500 at http://ec.europa.eu/justice/civil/files/c_2014_1500_en.pdf.

moratorium (i.e. stay of individual enforcement actions by the creditors against the debtor); (f) length of the moratorium; (g) majority-decision on plan approval as opposed to the requirement of full consensus among creditors (also called cram-down); (h) possibility to obtain new financing in preventive procedures; (i) limited court involvement;⁴ (j) confidentiality of the agreement; (k) existence of early-warning procedures of insolvency (particularly useful for SMEs); and (l) debt discharge possibilities following an entrepreneur's bankruptcy.⁵

We converted the qualitative information on the selected twelve dimensions into ordinal variables, i.e. variables whose increasing value reflects increasing efficiency of the rescue and recovery frameworks in the Member States under scrutiny, using legal expert judgement.⁶ The third column of Table 2.1 presents for each indicator the categories and their corresponding qualitative meaning.

Table 2.1: Indicators characterizing relevant dimensions of rescue and recovery frameworks

| Indicators | Objective | Effectiveness features, from low (0) to high (4) |
|---|---|--|
| Early possibility of restructuring | <i>Needed to ensure that restructuring avoids the insolvency of the debtor</i> | 0 - no possibility of early restructuring 1 - late possibility inside insolvency procedures 2 - somewhat earlier possibility, when firm is in imminent insolvency 3 - early possibility, when debtor is in financial difficulties |
| Conditions for initiating the procedure | <i>Provide incentives to debtors and creditors to enter process; screens for viable companies</i> | 0 - debtor must be insolvent 1 - insolvency must be imminent, evidenced by a certificate or other expert evidence 2 - insolvency must be imminent, but no expert evidence required 3 - debtor must be in financial difficulties 4 - no test required |
| Existence of alternative preventive procedures | <i>More alternative procedures cater better for the different needs and situations</i> | 0 - no preventive restructuring procedure 1 - 1 such procedure 2 - 2 or 3 such procedures 3 - more than 3 such procedures |
| Debtor in possession | <i>Debtor's control of assets is needed to facilitate the continuation of its operations</i> | 0 - debtor may be divested of the day-to-day operation of business and an insolvency practitioner is appointed by court 1 - an insolvency practitioner is appointed by the court, but he does not take over the administration of business, or the court itself supervises the procedure 2 - an insolvency practitioner can be appointed outside court (e.g. elected by the committee of creditors) 3 - no obligation to appoint an insolvency practitioner |
| Moratorium (stay of enforcement actions) | <i>Protection from individual enforcement is needed to allow time for negotiations</i> | 0 - no possibility of stay 1 - stay is general and automatic 2 - stay is general but on request |

⁴ In this respect, some involvement of courts ensures fairness and respect of the procedure, while a full involvement is generally seen as reducing the speed and efficiency of the outcome.

⁵ The last indicator on the discharge period has been designed based on the conclusions of the 2011 Competitiveness Council and hereby considered in light of its relevance for the possibility of a second chance for entrepreneurs. Although affecting natural persons rather than companies, it has been included in the set of indicators due to its relevance for small entrepreneurs.

⁶ It is worth noting that, while increasing values of the ordinal variable by construction reflect increasing efficiency of the pre-insolvency framework (from a minimum of 0 to a maximum ranging from 2 to 4, depending on the number of categories that were considered to be relevant for the specific dimension of the pre-insolvency framework) based on expert assessment, this does not necessarily imply increasing values of the underlying variable of reference. For instance, looking at the "length of moratorium" dimensions, while the lowest efficiency score (0) is assigned to the absence of any stay of enforcement actions, the second lowest score (1) is assigned to a stay that is assessed as being too long compared to the "optimum" length (2-4 months), to which the maximum score (3) is then assigned.

| | | |
|---|---|---|
| | <i>with creditors and address the hold-out problem</i> | 3 - stay is targeted and on request |
| Length of the moratorium | <i>Ensures balance between the interests of debtors and of creditors</i> | 0 - no possibility of stay 1 - possibility of stay for longer than 4 months or for an indefinite period 2 - possibility of stay for less than 2 months 3 - possibility of stay between 2 and 4 months |
| Majority decision on plan approval | <i>Needed to avoid jeopardising the restructuring effort and the unanimity problem</i> | 0 - no possibility of majority decision or no possibility of affecting the rights of creditors 1 - possibility of majority decision, but certain creditors excluded (tax authorities, employees, secured creditors, commercial creditors) 2 - possibility of majority decision involving all types of creditors and all creditors, whether affected or not 3 - possibility of majority decision involving all types of creditors and possibility to involve only those who would be affected by the plan |
| Possibility of new financing | <i>Needed to increase the success of restructuring plans</i> | 0 - new financing not allowed 1 - new financing not forbidden, but on the risk of debtor 2 - new financing can have super-priority status 3 - new financing is exempted from avoidance actions |
| Limited court involvement | <i>Needed to ensure the legality of acts having legal effects on third parties and reduce costs</i> | 0 - full court involvement, from launch of the procedure to end, including appointing an insolvency practitioner and voting by creditors in court 1 - court involvement from launch, but negotiations and voting out-side court 2 - limited court involvement, only for appointing the insolvency practitioner or the confirmation of plan |
| Confidentiality | <i>Needed to ensure the successful conclusion of negotiations</i> | 0 - publicity from day one, by opening court procedures 1 - confidentiality up to the moment of granting a stay 2 - confidentiality up to the moment of plan confirmation 3 - confidentially throughout |
| Existence of early warning tools | <i>Needed to provide SMEs with tools to identify financial distress</i> | 0 - no tools 1 - 1 or 2 tools 2 - 3 or 4 tools 3 - 5 tools or more |
| Discharge possibilities for bankrupt entrepreneurs | <i>Needed to free entrepreneurs of debts a reasonable period of time after their bankruptcy and enable them to have a fresh start</i> | 0 - no discharge possibility 1 - indefinite discharge period or discretion for the judge or discharge period of more than 3 years 2 - discharge period of 3 years but conditional on certain factors, e.g. payment of a percentage of debt 3 - discharge period of 3 years or less with no repayment threshold |

Source: INSOL external study

A quick look at the individual data presented in the Appendix (Graph A1) reveals significant heterogeneity among Member States along the twelve dimensions, which were assessed using 2013 data. Some countries tend to rank high in most of them, pointing to a generally high efficiency of their pre-insolvency frameworks (e.g., the UK) while others seem to be ranking systematically low (the most striking example being Bulgaria).

For most dimensions, Member States are distributed rather equally over the range of indicator values. By contrast, the distribution is more concentrated in the lower scores for the “possibility of stay” and “court involvement”, where the number of high-ranking cases is more limited.

2.3. Construction of composite indicators of pre-insolvency efficiency

The collected information on the efficiency of all 28 Member States' pre-insolvency frameworks has been summarized through the use of principal component analysis and composite indicator techniques. The principal component analysis led to the identification of four component factors explaining most of the variability in the original dataset. By looking at the dominant dimensions in each of these components reported in Graph 2.2 below, the four composite indicators/dimensions of efficiency have been labelled accordingly as follows: (i) easiness/availability of preventive measures; (ii) facilitations to continuation of the debtors' operations; (iii) direct and indirect costs of the measures; and (iv) debt sustainability.

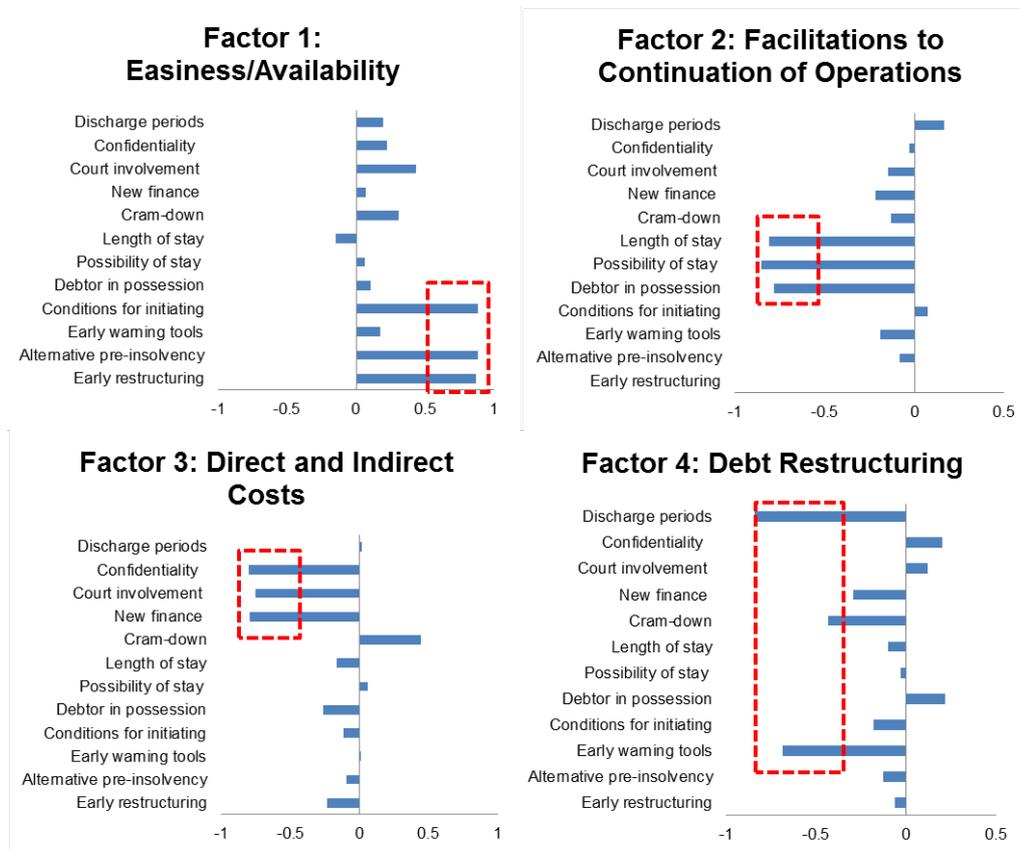
The factor loadings are used as intermediate weights for the individual original variables in the construction of a composite indicator for each common component, according to the proportion of the total variance of the indicator explained by the specific factors (see OECD, 2008). The indicators are designed so that higher efficiency along the four dimensions is reflected by higher values of the corresponding indicators.

The first indicator reflects the availability of early restructuring possibilities, the conditions for initiating the procedure, and the existence of alternative preventive procedures. It can therefore be interpreted as representing the easiness and availability of engaging in preventive proceedings. The second indicator reflects the absence of short-term constraints on operations during a pre-insolvency procedure, such as the debtor remaining in possession of the assets and the possibility of stay of enforcement actions by individual creditors. The third indicator represents the direct costs (financing flexibility or administrative burden) and indirect costs (e.g. reputational) associated with preventive restructuring procedures. The fourth indicator could be interpreted as reflecting the chances to restructure debt to sustainable levels (ex-ante, with early-warning procedures, during the procedure with better majority decision possibilities, and ex-post with easier and faster debt discharge possibilities). Finally, an index of overall efficiency of national pre-insolvency frameworks has been constructed on the basis of all four component indicators.

The results are presented in Graphs 2.3 and 2.4, for the overall efficiency indicator and for each of the four dimensions of efficiency, respectively.⁷ For all these indicators, higher values of the indicator score denotes higher efficiency along a given dimension of the national pre-insolvency framework. As shown in Graph 2.3, among the EU pre-insolvency frameworks the overall efficiency is the lowest in Bulgaria, while the highest value is obtained for the UK. The poor performance of Bulgaria is mainly due to very low availability of restructuring tools, leading to limited chances to bring debt back to sustainable levels, as well as the lack of incentives for debtors to enter a pre-insolvency procedure, as denoted by null values of three out of four composite indicators in Graph 2.4. High levels of efficiency are found in Portugal and Italy, also as a result of their recent reforms, which position them close to the performance of the UK. On the other hand, lower levels of efficiency can be found in Slovakia, Hungary, and Croatia, especially due to the relatively low easiness and availability of engaging in preventive proceedings and high direct and indirect costs of preventive restructuring procedures, as observable in Graph 2.4.

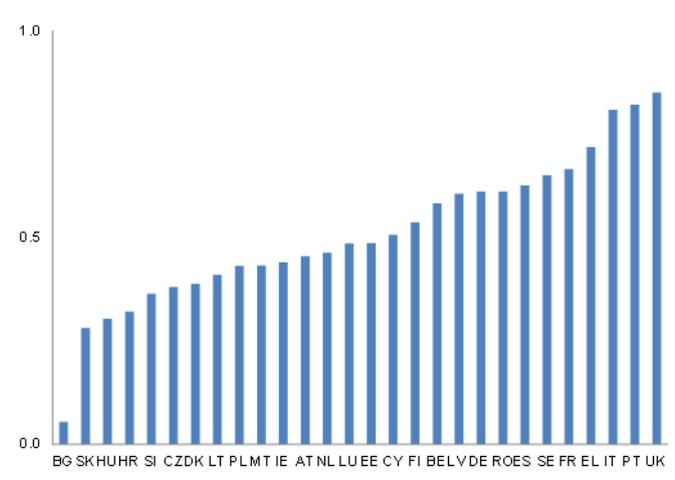
⁷ The underlying data are reported in Table A1 in the Appendix.

Graph 2.2: Factor loadings of individual questions using principal component analysis



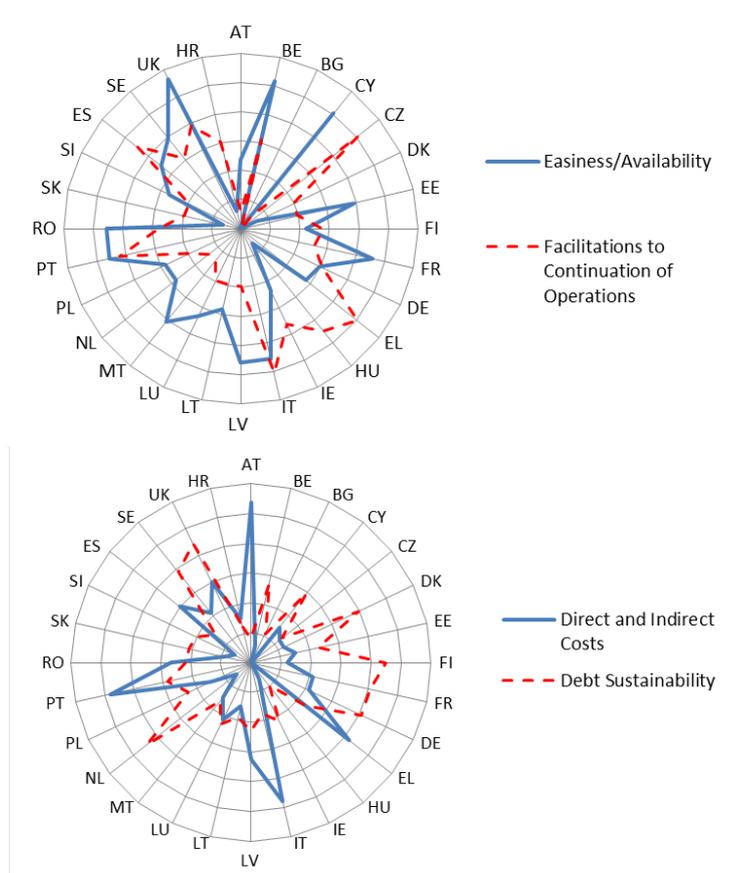
Source: own calculations

Graph 2.3: Overall efficiency of the EU pre-insolvency frameworks, 2013



Source: INSOL external study, own calculations

Graph 2.4: The four dimensions of pre-insolvency efficiency, 2013

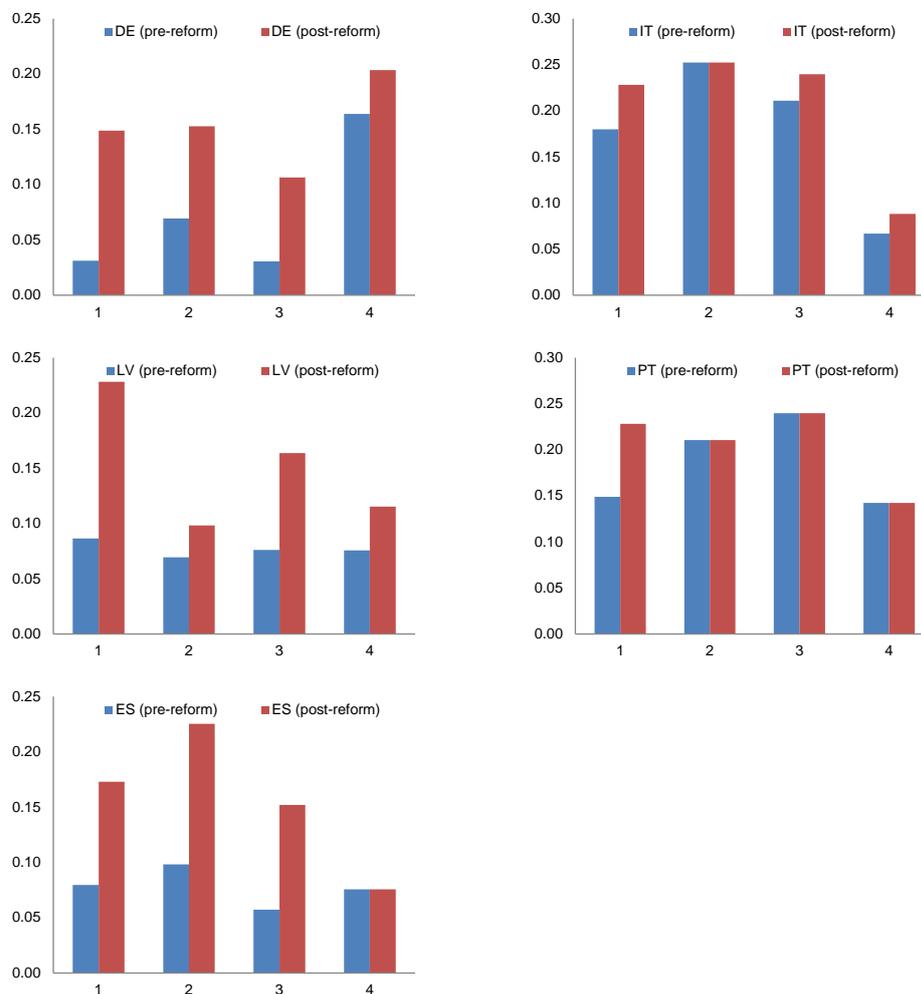


Source: INSOL external study, own calculations

As a *caveat*, one should bear in mind that the constructed scores do not reflect efficient implementation of national pre-insolvency frameworks, but only their ex-ante efficiency from a legal viewpoint. The efficiency of the outcomes of these procedures could thus still face bottlenecks related, for example, to inefficiencies of the justice system or lack of the required expertise among legal practitioners. Moreover, the information conveyed by the constructed indicators describes the situation of the analysed Member States as of end-2012. Insolvency legislation is nevertheless an active policy area, where regulatory changes have recently been enacted in a number of Member States. These include Germany, Italy, Latvia, Portugal and Spain during the years 2011 and 2012,⁸ Ireland, Spain and Slovenia in 2013, and Croatia in 2014. In order to use the composite indicators to estimate the economic impact of pre-insolvency legislation throughout the crisis, an adjustment is made for five countries that experienced a change in the relevant legislation, namely by computing the corresponding pre-reform values for Germany, Italy, Latvia, Portugal and Spain (the indicator for Ireland already reflects the pre-reform conditions). Graph 5 reports the pre- and post-reform values along the four dimensions, yielding some insights on the main effects of the regulatory changes

⁸ In Germany, the 2012 reform made restructuring possible before the company was insolvent (yet in imminent insolvency) and provided that the debtors remain in possession of their assets, facilitated new financing, and reduced the role of courts. In Italy, the latest reform of 2012 improved the possibilities for a majority approval of the restructuring plan. In Latvia, the 2010 reform made restructuring possible at an earlier stage, when the business is in financial difficulties, eased the conditions for accessing the procedure, and increased the possibilities for negotiations to be run in confidentiality. In Portugal, a reform took place in 2012 introducing a new restructuring procedure (PER) as an alternative to the pre-existing hybrid procedure (SIREVE). In Spain, an early restructuring procedure was introduced in 2009 and reformed in 2011 mainly to improve the conditions for majority decision.

Graph 2.5: Impact of recent reforms of preventive restructuring on the four efficiency dimensions



Source: own calculations. Note: Numbers 1 to 4 on the horizontal axis denote the composite indicators on accessibility, continuation of operations, direct and indirect costs, and debt restructuring, respectively.

3. ECONOMIC IMPACT OF AN EFFICIENT RESCUE AND RECOVERY FRAMEWORK IN THE EU

3.1. Economic impact of rescue and recovery framework on entrepreneurship

There is a well-established link in the literature between legislative and institutional features affecting the entry/exit of firms (including the insolvency framework) and entrepreneurship,⁹ which in turn affects economic growth. In his *Theory of Economic Development*, J. Schumpeter already regarded entrepreneurs starting new businesses as the engine of economic growth, and entrepreneurship has long been argued to be “at the heart of national advantage” (Porter, 1990) as well as a driving force of economic development (Wennekers and Thurik, 1999). Indeed, the link between entrepreneurship and growth is not direct, yet it operates through the main channels of innovation (intended as product, process, and organizational innovation) and competition. This is why legislation aimed to facilitate entrepreneurship and business dynamics could, through the channels of increased competition and innovation, enhance in turn productivity, employment, and, ultimately, economic growth.

A number of legal and institutional variables have been shown to affect entrepreneurship, including taxation (Poterba, 1989; Gompers and Lerner, 1998; Poutziouris et al., 2000; Fölster, 2002; Parker and Robson, 2003),¹⁰ property rights protection across countries (see Lerner, 2002; Claessens and Laeven, 2003; Bigus, 2006), and labour market regulation (Parker and Robson, 2003).

Notwithstanding the theoretical and intuitive link between pre-insolvency legislation and entrepreneurship, the extant empirical evidence on it is still relatively limited. Among the few examples of previous analyses, Armour and Cumming (2008) investigated the relationship between bankruptcy laws and entrepreneurship using data on self-employment and compiling a series of indices reflecting how “forgiving” personal bankruptcy laws are in the analysed countries. Their findings suggest that bankruptcy law has a statistically and economically significant effect on self-employment rates, providing partial insurance against the consequences of a failure and thereby stimulating at the margin the entry of entrepreneurs who would otherwise be too risk-averse (see Jackson, 1985; Adler et al., 2000; Lee et al., 2007). Previous empirical evidence has also shown that a forgiving bankruptcy law, above all when offering a fresh start from pre-bankruptcy debts, allows entrepreneurs to re-enter the economy rapidly after a business failure (Georgakopoulos, 2002; Landier, 2004; Ayotte, 2007). According to Baird and Morrison (2005) and Stam *et al.* (2006), such repeat entrepreneurship is common in jurisdictions in which a fresh start is allowed.

Taking stock of the mentioned studies, we analyse the impact of the efficiency of national pre-insolvency frameworks in the EU on the proportion of self-employed population, which can be regarded as a good proxy for entrepreneurship and has been previously used to this aim in the literature (among others, Armour and Cumming, 2008). The tested hypothesis is that, everything else being equal, more efficient pre-insolvency frameworks tend to stimulate entrepreneurship.

In our model, the (log) self-employment rate, drawn from Eurostat Structural Business Statistics (SBS), is regressed on the constructed indicators of preventive restructuring efficiency along the four relevant dimensions as well as the overall efficiency measure. The random effect pooled panel

⁹ The concept of entrepreneurship has been used in the disparate strands of literature focussing on it, e.g. evolutionary economics, management economics, industrial economics, and macro-economic growth theory literature, with a variety of meanings. In this context, the entrepreneur has been identified as: the person taking the risk associated with uncertainty; the supplier of financial capital; the innovator; the decision-maker; the organizer and coordinator of economic resources; the owner of the enterprise; the person who realises a start-up of a new business; the person subsuming more than one of the aforementioned roles (Wennekers and Thurik, 1999; Herbert and Link, 1989; Dijk and Thurik, 1995; Praag, 1996).

¹⁰ More specifically, high levels of income tax (for employees) and lower levels of capital gains tax (for entrepreneurs' shares in their business) have been found to be robustly associated with greater incidence of entrepreneurship (this general result holds both in single-country and cross-country studies).

estimation of the model covers the period 2003-2010 for 24 EU Member States,¹¹ using the following specification:

$$selfempl_{it} = \alpha + \beta insol_i + \gamma gdppecap_{it} + \theta EPL_{it} + \nu_t + \eta_i + \epsilon_{it}$$

where the *insol* variable is either one of the four composite indicators (along the four common factors) or the overall indicator of efficiency. As control variables, the model includes real GDP per capita (to control for country-specific factors such as the level of economic development or the general economic situation), the OECD indicator of employment protection legislation, measuring the procedures and costs involved in dismissing individuals or groups of workers and in hiring workers on fixed-term or temporary work agency contracts,¹² and time fixed-effects controlling for common cyclical shocks. The estimation results are presented in Table 3.1. Different versions of the model were estimated including the four relevant composite indicators both separately (versions 1 to 4) and jointly (version 5). As in the previous Section, caveats to take into due account relate to both data availability and methodological choices. First, the main shortcoming is represented by the lack of more than one point in time for the efficiency index, except for a few cases where both pre-reform and post-reform values are available. If the sample contained more pre- and post-reform observations, a natural extension of this analysis would be to consider a control and a treatment group, the latter including Member States where reforms affecting the efficiency of their pre-insolvency system have taken place. Moreover, the explanatory power of the estimated models finds a natural upper bound in the explanatory power of the single efficiency factors and, even more, of their aggregation obtained through the principal component analysis.

The estimation results reported in Table 3.1 suggest that pre-insolvency efficiency has a positive impact on self-employment rates and, in particular, that an increase by one percentage point in the efficiency of the national rescue and recovery systems (measured by the constructed aggregate index) is associated with a higher self-employment rate by some 0.75 % on average.¹³ This overall impact is in line with the economic expectation that a more efficient rescue and recovery framework should foster entrepreneurship. Moreover, once the model is estimated using the four separate factors as explanatory variables (see versions 1 to 4), the "continuation" dimension appears to be the most important to explain the overall positive impact of the aggregate index, as it is the only one to present a statistically significant positive coefficient, whereas the other factors do not have a statistically significant impact when taken separately.

A visual inspection of the self-employment levels against the distribution of EU Member States across the different efficiency indicators, reported in Graph 3.1, appears to confirm the results obtained in Table 3.1 (versions 1 to 4), i.e. the existence of a positive and significant relationship between self-employment levels and pre-insolvency efficiency alongside the "continuation" dimension. The "costs" dimension also shows some signs of an increasing pattern, while no clear one is apparent along the two remaining dimensions.

¹¹ Due to data availability. The analysis has also been carried out excluding Italy, Portugal, and Spain from the sample in order to take into account the idiosyncrasies related to the determinants of self-employment, hinted by Armour and Cumming, 2008. This does not fundamentally change the findings. Results are available upon request.

¹² Please refer to OECD Indicators of Employment Protection - Annual time series data 1985-2013 at www.oecd.org/employment/protection. The exact indicator used, also to ensure full coverage of the MS in the sample, is the *eprc_v2* version, obtained as the weighted sum of sub-indicators concerning the regulations for individual dismissals (weight of 5/7) and additional provisions for collective dismissals (2/7), with 12 detailed data items.

¹³ The increase in the self-employment rate is given in percentage change, as opposed to percentage points, due to the used semi-log specification.

Table 3.1: Estimation results for the self-employment model

Dependent variable: log(self-employment rate)

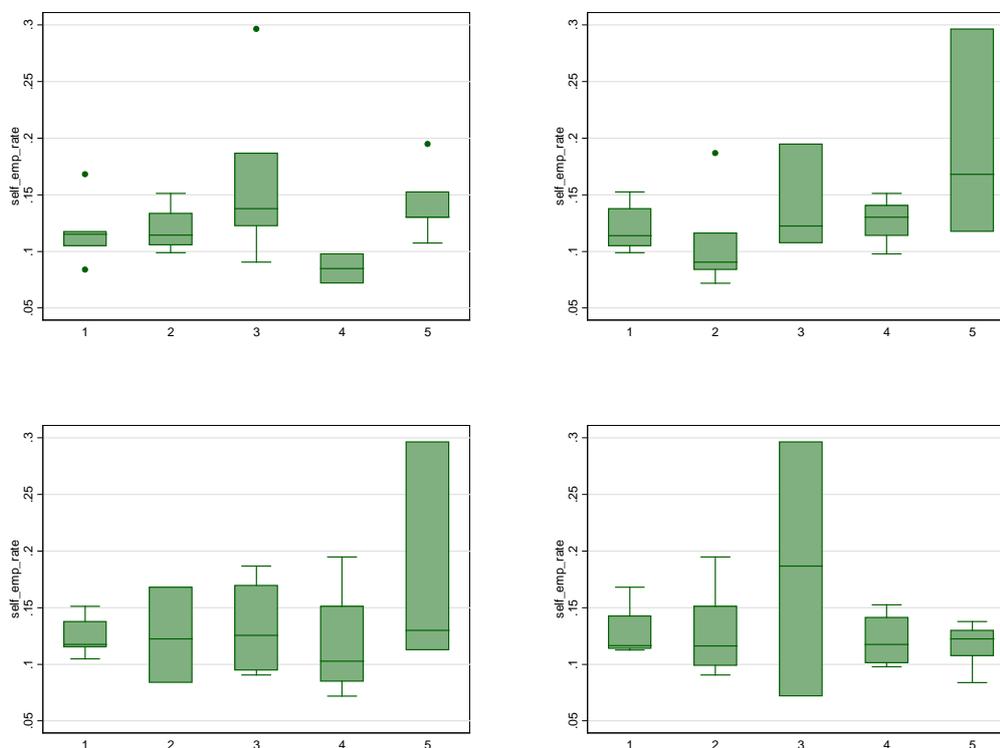
| | Baseline | Version 1 | Version 2 | Version 3 | Version 4 | Version 5 |
|-------------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
| GDP per capita | -0.000 (-2.09) | 0.000 (-1.56) | 0.000 (-1.55) | -0.000 (-1.50) | -0.000 (-0.94) | -0.000 (-1.40) |
| EPL | 0.0935** (0.043) | 0.0923** (0.043) | 0.0923** (0.42) | 0.0848** (0.043) | 0.0856*** (0.043) | 0.0832*** (0.043) |
| Overall Efficiency | 0.747* (0.406) | | | | | |
| Availability dimension | 0.411 (0.946) | | | | | 0.055 (0.995) |
| Continuation dimension | | | 3.148*** (0.876) | | 2.812*** (0.914) | |
| Cost dimension | | | | 1.592* (0.821) | | 0.946 (0.858) |
| Restructuring dimension | | | | -1.625 (1.112) | | -1.051 (1.148) |
| Constant | -2.681*** (0.198) | -2.399*** (0.169) | -2.606*** (0.164) | -2.438 (0.149) | -2.144*** (0.219) | -2.638*** (0.235) |
| Time fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |

t statistics in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Source: own calculations

Graph 3.1: Box-and-whisker plot of self-employment (EU28, 2010) against each pre-insolvency dimension: "easiness" (top left), "continuation" (top right), "costs" (bottom left), and "restructuring" (bottom right)



Source: own calculations. Note: Member States are distributed into 5 quintile groups according to their performance in each pre-insolvency efficiency indicator, ranked from lower to higher as represented by values from 1 to 5 on the horizontal axis (e.g., group 1 denotes 20% of Member States with the lowest score in a given indicator). The middle bar represents the median self-employment rate within a given group, and the top and bottom edges of the box denote the upper and lower quartiles. Dots represent values more than 1.5 times the interquartile range beyond the quartile.

3.2. Economic impact of rescue and recovery framework on corporate deleveraging and financial stability

This section focuses on the impact of national rescue and recovery frameworks on corporate deleveraging, in particular in terms of financial stability and economic activity. The analysis is based on the period following the recent financial and economic crisis, and is performed in two steps: (i) first, inspecting how rescue and recovery frameworks shaped the dynamics of the aggregate non-performing loans (NPL) rate of national banking sectors; and (ii) second, looking into the outcomes of corporate deleveraging on overall economic activity, as measured by GDP growth.

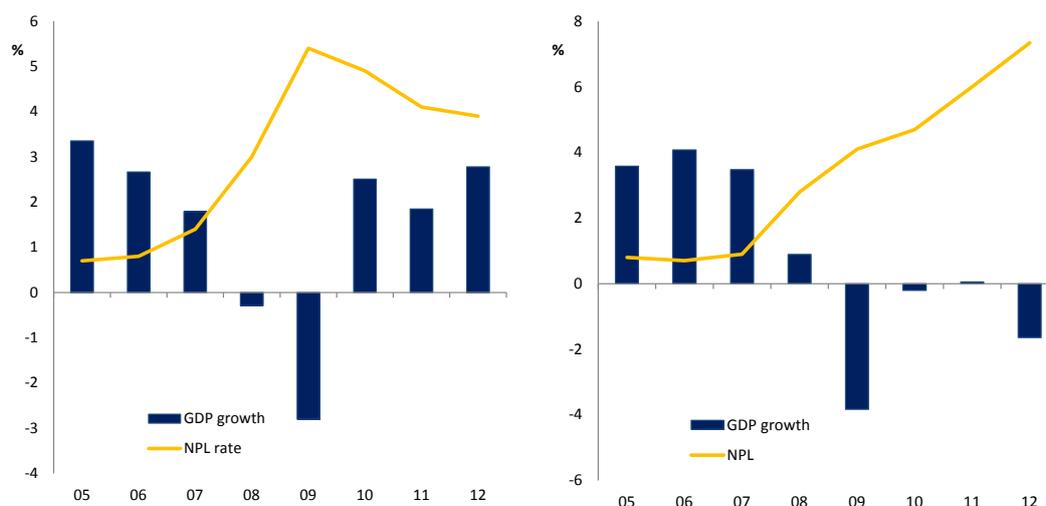
3.2.1. Impact of rescue and recovery frameworks on NPL dynamics

The share of non-performing loans (NPL) in the banking sector is a commonly used measure of financial sector soundness, and is a factor affecting credit supply (Becker and Ivashina, 2014). During deleveraging episodes in the non-financial private sector, the NPL rate usually rises as an increasing share of debtors become incapable to service or pay back their debt in an orderly manner. Rising NPL rates are often observed at the onset of a banking crisis (Kaminsky and Reinhart, 1999). Deteriorating loan portfolios and increasing losses force banks to curtail their credit supply, further increasing pressures on the non-financial sector to deleverage. The dynamics of NPLs therefore play a central role in the intensity of the feedback loop between the non-financial and financial private sectors (Nkusu, 2011).

Slow recognition of bad loans leading to several years of upwards-drifting NPL rates usually deteriorates the outcomes of deleveraging episodes, as it generates macroeconomic uncertainty, impairs the intermediation function of banks, and leads to protracted periods of tight credit for the whole economy, including its viable parts. A desirable property of NPL dynamics would therefore be their swift reaction to adverse macroeconomic shocks, followed by a gradual normalisation.

As an illustration, Graphs 3.2 shows the different profiles of NPL rates for the USA and Spain in the recent period. In the former case, the reaction of the NPL rate to the financial stress of 2008-2009 was quick, with a peak of the NPL rate observed as early as 2009. In the case of Spain, the rate started drifting upwards in 2008 and continued doing so in the following years.

Graph 3.2: Non-performing loans rate and economic activity in the US (left-hand side) vs. Spain (right-hand side)



Source: IMF Financial Soundness Indicators, Eurostat

The analysis is based on NPL data from the IMF Financial Soundness Indicators, covering 27 EU Member States and the period 2007-2012. The overall NPL rate covering firms and households is used due to data availability reasons. We propose two models of adjustment of the NPL rate to macroeconomic shocks, where the adjustment coefficient is interacted with a dummy variable indicating the terciles of all preventive restructuring indexes variables. The use of tercile dummies is useful as it allows to directly test the difference between the groups of countries with medium or high efficiency on a given dimension of the rescue and recovery framework, relative to those with relatively lower efficiency.¹⁴ At the same time, this specification is useful as it does not impose a linear relationship between the efficiency indicators and the adjustment speed.

The first model is based on a simple partial adjustment equation in which the change of the NPL rate is regressed on the current GDP growth rate, the previous period's level of corporate debt to gross operating surplus, and the previous period's level of the NPL rate, whose coefficient γ captures the adjustment speed:

$$\Delta npl_{it} = \alpha + \beta_1 gdpgr_{it} + \beta_2 debt_{it-1} + (\gamma + \gamma_1 tercile2_i + \gamma_2 tercile3_i) npl_{it-1} + \epsilon_{it}$$

where the lagged npl term is then interacted with two dummy variables, representing the middle and upper tercile of the efficiency indexes, respectively.

However, since panel tests of stationarity of the NPL rate seem to signal possible non-stationarity, at least in our relatively short sample, a second specification proposes an error-correction model, capturing the relationships among variables in two stages. This is in line with other empirical studies

¹⁴ The dummy for the lower tercile is not included to avoid perfect multicollinearity.

(among others, Rinaldi and Sanchis-Arellano, 2006) also identifying non-stationarity in NPL rates and resorting to an error-correction framework to model NPLs.

Within this framework, the long-term relationship links the same three variables as in the first specification (though all in levels), namely the NPL rate, GDP growth, and corporate debt divided by gross operating surplus. The short-term relationship regresses the change of the NPL rate on the lagged changes of all three variables of the model, plus the previous period's error correction term (error from the long-term relationship). Both stages are estimated on a panel using fixed country effects. The estimated model is:

$$npl_{it} = \alpha_0 + \alpha_1 gdpgr_{it} + \alpha_2 debt_{it} + \mu_i + \epsilon_{it}$$

$$\Delta npl_{it} = \beta_0 + \beta_1 \Delta gdpgr_{it-1} + \beta_2 \Delta debt_{it-1} + \beta_3 \Delta npl_{it-1} + (\beta_4 + \beta_5 \text{tercile}2_i + \beta_6 \text{tercile}3_i) ec_{it-1} + \nu_i + u_{it}$$

where the tercile dummies are interacted with the error-correction term *ec* to capture differences in the speed of closure of the gap to the long-term equilibrium.

The results of the first model in Table 3.2 point to an average adjustment speed of the NPL rate of about 29 % per year. Taken individually, the "restructuring" dimension seems to significantly increase this speed, by about 14 percentage points between the lower and the upper tercile of this variable. The "availability" dimension also seems to have a positive effect on the speed of adjustment of the NPL rate to normal levels, but the effect is only significant in the middle tercile. Interestingly enough, the "continuation" dimension taken individually seems however to be negatively associated with the adjustment speed of the NPL rate. Once all dimensions are taken into account (last column), the one on "restructuring" remains the only to significantly increase the speed of normalisation of the NPL rate. On some dimensions the sign of the coefficient changes moving from the middle to the higher tercile group. These changes cannot be directly interpreted, as the non-significance of the coefficients cannot exclude this pattern to be related to estimation error.

The results of the error-correction model in Table 3.3 seem to point to very similar conclusions. All dimensions taken individually as well as the overall indicator have a negative sign on the upper tercile variable, which would suggest that these indicators tend to increase the speed of convergence of the NPL rate to the long-term equilibrium value. However, given that the coefficients are not significant, the interpretation should be careful. The "continuation" dimension is again an exception, as it signals a significant reduction in the speed of correction of the NPL rate. Once all dimensions are included in the specification (last column) the "restructuring" dimension again becomes the only significant factor increasing the adjustment of the NPL rate to the long-term value. The coefficient signs of the other dimensions cannot be directly interpreted, as estimation error is high.

Taken together, the results of both specifications suggest that better ex ante and ex post possibilities to restructure debtors' liabilities appear to improve the reactivity of the NPL rate to changes in economic conditions and its subsequent normalisation.

Table 3.2: Estimation results for the Non-Performing Loans partial adjustment model augmented with rescue and recovery framework indices

| Dependent variable: change in NPL rate in year t | | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Baseline | Version 1 | Version 2 | Version 3 | Version 4 | Version 5 | Version 7 |
| GDP growth rate t | -5.657*** (-13.69) | -5.655*** (-13.27) | -5.702*** (-13.09) | -5.639*** (-13.81) | -5.652*** (-13.49) | -5.621*** (-13.29) | -5.647*** (-12.46) |
| (Debt/GOS) t-1 | 0.039 (0.89) | 0.043 (0.89) | 0.038 (0.87) | 0.030 (0.69) | 0.032 (0.75) | 0.048 (0.91) | 0.036 (0.72) |
| NPL t-1 | -0.289*** (-10.34) | -0.262*** (-7.79) | -0.240*** (-6.45) | -0.314*** (-12.94) | -0.237*** (-4.12) | -0.252*** (-6.79) | -0.183* (-2.01) |
| NPL t-1*Overall Efficiency (middle tercile) | | -0.066 (-1.09) | | | | | |
| NPL t-1*Overall Efficiency (upper tercile) | | -0.047 (-0.59) | | | | | |
| NPL t-1*Availability dimension Efficiency (middle tercile) | | | -0.115* (-1.87) | | | | -0.053 (-1.34) |
| NPL t-1*Availability dimension (upper tercile) | | | -0.079 (-1.47) | | | | 0.107 (1.50) |
| NPL t-1*Continuation dimension (middle tercile) | | | | -0.035 (-0.39) | | | -0.020 (-0.15) |
| NPL t-1*Continuation dimension (upper tercile) | | | | 0.139** (2.14) | | | 0.144 (1.20) |
| NPL t-1*Cost dimension (middle tercile) | | | | | -0.082 (-1.33) | | -0.094 (-0.98) |
| NPL t-1*Cost dimension (upper tercile) | | | | | -0.059 (-0.76) | | -0.015 (-0.12) |
| NPL t-1*Restructuring dimension middle tercile) | | | | | | -0.047 (-0.83) | -0.177** (-2.72) |
| NPL t-1*Restructuring dimension upper tercile) | | | | | | -0.140* (-1.77) | -0.255*** (-3.16) |
| Constant | 0.373* (1.79) | 0.360 (1.58) | 0.386* (1.84) | 0.387* (1.87) | 0.396* (2.01) | 0.333 (1.34) | 0.356 (1.46) |

t statistics in parentheses
*p<0.1, **p<0.05, ***p<0.01

Source: own calculations

Table 3.4: Estimation results for the error-correction model on Non-Performing Loans augmented with rescue and recovery framework indices

| Dependent variable: change in NPL rate in year t | | | | | | | |
|--|-----------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|
| | Baseline | Version 1 | Version 2 | Version 3 | Version 4 | Version 5 | Version 6 |
| ΔNPL_{t-1} | 0.126 (1.53) | 0.128 (1.53) | 0.124 (1.49) | 0.104 (1.28) | 0.095 (1.14) | 0.134 (1.64) | 0.073 (0.86) |
| $\Delta(\text{Debt}/\text{GOS})_{t-1}$ | -0.054** (-2.61) | -0.054** (-2.59) | -0.055*** (-2.67) | -0.053*** (-2.65) | -0.050** (-2.43) | -0.056*** (-2.73) | -0.052** (-2.53) |
| GDP growth rate t-1 | 1.239** (2.02) | 1.242** (2.01) | 1.245** (2.03) | 1.276** (2.14) | 1.185* (1.96) | 1.291** (2.13) | 1.208** (1.99) |
| Error Correction Term | -0.626*** (-11.29) | -0.622*** (-8.62) | -0.586*** (-8.18) | -0.697*** (-10.34) | -0.507*** (-6.19) | -0.626*** (-8.53) | -0.521*** (-3.55) |
| Error Correction Term*Overall Efficiency (middle tercile) | | 0.003 (0.03) | | | | | |
| Error Correction Term*Overall Efficiency (upper tercile) | | -0.025 (-0.21) | | | | | |
| Error Correction Term*Availability dimension Efficiency (middle tercile) | | | -0.029 (-0.24) | | | | 0.080 (0.58) |
| Error Correction Term*Availability dimension (upper tercile) | | | -0.120 (-1.13) | | | | 0.038 (0.20) |
| Error Correction Term*Continuation dimension (middle tercile) | | | | -0.027 (-0.20) | | | -0.094 (-0.40) |
| Error Correction Term*Continuation dimension (upper tercile) | | | | 0.254** (2.42) | | | 0.109 (0.70) |
| Error Correction Term*Cost dimension (middle tercile) | | | | | -0.214** (-2.06) | | -0.231 (-1.36) |
| Error Correction Term*Cost dimension (upper tercile) | | | | | -0.126 (-1.00) | | 0.068 (0.31) |
| Error Correction Term*Restructuring dimension (middle tercile) | | | | | | 0.080 (0.79) | -0.029 (-0.21) |
| Error Correction Term*Restructuring dimension (upper tercile) | | | | | | -0.178 (-1.42) | -0.309* (-1.73) |
| Constant | 0.241*** (7.55) | 0.240*** (7.40) | 0.241*** (7.51) | 0.249*** (7.95) | 0.248*** (7.74) | 0.241*** (7.63) | 0.261*** (8.06) |

t statistics in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Source: own calculations. Estimated in two steps on a panel of EU countries, with country fixed effects

3.2.1. Impact of corporate deleveraging on economic activity

We now turn to analysing the effect of rescue and recovery frameworks on the relationship between corporate deleveraging and overall economic activity. The generalised and necessary deleveraging process currently taking place in the corporate sector may affect domestic demand for several years, as firms keep investment, labour expenses, and dividend pay-outs at subdued levels (Ruscher and Wolff, 2012). This deleveraging process could be facilitated by well-functioning insolvency

frameworks, especially if combined with incentives to use other options, including out-of-court procedures and early rescue mechanisms (IMF, 2013a).

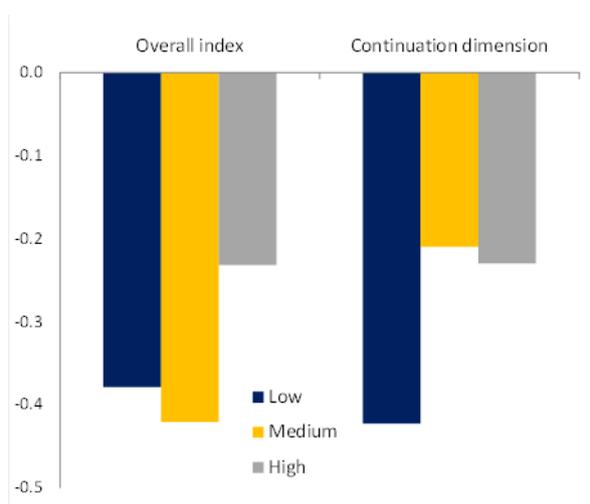
To assess whether early restructuring possibilities affected the macroeconomic outcomes of corporate deleveraging in the recent period, we estimate a panel data model of GDP growth for EU Member States over the period 2007-2012. Specifically, we regress GDP growth on previous year's GDP growth and the change in the stock of outstanding corporate debt divided by the stock of previous periods' total financial assets (similar results are obtained using gross operating surplus). The estimated equation is:

$$gdpgr_{it} = \alpha + \beta gdpgr_{it-1} + (\gamma + \gamma_1 \text{tercile}2_i + \gamma_2 \text{tercile}3_i) \text{delev}_{it} + \epsilon_{it}$$

where the deleveraging variable is next interacted with tercile indicators of efficiency of early restructuring frameworks. A similar specification, though with a higher autoregressive order, was used by Cerra and Saxena (2008) to study the effects of financial and political crises on economic activity. This enables the differentiation of the degree by which corporate deleveraging affects GDP growth depending on the degree of efficiency of the rescue and recovery regimes.

The results reported in Table 3.5 point to a significant negative relationship between corporate deleveraging and GDP growth (the first column shows that a reduction by one percentage point in the ratio of debt to financial assets is associated with around 0.36 percentage points lower GDP growth). This effect is significantly lower in Member States belonging to the upper tercile of the overall efficiency indicator (for which a deleveraging by one percentage point is associated with about 0.23 percentage points lower GDP growth). The interactions with individual dimensions of the efficiency index seem to suggest that the overall effect is mostly driven by the "continuation" dimension, although none of the dimensions is significant if all dimensions are taken together (last column). These effects are summarised in Graph 3.3, where the overall effect of a corporate deleveraging by one percentage point is separately presented by efficiency terciles. Economies in the highest efficiency tercile appear to be less sensitive to changes in corporate indebtedness (the sensitivity is about half that in the lowest tercile).

Graph 3.3: Effect of 1 pp. corporate deleveraging (debt/assets) on GDP growth, by pre-insolvency efficiency terciles



Source: own calculations

Table 3.5: Estimation results for the GDP growth model augmented with rescue and recovery framework indices

| Dependent variable: GDP growth rate in year t | | | | | | | |
|--|----------------------|---------------------|--------------------|----------------------|--------------------|--------------------|---------------------|
| | Baseline | Version 1 | Version 2 | Version 3 | Version 4 | Version 5 | Version 6 |
| GDP growth rate t-1 | -0.188*** (-3.08) | -0.093 (-1.23) | -0.067 (-1.06) | -0.102 (-1.49) | -0.112 (-1.70) | -0.072 (-1.16) | -0.129 (-1.66) |
| (Δ NFC debt t) / Total financial assets t-1 | 0.361*** (4.71) | 0.379*** (6.27) | 0.325*** (4.42) | 0.423*** (6.56) | 0.336*** (4.08) | 0.354*** (6.05) | 0.325*** (4.55) |
| (Δ NFC debt t) / Total financial assets t-1 * Overall Efficiency (middle tercile) | | 0.042 (0.33) | | | | | |
| (Δ NFC debt t) / Total financial assets t-1 * Overall Efficiency (upper tercile) | | -0.147** (-2.48) | | | | | |
| (Δ NFC debt t) / Total financial assets t-1 * Availability dimension Efficiency (middle tercile) | | | 0.030 (0.37) | | | | 0.031 (0.38) |
| (Δ NFC debt t) / Total financial assets t-1 * Availability dimension (upper tercile) | | | -0.060 (-0.63) | | | | 0.027 (0.22) |
| (Δ NFC debt t) / Total financial assets t-1 * Continuation dimension (middle tercile) | | | | -0.213*** (-3.63) | | | -0.158 (-1.15) |
| (Δ NFC debt t) / Total financial assets t-1 * Continuation dimension (upper tercile) | | | | -0.193** (-2.67) | | | -0.125 (-0.92) |
| (Δ NFC debt t) / Total financial assets t-1 * Cost dimension (middle tercile) | | | | | 0.135 (1.52) | | 0.102 (1.56) |
| (Δ NFC debt t) / Total financial assets t-1 * Cost dimension (upper tercile) | | | | | -0.121 (-1.52) | | -0.092 (-0.80) |
| (Δ NFC debt t) / Total financial assets t-1 * Restructuring dimension (middle tercile) | | | | | | -0.085 (-1.12) | 0.089 (0.83) |
| (Δ NFC debt t) / Total financial assets t-1 * Restructuring dimension (upper tercile) | | | | | | 0.060 (0.50) | 0.195 (1.22) |
| Constant | -0.006** (-2.45) | -0.006* (-2.00) | -0.005* (-1.80) | -0.006* (-1.93) | -0.006* (-1.86) | -0.006* (-1.94) | -0.007** (-2.08) |
| t statistics in parentheses | | | | | | | |
| * p<0.1, ** p<0.05, *** p<0.01 | | | | | | | |

Source: own calculations

4. CONCLUSIONS

In the current economic situation characterised by private sector deleveraging and subdued internal demand for many EU Member States, insolvency frameworks may represent a key policy area with potential benefits for financial stability, for mitigating the impact of private sector deleveraging on growth, as well as for spurring entrepreneurship.

To empirically assess the validity of these claims, we decomposed the Member States' legislative frameworks on preventive restructuring and effective discharge of firm's debt into 12 sub-indicators, catering for their main relevant dimensions. Subsequently, these sub-indicators were pooled according to their common informational content into four aggregate composite indicators, reflecting: (i) the availability of preventive restructuring procedures; (ii) the absence of short-term constraints on firm's activity; (iii) direct and indirect costs associated with preventive procedures (including reputational, financial, and administrative costs); and (iv) effective restructuring chances and early warning.

Based on the constructed indicators of efficiency of the national rescue and recovery frameworks, the potential economic impact of measures enhancing this efficiency has been analysed with panel analysis techniques, focussing on: (i) the effect on self-employment rates; and (ii) the effect on outcomes of corporate deleveraging dynamics. These are important economic dimensions given that: (i) self-employment can be regarded as a reasonable proxy for general entrepreneurship; and (ii) corporate deleveraging episodes have significant repercussions on financial soundness and economic activity. For those countries that have recently undergone through a change in their legislative frameworks, the values prior to the reform have been considered as relevant for the analysis.

As regards the impact on entrepreneurship, the aggregate index of efficiency of the rescue and recovery framework is found to have a significant positive impact on self-employment rates, particularly driven by the "continuation" dimension. These results are in line with the economic prior that a more efficient rescue and recovery framework, and in particular the absence of short-term constraints on operations (such as remaining in possession of the assets and possibilities for stay of proceedings), should foster the willingness to take on economic risk and start an economic activity. The results on deleveraging and financial stability indicate that the "restructuring" factor is positively associated with a speedier adjustment of the NPL rates, i.e. to their swifter reaction and subsequent normalisation following a negative macroeconomic shock. Also, the negative relationship between corporate deleveraging and GDP growth appears to be significantly lower in Member States characterised by higher efficiency of the rescue and recovery framework, mostly driven by the "continuation" dimension.

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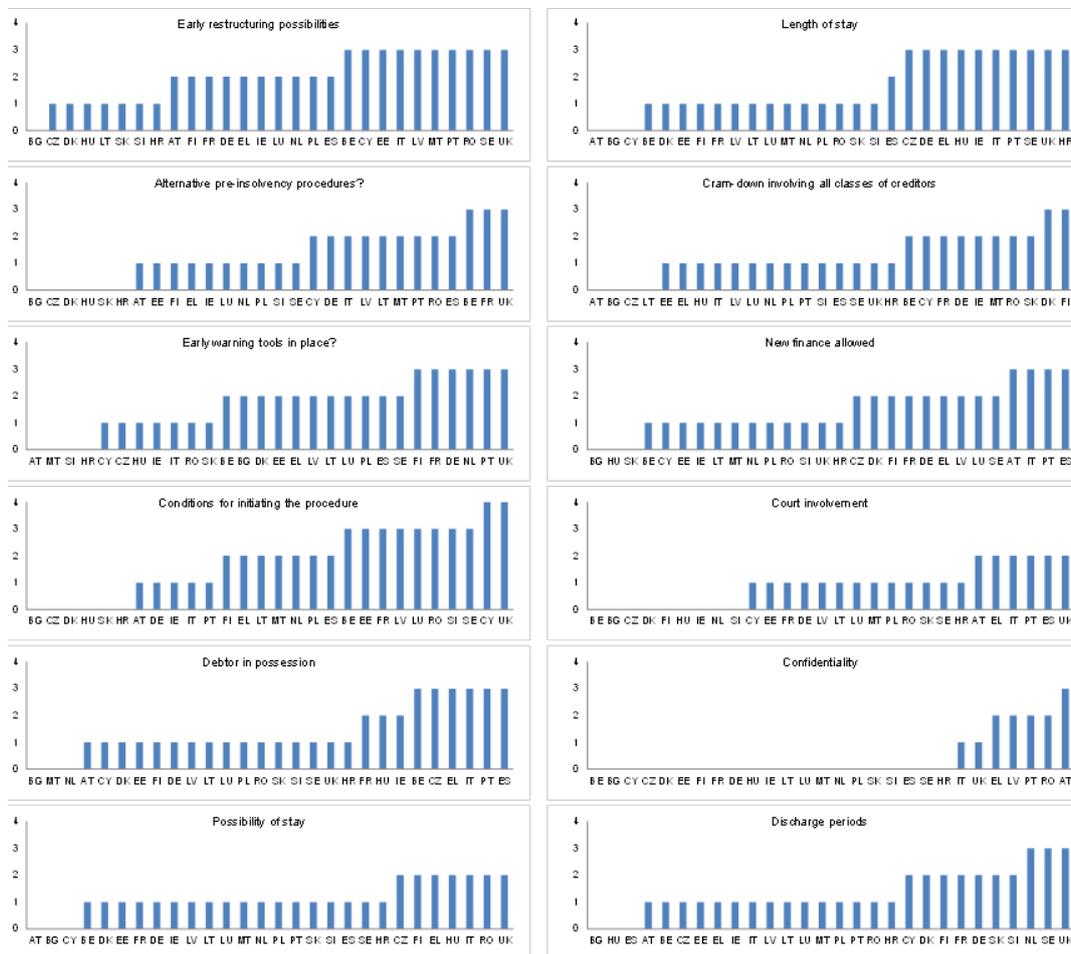
ANNEX

Table A.1: Efficiency scores in twelve aspects of pre-insolvency frameworks in the EU28, detailed values

| Country | Dimensions of pre-insolvency efficiency | | | | Aggregate Indicator |
|---------|---|---|---------------------------|---------------------|---------------------------|
| | Easiness/Availability | Facilitations to Continuation of Operations | Direct and Indirect Costs | Debt Sustainability | Pre-insolvency efficiency |
| AT | 0.12 | 0.03 | 0.27 | 0.04 | 0.45 |
| BE | 0.26 | 0.16 | 0.03 | 0.14 | 0.58 |
| BG | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 |
| CY | 0.25 | 0.03 | 0.08 | 0.15 | 0.51 |
| CZ | 0.00 | 0.25 | 0.06 | 0.07 | 0.38 |
| DK | 0.03 | 0.10 | 0.06 | 0.20 | 0.39 |
| EE | 0.20 | 0.10 | 0.08 | 0.12 | 0.49 |
| FI | 0.11 | 0.14 | 0.06 | 0.23 | 0.54 |
| FR | 0.23 | 0.13 | 0.11 | 0.20 | 0.67 |
| DE | 0.15 | 0.15 | 0.11 | 0.20 | 0.61 |
| EL | 0.14 | 0.25 | 0.21 | 0.12 | 0.72 |
| HU | 0.03 | 0.22 | 0.00 | 0.05 | 0.30 |
| IE | 0.12 | 0.18 | 0.03 | 0.11 | 0.44 |
| IT | 0.23 | 0.25 | 0.24 | 0.09 | 0.81 |
| LV | 0.23 | 0.10 | 0.16 | 0.12 | 0.61 |
| LT | 0.14 | 0.10 | 0.08 | 0.09 | 0.41 |
| LU | 0.17 | 0.10 | 0.11 | 0.12 | 0.49 |
| MT | 0.20 | 0.07 | 0.08 | 0.08 | 0.43 |
| NL | 0.14 | 0.07 | 0.03 | 0.22 | 0.46 |
| PL | 0.14 | 0.10 | 0.08 | 0.12 | 0.43 |
| PT | 0.23 | 0.21 | 0.24 | 0.14 | 0.82 |
| RO | 0.23 | 0.14 | 0.13 | 0.11 | 0.61 |
| SK | 0.03 | 0.10 | 0.05 | 0.11 | 0.28 |
| SI | 0.13 | 0.10 | 0.03 | 0.10 | 0.36 |
| ES | 0.17 | 0.23 | 0.15 | 0.08 | 0.63 |
| SE | 0.20 | 0.15 | 0.11 | 0.19 | 0.65 |
| UK | 0.28 | 0.19 | 0.15 | 0.22 | 0.85 |
| HR | 0.03 | 0.15 | 0.08 | 0.06 | 0.32 |

Source: own calculations. Note: Higher values of the indicators imply higher efficiency

Graph A.1: Efficiency scores in twelve aspects of pre-insolvency frameworks in the EU28, bar charts



Source: INSOL external study, own calculations. Note: see Table 1.1 for details on the interpretation of the score values

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