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## Finance, Competitiveness & Innovation Global Practice (FCI)

# Early Warning Tool Bulgaria : Technical Note

Technical Note  
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## ABBREVIATIONS

<b>AI</b>	Artificial Intelligence
<b>API</b>	Application Programming Interface
<b>AR</b>	Accuracy Ratio
<b>BA</b>	Bankruptcy Act
<b>BCCI</b>	Bulgarian Chamber of Commerce and Industry
<b>BGN</b>	Bulgarian Lev (national currency)
<b>BNB</b>	Bulgarian National Bank
<b>BSMEPA</b>	Bulgarian Small and Medium Enterprises Promotion Agency
<b>CCR</b>	Central Credit Register
<b>CA</b>	Commerce Act
<b>CIT</b>	Corporate Income Tax
<b>COVID-19</b>	Coronavirus Disease 19
<b>DBA</b>	Danish Business Authority
<b>DG REFORM</b>	Directorate General for Structural Reform Support
<b>DSCR</b>	Debt Service Coverage Ratio
<b>EAD</b>	Exposure at Default
<b>EBA</b>	European Banking Authority
<b>EBF</b>	European Banking Federation
<b>EBIT</b>	Earnings before Interest and Tax
<b>EBITDA</b>	Earnings before Interest, Tax, Depreciation, and Amortization
<b>EC</b>	European Commission
<b>ECA</b>	East and Central Asia
<b>ECB</b>	European Central Bank
<b>EL</b>	Expected Loss
<b>EMEA</b>	Europe, Middle East and Africa
<b>EC</b>	European Commission
<b>EU</b>	European Union
<b>EWE</b>	Early Warning Europe
<b>GAAP</b>	Generally Accepted Accounting Principles
<b>GDP</b>	Gross Domestic Product
<b>GDPR</b>	General Data Protection Regulation
<b>GFC</b>	Global Financial Crisis
<b>IAS</b>	International Accounting Standard
<b>ICT</b>	Information and Communication Technology
<b>IFRS</b>	International Financial Reporting Standards
<b>IP</b>	Insolvency Practitioner (in Restructuring)
<b>IRB</b>	Internal Rating Based
<b>KPI</b>	Key Performance Indicator
<b>LGD</b>	Loss Given Default

<b>MAMLA</b>	Measures Against Money Laundering Act
<b>MoE</b>	Ministry of Economic Affairs and Communications
<b>MoF</b>	Ministry of Finance
<b>MoJ</b>	Ministry of Justice
<b>MSME</b>	Micro, Small, and Medium Enterprise
<b>NACE</b>	<i>Nomenclature statistique des Activités économiques dans la Communauté Européenne</i>
<b>NDA</b>	Non-Disclosure Agreement
<b>NGO</b>	Non-Governmental Organization
<b>NPL</b>	Nonperforming Loan
<b>NRA</b>	National Revenue Agency
<b>NSI</b>	National Statistical Institute
<b>NSSI</b>	National Social Security Institute
<b>PD</b>	Probability of Default
<b>PDPA</b>	Personal Data Protection Act
<b>POSA</b>	Public Offering of Stocks Act
<b>ROD</b>	Return on Debt
<b>ROI</b>	Return on Investment
<b>SLA</b>	Service Level Agreement
<b>SME</b>	Small and Medium Enterprise
<b>SRSS</b>	Structural Reforms Support Service
<b>TCB</b>	Tax and Customs Board
<b>TIN</b>	Tax Identification Number
<b>TRIM</b>	Targeted Review of Internal Models
<b>TRRYULNT</b>	Bulgarian Registry Agency
<b>UBO</b>	Ultimate Beneficial Owner
<b>UCN</b>	Unified Civil Number
<b>UIC</b>	Unified Identification Code
<b>VAT</b>	Value-Added Tax
<b>WBG</b>	World Bank Group
<b>XBRL</b>	Extensible Business Reporting Language

## DEFINITIONS

<b>ADVISORY SERVICES</b>	Range of services to be provided to Debtors being notified about a perspective insolvency by the EWT
<b>DEBTORS</b>	Producer households, sole proprietorships, and non-financial companies (falling under the scope of the EWT)
<b>EWT (ALERT SYSTEMS)</b>	A system aimed at alerting debtors about a perspective insolvency, normally based on trigger events
<b>FALSE NEGATIVE</b>	A debtor in distress (i.e., with high probability of default) not being notified about a perspective insolvency by the EWT
<b>FALSE POSITIVE</b>	A debtor not in distress (i.e., with low probability of default) being notified about a perspective insolvency by the EWT
<b>HARD NOTIFICATION</b>	A notification to the Debtor about the detection of a perspective insolvency based on official communication (official letter from the EWT, communication from a Tribunal, etc.)
<b>INBOUND APPROACH</b>	An approach where debtors access the EWT on a voluntary basis to perform an assessment aimed at verifying whether there is a perspective insolvency
<b>INCENTIVES</b>	Range of benefits the debtors notified about a perspective insolvency by the EWT can have access to (for example: reduced penalties for past due tax debt)
<b>NEGATIVE INFORMATION</b>	Information negatively affecting debtors' creditworthiness (for example, unpaid checks, delinquent accounts, past due debt, bankruptcies, and foreclosures)
<b>OUTBOUND MODEL</b>	An approach where the EWT elaborates a set of data to identify and notify debtors' perspective insolvency
<b>PREDICTIVITY</b>	The capacity of the EWT to capture perspective insolvencies, minimizing the share of false positives and false negatives
<b>PERSPECTIVE INSOLVENCY</b>	High probability that a debtor will become insolvent (normally under a 12-24-month perspective). The notion of a perspective insolvency differs from a debtor facing "a likelihood of insolvency" as in Article 3 of the Directive. 'Perspective insolvency' is a state in which a debtor may find itself that is not yet close to being in 'imminent insolvency' or facing 'a likelihood of insolvency.' The key distinction between 'perspective' and those terms is the non-immediacy of the state of insolvency
<b>PROBABILITY OF DEFAULT</b>	Probability that a debtor will face difficulties in meeting financial obligations (normally under a 12-month perspective)
<b>SELF-ASSESSMENT</b>	Assessment activity made by the debtor to identify whether alert triggers exist, identifying a perspective insolvency
<b>SOFT NOTIFICATION</b>	A notification to the Debtor about the detection of a perspective insolvency based on informal communication (for example: a call or an email by the EWT or the Advisory service.)
<b>STABILIZATION (PROCEDURE)</b>	A procedure for traders facing financial distress aimed at restructuring their debt under a going-concern, as defined by the Bulgarian Commercial Act

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The objective of the TN is to assist the Bulgarian authorities in the design of an Early Warning Tool (EWT) to identify and assist debtors in potential financial distress, in line with the recommendations of the EU Directive 2019/1023 of the European Parliament and Council “On preventive restructuring frameworks, on discharge of debt and disqualifications, and on measures to increase the efficiency of procedures concerning restructuring, insolvency and discharge of debt” (2019) (the Directive<sup>1</sup>).

For the preparation of the TN, the WBG team<sup>2</sup> consulted with law and accounting firms, financial institutions, public agencies, and other stakeholders interviewed in a number of video conference meetings between October 28 and November 30, 2020<sup>3</sup>. The feedback obtained during these meetings was essential to understanding the context and providing the recommendations included in the report.

The WBG team is extremely grateful to the stakeholders and the Bulgarian authorities for the cooperation and inputs shared with the team.

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<sup>1</sup> See EU Directive 2019/1023, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019L1023>

<sup>2</sup> Composed of Bujana Perolli (Senior Financial Sector Specialist, Task Team Leader), Fabrizio Fraboni (Lead Financial Specialist), Fabio Tarantini (Credit Infrastructure Expert), Nina Pavlova Mocheva (Senior Financial Sector Specialist), Sandy Shandro (Senior Consultant and Insolvency Expert), under the guidance of and with comments from Mahesh Uttamchandani (Practice Manager).

<sup>3</sup> All meetings were held virtually, given the current travel restrictions deriving from the COVID-19 pandemic emergency. The stakeholders the team met with are: The Ministry of Justice, the Ministry of Finance, the National Revenue Agency, the Registry Authority, the Central Bank (in particular, the team in charge of managing the public credit registry), the Data Protection Authority, the Association of Insolvency Trustees, the private credit reporting operator (Experian), two leading commercial banks (Bank Raiffeisen and Unicredit), a fintech operator (APIs), the association of insolvency practitioners, the National Institute of statistics, the Bulgarian Chamber of Commerce and Industry, and the Association of Small and Medium enterprises.



## 1. EXECUTIVE SUMMARY

1. **Consistent with Article 3 of the EU Directive on preventive restructuring, an Early Warning Tool (EWT) aimed at detecting financial distress as early as possible must be implemented by Member States, enabling effective recovery mechanisms, and supporting a culture of second chance.** The availability of such Tool is particularly relevant in countries like Bulgaria, where SMEs (i.e., typically the range of debtors that benefit the most from such tools) contribute a significant share to the economy.
2. **The focus of the EWTs promoted by the EU Directive is to alert *debtors* (rather than creditors or public authorities, which has been traditionally the case), and this shift has important implications for the design and potential uses of these tools.** This is a welcome development that will contribute further to the creation of a rescue culture across the EU, thereby benefiting businesses, economic activity, and employment. Although the Directive imposes this important obligation on all Member States, it provides little guidance on how to implement EWTs, leaving each Member State plenty of discretion to design a system that best fits its needs. This TN explores the available options and recommends a way forward to implement an EWT in Bulgaria.
3. **Currently, there is no alert system in Bulgaria to specifically support debtors at identifying a perspective distress.** Complying with the EBA guidance<sup>4</sup>, early warning systems are only developed by Banks for credit risk management purposes. Therefore, an EWT complying with the Directive should be designed from scratch to identify perspective insolvencies. For this purpose, the appropriate model to support this task efficiently should be identified.
4. **Bulgaria does not seem to meet several of the necessary preconditions to successfully develop a sophisticated EWT.** There is a lack of timely, digitized, structured information in machine readable format about debtors' financial situations, lack of available credit histories and credit scorings provided by private credit reporting operators, and limited information about past due tax and VAT debt. These are just some of the current features that preclude the use of such information to develop predictive algorithms based on quantitative data, at least in the short term.
5. **Non-fulfillment of the above-described requirements not only precludes the implementation of an advanced and proactive EWT, but also the development of a sound dialogue between the private and public sectors in Bulgaria, based on mutual trust.** Therefore, digitalization of corporate data sharing, implementation of an e-Government platform to channel information exchange between citizens, businesses and public agencies and development of a stronger credit information sharing infrastructure<sup>5</sup> should all be considered as high-level priorities for Bulgaria in the years to come. In fact, the Central Credit Register (CCR) maintained by the Bulgarian National Bank (BNB) is the only credit information provider in the Bulgaria, and shares with lenders limited information on borrowers' credit histories and payment behavior. Public authorities should work intensively on developing the credit information sharing infrastructure in the years to come, in order to: a) review and perform an update of the CCR, to include a higher number of data points and become a critical asset to support the BNB's institutional tasks, such as permanent, data-driven and forward-looking macro and micro-prudential oversight, and b) to set-up all the enabling conditions to encourage data collection and provision of value-added services (such as credit scores) by private credit information providers.
6. **Since the necessary preconditions for a more advanced EWT are not fulfilled, the development of a purely inbound model<sup>6</sup> is recommended, where companies will request access to the EWT on a voluntary basis,**

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<sup>4</sup> See the EBA (European Banking Authority) on loan origination and monitoring

<sup>5</sup> In fact, currently Bulgaria ranks low among EU Countries in terms of performance of the credit information infrastructure. The key reason for this is the lack of active private credit reporting operators, providing credit reports and value-added-services to creditors.

<sup>6</sup> Where debtors in distress can access the EWT on a voluntary basis to ask for support.

**to make use of a range of services to support preventive interventions aimed at avoiding future insolvency.** A purely inbound model based on EWT’s analysis of debtor’s qualitative information should be considered as a “quick-win” by Bulgarian authorities and should be implemented in the short-term, complying with the preventive restructuring Directive. The Bulgarian authorities should also consider the opportunity to implement an inbound model based on a self-assessment in the medium-term. For this purpose, the definition of the self-assessment evaluation methodology and alert indicators will require the set-up of a Working Group with different public and private data providers (for example, Ministry of Justice, NRA<sup>7</sup>, NSI<sup>8</sup>, financial sector operators, BNB<sup>9</sup>, SME associations, chartered accountants, etc.). The model might either substitute or complement the fully inbound approach for a specific segment of debtors<sup>10</sup>. An in-depth cost versus merits analysis by a working group should be required to define the scope, the perimeter and the methodology adopted by the self-assessment. The eventual adoption of a more advanced approach through the elaboration of a set of alerts by the EWT (outbound approach) should be considered as an option in the long-term, well after the establishment of the e-government platform. However, authorities might decide to work on the definition of a conceptual model for an outbound approach starting from the onset of the EWT implementation project. Regardless of the implementation approach identified as the best fit, two key enabling features surrounding the EWT are as follows: a) availability of sufficiently encouraging incentives to support distressed and honest debtors with viable businesses when addressing the EWT; and b) a widespread information campaign to inform debtors about the opportunities deriving from the access to the EWT.

7. **Regarding institutional arrangements, some institutions<sup>11</sup> seem already well-placed to support debtors’ prequalification, appraisal, notification, and technical assistance phases both in terms of capacity and network.** Therefore, several opportunities seem to exist in Bulgaria to host the Tool and provide a range of services to debtors. When defining the most appropriate institutional and operational arrangements for the Tool, it needs to be underlined that a key driver for decision-making is to carefully assess the level of trust of the private sector in dealing with public institutions. It needs to be considered that disclosing information to third parties about companies being notified of a perspective insolvency might be highly detrimental and with counterintuitive effects (i.e., escalation to insolvency being accelerated rather than prevented when a debtor is notified of a perspective insolvency) and should be avoided at all costs.
8. **Therefore, the element of trust by the private sector should be kept into consideration when selecting the managing entity of the EWT to avoid that debtors fearing that information about their distressed status might be used for purposes other than the ones established by the EWT, would decide not to access the Tool.** On this topic, more detailed indications of potentially eligible entities and advantages and disadvantages deriving from some institutional and operational arrangements are described in the TN<sup>12</sup>.
9. **Lastly, the current COVID-19 pandemic emergency and the subsequent post-pandemic phase are expected to have an impact on the definition of the approach and operational arrangements of the EWT.** In fact, the number of debtors showing a perspective insolvency is expected to increase significantly, whose patterns might not always be well captured through a quantitative analysis. Under these challenging circumstances and regardless of the approach adopted by the EWT, a well-defined strategy and strong policy coordination are required to ensure the efficiency of measures enabling the rescue of viable businesses, encompassing among other topics, the interconnection between the EWT and the preventive insolvency measures (including incentives for out-of-court rehabilitation) aimed at achieving debt recovery under a going concern. Without strong coordination

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<sup>7</sup> National Revenue Agency

<sup>8</sup> National Statistical Institute

<sup>9</sup> Bulgarian National Bank

<sup>10</sup> For example: sole proprietors and micro/small businesses might continue to address the EWT for an assessment, while medium and large companies might be mandated to perform the self-assessment and report a perspective insolvency (at a more advanced stage of EWT).

<sup>11</sup> Such as BSMEPA (Bulgarian Small and Medium Enterprises Promotion Agency) and the Bulgarian Chamber of Commerce and Industry (BCCI).

<sup>12</sup> See Section 8

on these measures, the implementation of the EWT would most likely result in fulfilling mere compliance duty of the National Authorities, with low or no significant impact on the rescue and rehabilitation culture in Bulgaria.

**Table 1: Key Findings and Recommendations**

Topic	Key findings	Key recommendations
<p><b>1. Data sources and information to support the EWT</b></p>	<p>Some key relevant public information (such as financial data) does not seem to comply with the requirements of availability to fully support the EWT.</p>	<p>Evaluation of debtors' perspective insolvency should solely rely on qualitative and quantitative analysis based on information to be provided by debtors.</p>
<p><b>2. EWT Modelling</b></p>	<p>Lack of availability of public information and private credit information providers undermines the development of complex, automated and highly predictive algorithms to detect perspective insolvency.</p>	<p>Implementation of an inbound model, where debtors can contact the EWT to perform an assessment and ask for support should be envisaged in the short term, with the option of mandating medium and large companies to perform a self-assessment and flag perspective insolvency to the EWT to be considered in the short-medium term.</p>
<p><b>3. EWT's institutional and operational arrangement</b></p>	<p>Several institutions (such as BSMEPA and BCCI) seem well placed to support the adoption of an inbound model in the short term and host the EWT.</p>	<p>The consideration that the Tool should be designed for the exclusive benefit of the debtors should prevail when defining the best fit in terms of institutional and operational arrangements to host the EWT.</p> <p>Under this perspective, the key factors to consider are:</p> <ol style="list-style-type: none"> <li>1) The institution should be trusted, and debtors should be certain that the support provided will have no other interest other than helping entrepreneurs solve their difficulties.</li> <li>2) Opportunity of the EWT of providing a combination of free-of charge and remunerated support by the EWT, in order to deliver both fully accessible and highly professional services</li> </ol>
<p><b>4. Other topics</b></p>	<p>There is a weak culture of debtor's rehabilitation and second chance in Bulgaria</p>	<p>To avoid the risk of perceiving the implementation of the EWT as a mere regulatory compliance duty, debtors should be encouraged to access the Tool through public awareness campaigns and incentivizing measures. Under this perspective, the lessons learned in other countries where an EWT is already established might be critical at understanding what the most appropriate measures to encourage access to and use of the Tool might be.</p> <p>In any case, defining a strict correlation between the EWT and the stabilization procedure to support rehabilitation and debt restructuring under a going concern is highly recommended.</p>

## 2. INTRODUCTION

10. **There are some key aspects to consider when implementing an EWT in Bulgaria.** These are the prevalence of sole proprietors<sup>13</sup>, micro and small enterprises in the market, the challenges faced by Bulgarian MSMEs (as reported by stakeholders<sup>14</sup>), and the still ongoing evolution of the information sharing infrastructure on debtors' financial status.
11. **To ensure full consistency of a proposed approach towards EWT implementation with the Bulgarian specificities, when discussing how to design an EWT, the TN conceptually analyzes three pillars:** (1) the existence and availability of data that should be used by the EWT; (2) the model and algorithm that can indicate companies in distress; and (3) the institutional arrangements surrounding the EWT, including governance of the agency in charge of the EWT's operations, and the process of notification and support of distressed businesses.
12. **Regarding the first pillar (data availability), the key requirement is that information should be publicly available, timely and in a structured format.** The most relevant data to capture perspective financial distress are financial ratios, credit histories and outstanding/past due debt with Tax Authority and Social Security. Other information can be significantly useful to detect perspective distress, such as existence of ongoing judicial proceedings against the debtor or judgments against the debtor pending execution, seized goods and several other alerts. Naturally, both the relevance of some types of data and data sources and the priority (i.e., the sequence of alerts that highlight the worsening of a debtor's financial situation) can greatly vary from country to country.
13. **Regarding the second pillar (modelling), EWT's complexity and predictivity highly depends on the requirement of information availability described above.** Based on that, a significant range of modelling solutions with increasing complexity exist, from a barely manual and subjective analysis combining qualitative and quantitative information provided by the debtor, to a periodical self-assessment of a set of current and forward-looking financial and liquidity indicators, to a fully automated algorithm based on statistical analysis and Artificial Intelligence to source data from different data providers to be managed by the EWT<sup>15</sup>.
14. **Regarding the third pillar (institutional and operational arrangements), there are several factors to consider when identifying the most effective solution.** The most relevant are: i) the institution's capacity and network to host the EWT and support debtors; and ii) debtor's trust in the EWT and support services. Under this perspective, an array of already established solutions potentially exist, ranging from public authorities fully managing the EWT and support services, or where both model management to flag debtors in perspective distress and technical assistance are delegated to NGOs or private institutions.
15. **In general, given the relatively recent adoption of the EU Directive, there is no established "best practice" model when it comes to defining data collection, elaboration, modeling, and institutional arrangements to support the EWT.** Each Member State has implemented a Tool that essentially reflects local specificities (such as regulation on data sharing, entrepreneurship, and culture of second chance, data availability, the public sector's capacity to manage a sophisticated EWT, etc.), that may not necessarily match with the Bulgarian context. Under this perspective, the lessons learned in each country concerning these topics and the authorities' vision of the way forward on the EWT in a way that best accommodates debtors' needs, will be described in the upcoming Benchmarking Report. This will support informed decision-making by the Bulgarian authorities on this subject.

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<sup>13</sup> See EU's Bulgaria 2019 SBA (Small Business Act) Factsheet

<sup>14</sup> Mostly referred to low digitalization, competitiveness and entrepreneurship education. On this matter, see the European Commission 2019 SBA (Small Business Act) Factsheet. [is a link to the document missing or not intended to be provided?]

<sup>15</sup> On this topic, a Benchmarking Report will describe the different approaches to the detection of perspective insolvency adopted in other countries, highlighting the specificities of each context, opportunities and risks deriving from the adoption of the modelling options, as well as key lessons learned by national authorities managing the EWT during the Tool's lifespan.

### 3. KEY CONSIDERATIONS FOR DESIGNING AN EWT

#### 3.1 Definition

16. **An EWT helps businesses detect financial difficulties so that they can be addressed in a timely manner.** Within this broad definition, EWTs can adopt many different forms, ranging from purely internal control systems (involving corporate bodies like the supervisory board or corporate auditors), to external control systems that rely on the intervention of third parties, either due to their professional expertise or because they are better informed about the debtors' affairs.
17. **The literature on this topic appears excessively permissive, allowing the term “EWT” to be used for any action, system, or event that may help detect, directly or indirectly, the existence of financial distress<sup>16</sup>.** This approach is perhaps misleading, as it implies that the organization of events, establishment of advisory services, or even information campaigns would amount to the establishment of an EWT. In this context, this TN adopts a narrow approach and considers EWTs as those systems that, after analyzing the detailed circumstances of a specific business, notify the management of such business of the existence of problems, urging management to take prompt action.

#### 3.2 Purpose

18. **It is well documented that the earlier a debtor can detect its upcoming financial difficulties and attempts to resolve them, the higher the probability of avoiding insolvency<sup>17</sup>.** Similarly, the earlier it is established that the viability of a business is permanently impaired, the more orderly and efficient the liquidation process will be. Until recently, EWTs were typically designed to alert *creditors* and *public authorities* to the upcoming distress of corporate and, from time to time, supervised debtors. Specifically, financial institutions in the EU have the obligation to implement adequate internal procedures to identify and manage potential nonperforming clients at a very early stage<sup>18</sup>. Public authorities, including financial sector supervisors, have also developed EWTs to prevent the failure of systemic entities and preserve financial stability.
19. **However, the focus of the EWTs promoted by the EU Directive is rather on the *debtor side*, and this shift has implications for the design and potential uses of these tools.** Among other differences with the Directive's predecessors, one can highlight the enhanced need to rely on publicly available data, the lack of sophistication of the ultimate beneficiaries of the alert, or the natural aversion by businesses (and micro, small and medium enterprises (MSMEs) in particular) to acknowledge the existence of upcoming financial distress.
20. **Although the focus of the tool is to serve *all debtors that engage in economic activities*, EWTs are expected to be particularly effective for SMEs.** This is mostly<sup>19</sup> because, when facing financial difficulties, SMEs often do not have the necessary resources to cope with high restructuring costs, including hiring advisors that can assist them to prevent or mitigate the effects of financial distress. Considering that SMEs are predominant in Bulgaria, the TN explores variations of design and implementation of EWTs which could specifically serve this sector.

#### 3.3 Overview of Key Models

21. **Statistical and technical features aside, EWTs can be based on one of the two approaches - an inbound or outbound model, as described in the following sections.** The Directive is not prescriptive on how to implement

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<sup>16</sup> See, for example, “Bankruptcy and Second Chance for Honest Bankrupt Entrepreneurs”, ECORYS (2014).

<sup>17</sup> See, among others, “Business Dynamics: Start-Ups, Business Transfers and Bankruptcy”, EC (2011).

<sup>18</sup> See “Guidance to EU banks on Non-Performing Loans”, ECB (2017).

<sup>19</sup> Some other reasons on the EWT's focus on SMEs are a) The lack of necessary detailed and accurate quantitative information from SMEs to calculate likelihood of insolvency and b) The large share of the companies covered by this segment (up to 99% in some Countries)

the Tools, and Member States can identify the approaches that are the best fit to accommodate their specificities. The approaches are not mutually exclusive, and the Bulgarian authorities may potentially decide that the adoption of both approaches, mutually reinforcing, is the best option for Bulgaria (the funding available to introduce either or both options will be a factor). Naturally, the accuracy of these approaches will vary depending on the amount and quality of data provided, a critical issue discussed in section 5.

### ***Inbound model: Entrepreneurs' Self-Assessment***

22. **In this approach, the EWT encourages entrepreneurs (and entrepreneurs' internal corporate bodies) to assess their own situation.** The assessment is the first line of defense: before the involvement of third parties takes place, the system prefers to place the responsibility for detecting financial distress on the ultimate beneficiaries of such information, including shareholders, business supervisory boards, and employees' representatives. The underlying principle is that it is in the debtor's own interest to detect these difficulties as soon as they arise. When potential distress is not detected by management (the main corporate body responsible for doing so), then other bodies within the business should alert or seek an explanation from management as to the severity of the potential distress. Such assessment can be conducted by the business's own corporate bodies, whenever access to the required information is possible, or by a public or delegated private agency, which would conduct the assessment at the request of the business.
23. **There are different ways to design an EWT under this approach.** The simplest way is granting debtors access to a hotline service, where businesses' representatives can ask for guidance to perform the self-assessment and subsequently benefit from a range of possible services - advisory services on particular topics, capacity building, support for the set-up of a rescue strategy or starting of an insolvency procedure. Such an approach has been implemented in Germany.
24. **More advanced approaches exist under the inbound model, involving delegating the analysis to either corporate bodies or other entities, for example, chartered accountants.** Such approaches have been implemented in France<sup>20</sup> and Italy,<sup>21</sup> as described in the Benchmarking Report<sup>22</sup>. Such approach also delegates the analysis to the companies which are subject to statutory audits<sup>23</sup>, who are required to formally alert management to the circumstances that endanger the business as a going concern. Once this information is received, management has the obligation to act as early as possible; the timing and the type of action, depending on whether director's liability may be triggered. This alternative approach, however, would only be useful to those companies that have appointed an auditor, which are estimated to be only a few thousands in Bulgaria<sup>24</sup>.
25. **A feature of self-assessment-based models consists of an interface either offered by a private operator under the methodological guidance of public authorities, or directly by a public agency (frequently the one in charge of registering businesses' financial statements on an annual basis).** In this approach, the entrepreneur performs – either on a voluntary or mandatory basis - a “health” check, and provides the information required to perform the assessment<sup>25</sup>. Next, the EWT automatically calculates the likelihood of the business

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<sup>20</sup> See the State financed start-up *signaux faibles*, supporting debtors with an alerting tool based on opened data and a platform based on open source, see <https://beta.gouv.fr/startups/signaux-faibles.html>

<sup>21</sup> See the set of alert indicators and the calculation methodology set forth by the chartered accountants association with the support of private operator (business register) to be calculated on a quarterly basis by each company (or chartered accountants). Reporting of indicators falling beyond the established threshold to an entity that has been specifically set-up for this purpose (e.g., OCC, *Organismi di composizione della crisi di impresa*, i.e. Extrajudicial resolution entities), is expected to take place from Feb. 2021.

<sup>22</sup> The Benchmarking Report is an output under preparation by the WBG, analyzing relevant case studies on EWT implementation and lessons learnt in other countries.

<sup>23</sup> This is the approach adopted in France with respect to the largest companies only (*société anonyme*). See Article L234-1 of the French Commercial Code. The implementation of an alerting tool in Italy also follows this approach.

<sup>24</sup> According to figures provided by the Registry Authority during the WBG virtual mission

<sup>25</sup> Such approach is adopted in Italy.

becoming insolvent based on a set of key indicators. Subsequently, the EWT relays its findings to the debtor's management, who would again be encouraged to seek advisory support without delay.

26. **The key advantage of the inbound approach is that it can support those debtors whose circumstances that may give rise to imminent danger of insolvency cannot be captured by a quantitative model, for example personal distress.** However, a relevant shortcoming specific to this approach is that in many cases it may depend on the willingness of the entrepreneur to conduct the self-assessment. Those entrepreneurs who either do not anticipate a situation of upcoming financial distress or are not aware of the existence of the EWT would be excluded from the benefit of using the tool.

*Outbound model: An advisory agency combined with qualified volunteers*

27. **A more ambitious approach involves a public or private agency that, at the minimum, is responsible for: (1) designing and operating the EWT; and (2) notifying debtors that their business might be facing difficulties in the short term.** The EWT could also include optional advisory services that would assist with restructuring the business, or any other beneficial measures.
28. **There are several advantages to the outbound model.** The main ones are: i) its objectivity (ensuring a level playing field in the evaluation phase, being based on quantitative predictive models); and ii) it can accommodate a gradual approach and it allows for a series of steps to remedy the distress situation. In addition, a public or private advisory agency is better placed and, most likely, has normally more adequate resources to design and operate a sophisticated system that comprises all types of data. They include not only financial information about the entrepreneur, but also payment history, governance, and macroeconomic data. Another relevant advantage deriving from this model is that it can potentially flag debtors who are not fully aware about their distressed situation. Keeping in mind that one of the key objectives of the Directive is to instill a culture of prevention from the insolvency risk and a rescue culture within the EU zone, the element that the debtors that are not aware of their exposure to a risk of insolvency is probably the key target of an Early Warning Tool.
29. **The main downsides of the outbound model mostly refer to false negatives and strict requirements of data availability to comply with.** In fact, the predictive model may not flag those situations of perspective insolvency arising from other factors that are not necessarily reflected in quantitative and structured information (e.g., when the EWT flags false negatives). In addition, the implementation of such a model is only possible where timely, complete, structured datasets are available to support the implementation of the tool based on robust predictive algorithms – in order to minimize the risk of flagging false positives and false negatives, whose effect might be detrimental.
30. **Belgium and Denmark are some countries within the EU that have recently implemented models based on this approach<sup>26</sup>.** A summary of the main features observed in the inbound and outbound models will be provided in the Benchmarking Report. A short description of how the different approaches have been adopted in some EU countries are described below:

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<sup>26</sup> Estonia also chose to implement such approach, under the guidance of WBG



### **BOX 1: VOLUNTARY SUPPORT TO COMPANIES IN DISTRESS IN GERMANY**

In Germany a nonprofit organization, Team-U, supports entrepreneurs facing difficulties. The model is inbound, as entrepreneurs themselves must seek help from Team-U in order to receive the support they need.

The rationale behind this approach is that: (1) help from a neutral counterpart, rather than a public authority, may make entrepreneurs feel more comfortable with questioning their own financial status and receiving advice; and (2) a self-assessment based on qualitative information is considered more effective in identifying the reasons for distress. The support to distressed companies is provided through a network of volunteer consultants, often ex-entrepreneurs who experienced financial difficulties during their professional life.

### **BOX 2: THE DANISH BUSINESS AUTHORITY AND EWE IN DENMARK**

Early Warning is a public program run by the Danish Business Authority (DBA) in Copenhagen under the Ministry for Business and Growth. The program is largely composed of two different and well-defined stages: (1) a first stage, involving the identification of distressed companies based on an artificial intelligence model operated by the DBA; and (2) a sophisticated network of consultants and volunteers who provide advice to distressed companies, run by Early Warnings Europe (EWE).

The DBA model is based on accessible accounting data, which are free in Denmark, and calculates probabilities of default of distressed businesses. The model uses parameters such as income statement, gross profit, result of ordinary operations, profit for the year, equity development, and short-term and long-term debt. The results suggested by the model are a basis, not a substitute, for subsequent individual, qualitative processing of the model's results; the processing is performed by EWE.

After an EWE expert has validated the model's findings, a consultant, or a volunteer (see section 7 for more information) approaches the management of the distressed company and offers advice on reconducting the business's financial situation. The first action taken by the consultant is an initial screening, which involves a complete overview of the circumstances, including financial, economic, and often private issues of the distressed business. EWE consultants are based across the country in regional development centers, making it easier to reach struggling entrepreneurs in person.

If a company can be saved, the consultant assigns one of the organization's 100 volunteer advisors to support a turnaround of the company. It has been reported that approximately 40 percent of assisted companies are followed by a volunteer advisor for a longer period. A volunteer develops an action plan and is the point of reference for the company owner throughout the restructuring process.

### **BOX 3: THE ITALIAN EWT BASED ON QUANTITATIVE SELF ASSESSMENT**

In Italy, the implementation of the EWT comes along with a broader reform of the insolvency regime through a new Regulation ("Codice della crisi d'impresa e dell'insolvenza" or "CCII" through the Decree 14/2019).

Under the original idea of the Italian legislator, the CCII (including the internal and external alert procedures, as described above) was to enter into force in the second half of 2020. The original deadline was then postponed to September 2021, on the basis that the economic context resulting from the COVID-19 pandemic crisis would have frustrated from the outset the new regulation's objectives of promoting business rescue.

Because of the need to align the new CCII with the EU Directive 2019/1023 and analyses the impact of the continuing pandemic, the Italian authorities have subsequently established a new Commission of experts with the task: i) to assess the opportunity to postpone the entry into force of certain rules of the CCII; ii) propose amendments to the CCII to implement Directive; (iv) propose amendments, even temporary, to specific rules of the CCII concerning the ongoing pandemic emergency. Regarding the Early Warning Tool, a set of alert indicators and the calculation methodology set forth by the chartered accountants association (CNDCEC) with the support of private operator (business register) must be calculated on a quarterly basis by each company (or chartered accountants). Reporting of indicators falling beyond the established thresholds or the existence of alert triggers to an entity that has been specifically set-up for this purpose (e.g., OCRI, *Organismi di composizione della crisi di impresa*, i.e., extrajudicial resolution entities), is expected to take place starting from May 2022.. To ensure the effective participation to the EWT an array of incentives (like the minimum level of

interest applied to fiscal debt, minimum level of tax penalties, among others) will be applied by the Regulator. To perform the self-assessment, an online platform is being made available to entrepreneurs (see Art. 3 of Decree 14/2019). If a perspective insolvency is detected, entrepreneurs can have access to a list of experts that he might select to have access to to the extrajudicial crisis resolution workflow. In order to be appointed, independent expert should have relevant expertise in accounting, risk management and finance, with a specific certificate to be delivered by a training entity.

### 3.4 What Should Be Measured By an EWT

#### *Liquidity test*

31. **Insolvency occurs when a company cannot meet its contractual obligations as they become due.** This has been widely referred to as the “liquidity test” for insolvency. It generally requires that the debtor has ceased making payments and will not have enough cash flow to service its existing obligations in the ordinary course of business. From this perspective, the objective of the EWT is to identify entrepreneurs that have not reached that stage yet, but that may reach it unless certain actions are taken without delay. Indicators that may be used to reach that conclusion include: the debtor’s failure to pay rent, taxes, salaries, employee benefits, trade accounts payable, and other essential business costs.
32. **Sources of data that can be used by the tool to determine whether this test has been met include:** (1) current (and ideally perspective) financial information, and the cash flow statement more specifically; (2) payment history, to the extent this information is available and any consent from the debtor that is necessary is obtained; and (3) payments to the Tax Authority (NRA in Bulgaria). The key challenge that the EWT will face when determining business distress is how early can that status be anticipated, and with what degree of accuracy. This issue has already been highlighted and is discussed in detail in section 5.

#### *Balance sheet test*

33. **When designing an EWT, a shortcoming traditionally associated with the liquidity test needs to be considered: a debtor’s inability to pay its debts as they become due may point to solely temporary cash flow or liquidity problem for a business that is otherwise viable<sup>27</sup>.** If the EWT deems the liquidity test as the sole indication of distress, the tool may naturally identify “false positives”<sup>28</sup>, which, considering the negative implications the notification may have, should be avoided at all costs. For this reason, it is desirable that any EWT designed in Bulgaria looks beyond the liquidity test and includes other variables that do not look exclusively at the cash flow or payment history of a company to determine its financial health.
34. **To complement the liquidity test, indicators that focus on the “balance sheet test,” which centers on excess of liabilities over assets as an indication of financial distress, are an advisable option.** Specific indicators that may serve this purpose are largely based on the debtor’s balance sheet and income statement information and may include the debt to EBITDA (a measure of a company’s overall financial stability) or debt to sales (these are discussed in further detail in section 5.1.4).

### 3.5 The Importance of Confidentiality in an EWT

35. **The information collected and handled by the EWT, regardless of the final form or structure adopted, will of course be of a commercially sensitive nature, confidential, and perhaps even subject to obligations owed to other persons.** In all markets, the potential spread of rumors involving the potentially compromised financial

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<sup>27</sup> Competition in modern markets may compel market participants to accept even losses on a temporary basis in order to become competitive and maintain or gain market share.

<sup>28</sup> Under the current circumstances (COVID-19 pandemic emergency), where most businesses suffer from a lack of fresh liquidity. A model only based the liquidity test might highlight a relevant quantity of false positives.

status of a debtor can have disastrous consequences. For this reason, it is desirable that an EWT include appropriate institutional/operational arrangements and provisions to protect from abuse by creditors or competitors that may take advantage of it, all information collected by the Tool, or any analysis provided by the tool. There should also be a legal obligation for EWT staff to use information received or produced by the Tool only for the purposes of the debtor at hand. The obligation should also include, but not limited to, the creation of a register of authorized persons and with punctual log frame of any access to ensure full accountability. There may be a need for certain exceptions, like the provision of information in the context of criminal proceedings, for example.

### **3.6 The role of the EWT in the context of COVID-19 and post- COVID-19 times**

36. **The outbreak of the COVID-19 pandemic has resulted in an increase of debtor distress.** The crisis has severely impacted economic activity with output losses often exceeding those observed during the Global Financial Crisis (GFC) that started more than a decade ago. Many debtors quickly saw their income flow drastically reduce or dry up altogether due to COVID-19. Against the backdrop of a highly uncertain economic recovery, renewed spikes in caseloads, and a reintroduction of emergency measures, debtors’ distress has been on the increase ever since. To avert a possible credit freeze, regulators across the globe have introduced drastic financial measures, such as moratoria on credit repayments and extension of past-due days<sup>29</sup>. Many have also issued specific directives on how credit providers should report and update data to credit information providers. Based on the lessons learned during the GFC, a clear strategy, strong regulatory guidance, and wide coordination between public authorities and the private sector are expected to support a faster recovery from the current distressed scenario<sup>30</sup>. The role of the EWT as a tool aimed at supporting a rescue culture is expected to become even more prominent in the future.
37. **The key factors for an efficient recovery are:**
- 1) Policy intervention must be fast, as its delayed application exponentially increases the severity of the scenario. A successful strategy must build on robust coordination and interaction among these actors to ensure that timely actions are taken, and measures are well aligned;
  - 2) Coordination among creditors (lenders, tax authority for example) is fundamental, as the reluctance to enable a proactive debt recovery framework by one creditor can potentially undermine the effectivity of all planned improvements, with a penalization of viable businesses with a genuine will to rehabilitate under a going concern;
  - 3) A prompt identification of this segment of debtors by the EWT is fundamental, to address the difficulties in a timely and effective manner;
  - 4) Recovery of these debtors under an ongoing concern is only possible if recovery measures encompass financial as well as operational elements. In fact, distressed but potentially viable businesses will most likely need proper restructuring and not just an “extend and pretend” approach, that will probably just delay the future recognition of insolvency;
38. **Based on industry practices on credit reporting<sup>31</sup>, the expected impacts of the current global emergency on the EWT are as follows:**

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<sup>29</sup> For more information on measures undertaken by countries, see the April 2020 WBG Policy Note “COVID-19 Outbreak: Implications on Corporate and Household Insolvency” by Antonia Menezes and Sergio Muro, available at <http://pubdocs.worldbank.org/en/912121588018942884/COVID-19-Outbreak-Implications-on-Corporate-and-Individual-Insolvency.pdf>

<sup>30</sup> On this matter, see the WBG policy note “COVID-19 and non-performing loan resolution in the East Europe and Central Asia regions”, December 2020.

<sup>31</sup> See World Bank “Why credit reporting matters in formulating policies during COVID-19 response and recovery”, 2020,

- 1) As the rate of NPLs is expected to increase<sup>32</sup>, the number of companies to be notified about a perspective insolvency by the EWT will most likely grow significantly;
- 2) The judgmental component of the EWT to identify debtors in perspective distress might become fundamental, as patterns of perspective insolvency will not be necessarily captured through quantitative data<sup>33</sup>. Moreover, statistical modeling (typically based on logistic regression) that normally supports EWTs and reflect correlations between some indicators and a probability of default, are not performing well<sup>34</sup> under exceptional circumstances;
- 3) The risk of identification of false positives (with the detrimental effects deriving thereof) will become material if relevant decisions of disclaiming the measures to mitigate credit and financial risk mitigation measures to face the pandemic (for example: moratoria) while still preserving the continuity of payment/credit histories will not be taken by Regulators.
- 4) Availability of timely information to capture perspective insolvency in outbound models is becoming even more important, as the pace of deterioration of the financial situation of a debtor might be very fast under the current pandemic event.
- 5) Within the increased number of debtors being notified of a perspective insolvency under the current circumstances, the share of debtors facing distress which are not willing to be rescued (mainly interested in taking advantage from a range of benefits deriving from the access to rescue measures or attempting to delay or avoid initiation of court proceedings) might also increase. In this regard, pre-screening measures to identify honest entrepreneurs with both capacity and willingness to recover from the distress will become essential.
- 6) Recovery of distressed but viable debtors is strongly connected to the set of measures that must be triggered, since the recognition of a perspective insolvency (such as of time-bound regimes that give debtors and creditors special one-off benefits in exchange for an agreed workout plan). Under this perspective, the EWT will become fully effective only if strong coordination with the other components of the insolvency framework is defined.

## 4. REQUIREMENTS OF ARTICLE 3 OF THE EU DIRECTIVE

### 4.1 Scope of Article 3

39. **Before considering the development of an EWT in Bulgaria, it is important to have a clear understanding of what Article 3 requires, and of the perimeter of its intended application.** Article 3 provides for:

*“1. Member States shall ensure that debtors have access to one or more clear and transparent early warning tools which **can detect circumstances that could give rise to a likelihood of insolvency** and can signal to them the need to act without delay.*

*2. Early warning tools may include the following:*

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<https://blogs.worldbank.org/psd/why-credit-reporting-matters-formulating-policy-during-covid-19-response-and-recovery>

<sup>32</sup> While the current trend of NPLs seems static, a significant increase is expected when the current exceptional measures to support debtors in distress will be lifted

<sup>33</sup> See for example the loss of competitiveness of certain products/market segments deriving from the pandemic.

<sup>34</sup> Statistical modelling performance can be measured through a set of indicators, such as the Accuracy Rate (AR) or Gini index, measuring the quantity of false positives and false negative highlighted by the model.

- (a) alert mechanisms when the debtor has not made certain types of payments;
  - (b) advisory services provided by public or private organizations;
  - (c) incentives under national law for third parties with relevant information about the debtor, such as accountants, tax and social security authorities, to flag to the debtor a negative development.
3. Member States shall ensure that debtors and employees' representatives have access to relevant and up-to-date information about the availability of early warning tools as well as of the procedures and measures concerning restructuring and discharge of debt.
4. Member States shall ensure that information on access to early warning tools is publicly available online and that, in particular for SMEs, it is easily accessible and presented in a user-friendly manner.
5. Member States may provide support to employees' representatives for the assessment of the economic situation of the debtor.”

40. **The following observations follow from the wording of Article 3):**

- 1) The time at which an EWT is to be made available is *before* the debtor faces any “likelihood of insolvency,” which is the standard applicable under Article 4.1 of the Directive.
- 2) It follows that additional duties on directors required under Article 19 of the Directive<sup>35</sup>, which are to apply where there “is a likelihood of insolvency,” should not be triggered *solely* based on any EWT notification or other contact with the debtor under Article 3.
- 3) EWTs are clearly intended to be for the benefit of the debtor and *no one else*. The intention of the Directive is to make it possible to save the “success stories” (and to liquidate promptly the failures) by giving some form of advance indication that financial problems requiring a formal restructuring might occur in the future if early steps are not taken. This is consistent with another principal aim of the Directive: to encourage a spirit of entrepreneurialism within the EU as well as both reasonable risk-taking by honest debtors and a more generous attitude toward forgiveness of failure<sup>36</sup>.
- 4) There may be a risk that employees, whose interests and wishes may not always coincide with those of the debtor, may not stand by to permit the debtor to try to find long-term solutions for the business, and might seek to intervene to force their views on the debtor. In this regard, note that Article 3(5) provides that a Member State “may” provide for support to employees’ representatives for the assessment of the economic situation of the debtor. If a policy decision is made to provide such support, then consideration should be given to the feasibility of covering off any liability risk in legislation. Otherwise, in the absence of their consent, debtors are entitled to assume that they, not the Member State or any agency involved in the operation of the EWT, control the information flow to employees and/or their representatives.

## 4.2 Minimalistic versus Comprehensive Approach

<sup>35</sup> See also Recital 71 of the Directive and also paragraph 2.19 of the WB Report “*Preventive restructuring in Bulgaria*” of July 2019. [Which WB Report is this?]

<sup>36</sup> See Recitals 1, 3, 5, and 7

41. **Apart from the examples given in Article 3 itself, the Directive offers little guidance on how Member States should comply with the requirement to give debtors access to “one or more” EWTs.** There is, however, plenty of scope in the Directive for each Member State to do as much as it considers appropriate to its needs and institutional capacity. There are many factors to be considered before deciding on the approach to compliance that is best for Bulgaria. The agencies in charge of designing and operating such EWTs need to exercise great care to minimize liability risk, as well as the prospect of unintended damaging consequences. If a policy decision is taken to do the minimum necessary, compliance would be quite straightforward. For example, since it is already the case that a late payment is something recorded by the National Revenue Agency (NRA), a notification sent to the debtor warning of the need to remedy the situation would amount to compliance with the Directive. Indeed, Recital 22 of the Directive states that EWTs could take the form of “alert mechanisms” that indicate when the debtor has missed a payment, such as taxes or social security contributions, and leaves it to Member States to decide whether the public or the private sector should develop the notification tool.
42. **There are two advantages in taking the minimalistic straightforward approach that is solely based on information on missed payments.** First, it avoids the confidentiality problems relating to the basis of notification inherent in a more elaborate EWT, because the past due debt with the NRA is already a matter of public record in Bulgaria: anyone dealing with the debtor can ascertain the position (but only the existence of past due tax debt is flagged, notwithstanding the type or amount of debt). Second, it minimizes the risk of the potential liability of the agency in charge of operating the EWT for having brought about or contributed to a company’s insolvency by virtue of the inappropriate or inaccurate functioning of the EWT.
43. **However, there are also disadvantages in adopting the minimalistic approach.** While reducing the chances of false positives and minimizing liability risk, this approach also delays the identification of a distressed business. The business may have already missed a payment, which may not be considered early enough and is certainly later than the standard targeted by the Directive. In addition, a minimalistic approach may result in a significant quantity of false positives (i.e., viable businesses that have missed payments to the NRA) and false negatives (in this case, those companies experiencing distress without having past due tax debt). In this sense, it could be argued that the Directive falls into a contradiction. A more comprehensive approach would seem justified if the EWT is expected to “*detect circumstances that could give rise to a likelihood of insolvency.*” If this standard is to be met, the EWT needs to take into consideration additional qualitative/quantitative information, including financial or economic information, to come to such conclusion.
44. **Several related risks need to be considered in adopting a more comprehensive approach that considers signs of financial problems a trigger for issuing an alert.** Perhaps the most important one is that “financial problems” can only rarely be fully explained by financial indicators. And, more pertinently, the extent to which other factors can explain such problems is often unknown. For example, there may be many reasons that a financial indicator shows signs of deterioration such as, the departure of employees or negative rumors in the marketplace or a changed management structure, each may be a valid explanation for poor financial performance. However, it is complex for an EWT to establish a link between these variables.

### 4.3 Potential Risks Involved in an EWT

45. **If and to the extent that an EWT is triggered by an event that turns out not to have been a “real problem,” then the tool is generating false positives<sup>37</sup> and therefore is not functioning optimally - the consequences may be serious.** Naturally, the same detrimental effects may take place in case information on flagged debtors is culpably or intentionally made available to creditors.
- 1) The spirit of entrepreneurship could be damaged, as debtors may be less inclined to take reasonable commercial risks if they are afraid of receiving notification of financial distress. This is particularly true in

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<sup>37</sup> About the definition of false positives and false negatives, see the Definitions Section.

small economies with a small business community.

- 2) The cost of credit could increase, as financial creditors will almost certainly make it a pre-condition to credit, that the fact of any notification to the debtor be disclosed.
- 3) The risk that parties other than the debtor will learn of a notification (already significant in the context of Bulgaria) will increase as the number of notifications to the debtor increases, with creditors and competitors taking advantage in whatever ways they can.

46. **The materialization of these risks may imply the potential liability of the Member State for damages caused to the debtor.** Indeed, although Recital 22 of the Directive states that the Directive itself “*should not impose any liability on Member States for potential damage incurred through restructuring procedures which are triggered by ... early warning tools,*” that does not mean that the risk of liability does not exist. Such a liability could arise either as a result of: (1) a loss of confidentiality of information essential for the profitable operation of the debtor’s business; or (2) analytical errors made by the EWT in the assessment of problems facing the business, which, in turn, caused the debtor to enact changes that made the situation worse, or that contributed to or caused a later insolvency. Suggestions of solutions that effectively mitigate these risks are detailed in the following sections<sup>38</sup>.

#### 4.4 Interaction between the EWT and the Bulgarian Insolvency Framework

##### 4.4.1 Applying for restructuring procedures

47. **Any EWT developed under Article 3 will form an integral part of the Bulgarian restructuring regime. It is important, therefore, to know where, exactly, EWTs fit within that system.** Since July 2017, a workable restructuring procedure was made accessible by debtors who are in "imminent danger of insolvency" as that of the category of debtors targeted by the Directive (the debtor faces a "likelihood of insolvency"). These provisions are contained in Articles 761-797 of the Commerce Act (the "CA"). Article 762(2) of the CA requires a debtor applying to open a restructuring proceeding to substantiate the "danger of insolvency" in view of its pending payable due dates within the 6 months following the submission of its restructuring application, that it will become unable to meet certain payables under CA Article 608, Paragraph 1 or may stop paying. In contrast, Article 3 of the Directive moves the timeline to an earlier time: EWT(s) should be designed to "detect circumstances that could give rise to a likelihood of insolvency." Importantly, this may, in many cases, be before the debtor is eligible to open a restructuring procedure under the current CA or under the CA, as it may be further amended to comply with the Directive. In this sense, Article 3 of the Directive should be viewed as innovative.

##### 4.4.2 Directors’ liabilities

48. **As stated, it follows that the duties of directors required under Article 19 of the Directive<sup>39</sup>, which are to apply where there “is a likelihood of insolvency,” should not, therefore, be triggered solely based on any EWT notification.** Whether those duties apply or not will depend in each case on the financial position of the debtor when the EWT is accessed by the debtor (or when a notification is made to the debtor, if that is the model chosen). For example, if, at the time that an EWT is accessed, the debtor is not, in fact, facing an imminent danger of insolvency and would not meet the requirements under Article 762 (2) (because the financial or other difficulty can be resolved quickly and simply, or for some other reason), then the debtor should not incur liability, at some future date, for having failed to take into account the interests of those mentioned in Article 19 of the Directive - at that time of the early warning, the imminent danger of insolvency test did not apply to the debtor. That is not to say that the debtor might not incur such liability from and after some later date; however, the key point is that the actual “time” at which these additional Article 19 duties apply is not automatically going to be when the

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<sup>38</sup> See Section 5 on sources of data and data privacy-related issues, Section 6 on EWT modeling, and Section 7 on debtors’ alerting process.

<sup>39</sup> See too Recital 71 of the Directive and also Section 17 of the WBG Insolvency Report of December 2020.

debtor accessed the EWT. A court assessing the conduct of the debtor that has accessed an EWT and later become insolvent must, therefore, consider every case with great care.

49. **It should be emphasized, that any future amendments to comply with Article 19 of the Directive, which requires directors to “have due regard” to a range of interests other than those of the company itself (and its shareholders) will tend to increase the risk that, in order to avoid personal liability, the directors might decide to cease trading prematurely and refrain from pursuing in a committed way either trading out of the difficulties, attempting a restructuring, or accessing an EWT.** Personal liability of directors is a modern feature of the “business judgement rule”, which seeks to promote the reasonable but free exercise by directors of their managerial functions, and to protect their decisions from review (and liability) even if their decisions turn out to have been mistaken and even if they lead to the insolvency of the company. The World Bank Principle B2 describes the balance to be struck in the following way:

“Laws governing directors’ obligations in the period approaching insolvency should promote responsible corporate behavior while fostering reasonable risk taking and encouraging business reorganization....”<sup>40</sup>

The Directive also recognizes the risk to the existence of a strong corporate enterprise culture posed by a provision such as Art. 19. Recital 70 states in relevant part:

“...it is important to ensure that directors are not dissuaded from reasonable business judgment or taking reasonable commercial risks, particularly where to do so would improve the chances of a restructuring of potentially viable businesses.”

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<sup>40</sup> See World Bank’s Principles for Effective Insolvency and Creditor/Debtor Rights Systems, Principle B2, available at <http://documents1.worldbank.org/curated/en/518861467086038847/pdf/106399-WP-REVISED-PUBLIC-ICR-Principle-Final-Hyperlinks-revised-Latest.pdf>



## 5. OVERVIEW OF THE EWT INBOUND MODEL PROPOSED FOR BULGARIA

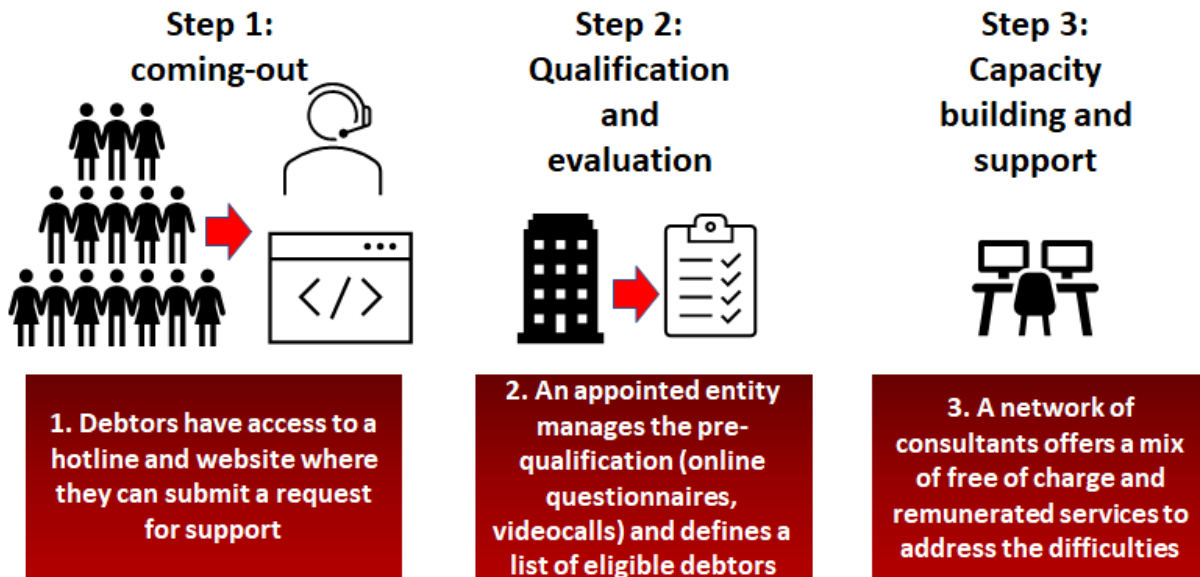
50. **During the virtual meetings, the Team has detected a range of specificities that should have a direct impact on the definition of the features of the EWT in Bulgaria, as follows:**
- 1) Availability: Availability, timeliness, and accuracy of publicly available financial and credit information to support the elaboration of trigger alerts identifying perspective insolvency early enough to set-up remedial intervention is generally low.
  - 2) Culture: A culture of rescue and second chance seems yet to be established in Bulgaria. Some creditors show rigidity when dealing with out-of-court debt resolution or restructuring and might set up prompt interventions with counterintuitive effects (e.g., acceleration of the escalation towards default) in the case where the list of distressed debtors elaborated by the EWT would be released.
  - 3) Quality of rehabilitation and insolvency framework: The current access to the stabilization procedure, available under the Commerce Act, by distressed companies seems very limited. Significant improvements are needed to align the insolvency framework to good practices, as outlined in the WB Preventive Restructurings Technical Note.
  - 4) Cooperation among public authorities for data sharing: The cooperation among authorities on data sharing and data disclosure seems still limited, also given the quite rigid interpretation of the application of the GDPR<sup>41</sup>. A project is ongoing to set-up an e-gov portal within the next 2 years.
  - 5) Trust of the private sector towards public authorities: A feeling of distrust seems a common pattern of private sector representatives when dealing with Public Authorities both in terms of service levels (i.e. limited and not timely information shared), and reliability (i.e. concern that information collected by Public Authorities might not be used properly, and might become part of a “data black market” where some data are shared to privileged entities).
  - 6) Debtors’ morphology: The vast majority (more than 90%) of debtors in Bulgaria are micro and small companies. Based on that, submitting sophisticated and detailed sets of data to perform a sophisticated analysis (either outbound or based on a self-assessment) may not be viable under a cost/benefit perspective.
  - 7) Capacity of entities of the public or private sector to manage an advanced EWT: No public or private entity in Bulgaria seems to have the operational capacity to handle an advanced EWT in the short-term. In fact, neither the Registry Agency (that essentially plays the role of Registrar, to receive information about newly incorporated legal entities nor private credit reporting operators (no credit histories are provided by private sector operators in Bulgaria) seem well positioned to do so, at least in the short-term.
51. **Keeping the above into consideration, the TN recommends the introduction of an Early Warning Tool in Bulgaria based on the “inbound” model (at least in the short-term), which conceptually consists of three main blocks, illustrated in Figure 1:**
- 1) A hotline and help desk to support debtors experiencing distress.

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<sup>41</sup> In fact, during the WBG’s virtual mission, it was stressed by the Bulgarian Authority that – even if the use of information from public entities (such as NRA and NBS) for the purpose of the EWT might fall under the scope of “permissible purpose” established by the GDPR - a special regulation might be needed to support data sharing.

- 2) An entity providing a pre-screening service and a first high-level assessment of the problems reported by the company who contacted the service.
- 3) A counseling entity providing advisory services to debtors being notified about a perspective insolvency.

**Figure 1: The Three Blocks of the Proposed EWT in Bulgaria**



52. **The main phases of the EWT’s operations are:**

- 1) Debtors have access to a pre-qualification phase through a hotline or website specifically set up for this purpose.
- 2) After an online registration or a call where the relevant opportunities deriving from the access to the EWT are described and only high-level information is shared by the debtor, a meeting is planned with a representative of the pre-qualification Team.
- 3) After the signature of an NDA<sup>42</sup>, the debtor meets with a pre-qualification Team representative, who gathers necessary information to get a comprehensive view of the reason of addressing the EWT and debtor’s situation (e.g., personal difficulties, business situation, financial situation<sup>43</sup>). The EWT then supports the assessment of the debtor to identify patterns of perspective insolvency.
- 4) A list of eligible debtors is prepared and submitted for a final decision making on an informal notification to the debtor and eventually to the advisory service. The key criteria for eligibility are:
  - Personal debtor’s commitment to rehabilitation.
  - Consistent signals showing perspective distress.
  - Evidence that identified issues could be resolved by the EWT or connected entities providing technical assistance<sup>44</sup>.

<sup>42</sup> “Non-Disclosure Agreement”.

<sup>43</sup> A questionnaire and a list of information to be provided is shared with the applicants when the meeting is scheduled

<sup>44</sup> This phase is often referred to as “match making”. In fact, preliminary assessment should confirm that the EWT is the right

- 5) Notified debtors are contacted by the advisory service (or are given the opportunity to address the advisory service), and a preparatory meeting is scheduled (a list of relevant information to submit to the service is preliminarily shared with the debtors, along with a signed NDA). The debtor takes a final decision on whether to access the proposed set of services.
- 6) A first general screening is performed by the advisory service to highlight the areas of concern, the possible reasons, and the potential remedial actions. A first set of findings is shared with the debtor, along with broad recommendations on how to address the weaknesses and solve the issues. A description of possible opportunities the debtor might have access to (for example: free of charge capacity buildings, or a support by a matter expert for in-depth support on specific topics, wherever needed) is also provided in this phase.
- 7) The company has access to the above supplementary measures.

53. **Table 2 summarizes the different options to implement and operationalize the components of the proposed EWT in Bulgaria.** The different options and their related variations with the associated pros and cons are described in more granular details in Sections 5–7.

**Table 2: Overview of Main Implementation and Operationalization Options**

Phase and topic	Options to consider
<b>EWT ownership/ governance</b>	Public (most likely a partnership between the Ministries of Justice and Economy)
<b>EWT management</b>	<p><u>Option 1:</u> An agency of the public sector</p> <p><u>Option 2:</u> Management is outsourced to a Non-Governmental Agency (for example: Chambers of Commerce and Industry, BSMEPA) or to a private entity</p>
<b>Contact channel (inbound communications from debtors)</b>	<p><u>Option 1:</u> Fully online (website)</p> <p><u>Option 2:</u> Website and hotline (call center)</p>
<b>Contact channel (outbound communications from EWT)</b>	<p><u>Option 1:</u> Email/chatbox</p> <p><u>Option 2:</u> Email/chatbox, call center operators</p> <p><u>Option 3:</u> Email/chatbox, call center operators and official letters</p>

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support channel for the debtors. For example: perspective insolvency might be identified for honest entrepreneurs with sound and well-defined business models and risk management, lacking sufficient funding to support their activities. This cluster should not be considered as a target segment for the EWT (as they might address creditors or crowdfunding platform to fulfill their needs). Conversely, lack of literacy (for example: business planning, strategic planning, accounting, digital transformation) of honest entrepreneurs might be considered as an alert signal, with a risk of perspective insolvency. As in other countries (Poland, among others), the EWT should consider this cluster as a target segment.

<b>Approach towards support to debtors</b>	<p><u>Option 1:</u> One-off (debtors reporting a possible perspective distress have access to support from a counseling entity)</p> <p><u>Option 2:</u> Staged approach (debtors must face a pre-qualification phase prior to granting access to support from a counseling entity)</p>
<b>Approach towards debtors' payment of services rendered by the EWT</b>	<p><u>Option 1:</u> The services rendered to debtors are totally free of charge</p> <p><u>Option 2:</u> A range of combined free of charge and remunerated services (typically, the pre-screening and the general screening by the advisory service are free of charge, while the additional services to address punctual weaknesses can be remunerated) is offered by the EWT</p>
<b>Counseling service<sup>45</sup></b>	<p><u>Option 1:</u> Based on hired staff and a network of professionals available upon demand</p> <p><u>Option 2:</u> Based on hired staff and a network of volunteers</p> <p><u>Option 3:</u> All volunteers working on a non-remunerated basis</p>

## 6. SOURCES OF DATA

54. **A broad overview of the debtors' information sharing framework is provided in this Section, with a particular focus on MSMEs, which are the main target of the Directive.** Appraising the available key information to be submitted by debtors which is normally relevant for detecting perspective insolvency is a key step for an informed decision-making on the best approach for the implementation of the Early Warning Tool. The availability of financial, tax, credit, company information as well as information from other sources is described in the following sections.

### 6.1 Financial Information

#### 6.1.1 Description

55. **Financial information is normally the cornerstone when measuring a business' likeliness of future insolvency.** In fact, a debtor's capacity to meet current and future obligations and income capacity to finance the debt can be calculated from financial information. The formal set-up of a business requires fulfilling certain legal formalities, such as registering with the Bulgarian Companies' Registry.
56. **The Bulgarian business register / register of non-profit legal entities (ТППЮЛНТ - TRRYULNTs) is administered by the Registry Agency attached to the Ministry of Justice.** Registered in the TRRYULNTs are traders, branches of foreign traders, non-profit legal entities, and branches of non-profit legal entities, along with the particulars on them that are required by law to be registered. Also contained in the TRRYULNTS are the documents that are required by law to be kept available for public inspection relating to traders and foreign

<sup>45</sup> See Section 7.3 for the detailed suggestion on the most suitable organization to provide counseling services.

traders' branches, non-profit legal entities, and branches of foreign non-profit legal entities. The business registry and the register of non-profit legal entities share a common electronic database containing the particulars that are required by law to be registered and the documents that are required by law to be kept available for public inspection relating to traders, foreign traders' branches, non-profit legal entities, and branches of foreign non-profit legal entities. Files on traders, foreign traders' branches, non-profit legal entities, and branches of foreign non-profit legal entities are kept in electronic form. The files contain applications, documents substantiating the particulars registered, disclosures and other documents, which may also contain personal data identifying individuals representing or managing the trader or non-profit legal entity concerned. Company registration at the Registry Agency seems a cheap, smooth, and fast process. It can be done either physically at the Registrar's premises or online, and the registration fees are very low (1 EUR approx. for establishing a company, 20 EUR for annual fees).

57. **Most Bulgarian legal entities<sup>46</sup> must submit annual reports to the Registry Agency or in the Central Registry of NGOs of public benefit (for nonprofit organizations) during the six months following the end of their year.** For most Bulgarian companies<sup>47</sup>, the deadline is June 30, with an additional 3-month tolerance period to submit corrections prior to data consolidation, which takes place starting from Sept.30. According to the Accountancy Act, the annual report is meant to give an overview of the enterprise's financial position and financial performance, and it must be prepared according to Bulgarian National Accounting Standards<sup>48</sup> or under International Financial Reporting Standards (IFRS).
58. **The annual financial statements and the management report shall be published in the form and with the text on the basis of which the registered auditor has expressed his/her opinion.** The full text of the audit report shall also be subject to publication. Enterprises, which are not subject to statutory independent financial audit, are exempt from publishing certain parts of their financial statements (income statement and management report). Enterprises without any activities during the reporting period are exempt from the requirement to publish financial statements. However, they are required to submit a declaration for lack of activities within three months after the end of the reporting period in the Commercial Register website or in the Central Registry of NGOs of public benefit website (for nonprofit organizations – non-profit associations and foundations). A parent company which is a fully owned or partially-owned subsidiary of another entity (i.e., local intermediate parent) and is exempt under the applicable financial reporting framework from the requirement to prepare consolidated financial statements, is required to publish in Bulgarian language the consolidated financial statements of its parent company together with the respective consolidated management report and audit opinion on these financial statements within three-month period after the parent company's statutory publishing deadline. The information published is freely accessible through the Commercial Register website and in the Central Registry of NGOs of public benefit website.
59. **The Accountancy Act prescribes the minimum required content for the management report, depending on the category of the entity (micro-enterprise, small, medium sized or large enterprise).** Specific requirements for the content of the management report for public interest entities are also available in the Public Offering of Securities Act (POSA). Enterprises draw up an annual management report, which shall contain at least the following information (Box 4).

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<sup>46</sup> Public listed companies should post their financial statements within 90 days after year's end.

<sup>47</sup> Except for quoted companies, whose interim reports are produced on a monthly and quarterly basis

<sup>48</sup> See Chapter Four of the Accountancy Act

#### **BOX 4: THE BULGARIAN ACCOUNTANCY ACT – MANAGEMENT REPORT**

Key contents:

- 1) Objective review giving a true and fair view of the development and results of the operations of the enterprise and its position, together with a description of the main risks facing it.
- 2) Analysis of financial and nonfinancial key performance indicators relevant to the business, including information on issues related to environment and employees; when preparing the analysis for the management report, references to expenses reported in the annual financial statements and additional explanations thereon may be included.
- 3) All significant events that have occurred after the date of drawing up the annual financial statements.
- 4) Probable future development of the enterprise.
- 5) Activities in the area of research and development.
- 6) Information on the acquisition of own shares as required under Article 187e of the Commerce Act.
- 7) Existing branches of the enterprise.
- 8) Any financial instruments used by the enterprise, and where material for the purposes of evaluating the assets, the liabilities, the financial position and the financial result, the following shall be disclosed:
- 9) Objectives and policies of the enterprise concerning financial risk management, including its hedging policy for each main type of hedged item to which hedge accounting is applied
- 10) Enterprise's exposure to price, credit and liquidity risks and cash flow risks.

60. **Subject to statutory independent financial audit by registered auditors are the annual financial statements of:**

- 1) Small enterprises, which at 31 December of the current reporting period exceed at least two of the following indicators:
  - Book value of assets – BGN 2,000,000
  - Net sales revenue – BGN 4,000,000
  - Average number of employees for the reporting period: 50
- 2) Medium-sized and large enterprises
- 3) Public-interest enterprises as defined in the Accountancy Act
- 4) Joint-stock companies and limited partnerships with shares which are not classified as micro-enterprises
- 5) The annual financial statements of enterprises included in the consolidated financial statements which are subject to statutory independent audit
- 6) Enterprises for which this requirement is established by law
- 7) Certain non-profit legal entities designated as operating for the public benefit when they either:
  - Exceed one of the following criteria:
    - The book value of their assets exceeds BGN 1,000,000
    - Net income from profit generating and non-profit operations for the current year: BGN 2,000,000
    - Total amount of financing received during the current year and not utilized as of 31 December of the

current year financing, received in previous reporting periods: BGN 1,000,000.

- Or are established to carry out activities – for example, an agency in adoption of children under Art. 116 of the Bulgarian Family Code.

61. **According to the Accountancy Act, Bulgarian companies are divided into four categories for the purposes of their financial reporting:**

- 1) *Micro enterprises*, for which the annual report consists only of a concise balance and statement of revenues and costs;
- 2) *Small enterprises*, which must submit the same information as micro enterprises as well as an Annex on the company's operations and significant events of the financial year (management report); and
- 3) *Medium enterprises*, which must also include in their submission a balance sheet and income statement, and notes to the accounts as well as a cash flow-statement and statement of change in owner equity; and
- 4) *Large enterprises*, which must submit the same information as medium companies, as well as, provided by registered auditors a) Independent financial audit, b) Taxation consultations, c) Declaration on corporate governance.

**BOX 5: THE BULGARIAN ACCOUNTANCY ACT – COMPANY CLASSIFICATION**

According to Section 1 of the Accountancy Act:

Micro undertakings are entities that in the current accounting period do not exceed at least 2 of the following indicators:

- Balance value of Assets – 700.000 BGN
- Net revenues from sales – 1.400.000 BGN
- Average number of staff – 10 people

Small undertakings are entities that in the current accounting period do not exceed at least 2 of the following indicators:

- Balance value of Assets – 8.000.000 BGN
- Net revenues from sales – 16.000.000 BGN
- Average number of staff – 50 people

Medium undertakings are entities that in the current accounting period do not exceed at least 2 of the following indicators:

- Balance value of Assets – 38.000.000 BGN
- Net revenues from sales – 76.000.000 BGN
- Average number of staff – 250 people

Large undertakings are entities that in the current accounting period exceed at least 2 of the following indicators:

- Balance value of Assets – 38.000.000 BGN
- Net revenues from sales – 76.000.000 BGN
- Average number of staff – 250 people

**In addition, the annual financial statements of sole proprietors<sup>49</sup>, which amount of net revenues from sales for the current accounting period do not exceed BGN 200.000, consist only of a statement of revenues and**

<sup>49</sup> The sole proprietor (Bul.: *Едноличен Търговец*, short: *ЕТ*) is a special legal body of the Bulgarian commercial law. Contrary to

**costs.** A breakdown of the number of companies allocated to each category that submitted financial information in 2019, is summarized in Table 3 below<sup>50</sup>:

**Table 3 : Classification of companies – basic figures- 2019<sup>51</sup>**

Type	Number (Bulgaria)	Share % (BG)	Share % (EU 28)
Micro	315,410	91.8%	93.0%
Small	23,471	6.8%	5.9%
Medium-sized	4,248	1.2%	0.9%
<b>SMEs</b>	<b>343,129</b>	<b>99.8%</b>	<b>99.8%</b>
Large	623	0.2%	0.2%
Total	343,752	100%	100%

**62. Some supplemental information with important consequences for the design of the EWT:**

- 1) SMEs cover the 99.8 percent of active companies in Bulgaria, therefore, SMEs are the backbone of the Bulgarian ‘non-financial business economy’.
- 2) Medium- size or large-size companies (roughly 5,000 legal entities) do include a cash flow statement in their annual reports. These companies represent less than 2 percent of companies engaged in economic activities in Bulgaria.
- 3) A significant number of companies do not submit any financial information at all, despite the obligation to do so. These companies amount to approximately 30,000 per year<sup>52</sup>.
- 4) “Zombie companies” cover a non-fully disclosed share of this apparently active companies (especially micro and small undertakings). Based on the low Registry fees, these companies can continue to Report financial statements, even when the company has substantially ceased to exist under an operational perspective<sup>53</sup>.

other commercial entities, the sole proprietor is a natural person with commercial characteristic attributed by law. By the registration as sole proprietor into the commercial register, no new legal entity is created but the legal personality of the natural person gets extended. This way, the sole proprietor is responsible for the performance of the obligations deriving from commercial activities and the obligations deriving from his activities as private person. Hereby, he is liable for his obligations with all his assets. According to the Bulgarian Commerce Act, the sole proprietor is a person that by occupation effects one of the commercial transactions listed in Article 1 (1) of the Commerce Act or that establishes a business that regarding its nature and extent corresponds to a commercially established business. Pursuant to Article 56 of the Commerce Act, the sole proprietor is a natural person capable of acting having his place of residence in Bulgaria. The nationality is not determinative. Whether with Bulgarian or foreign nationality – what matters is that the person has a permanent residence in Bulgaria. Hence, the sole proprietor must be a natural and “local” person.

<sup>50</sup> See [the](#) European Commission’s Bulgaria SMA Fact Sheet 2019

<sup>51</sup> These are estimates for 2018 produced by DIW Econ, based on 2008-2016 figures from the Structural Business Statistics Database (Eurostat). The data cover the ‘non-financial business economy’, which includes industry, construction, trade, and services (NACE Rev. 2 sections B to J, L, M and N), but not enterprises in agriculture, forestry and fisheries and the largely non-market service sectors such as education and health. The following size-class definitions are applied: micro firms (0-9 persons employed), small firms (10-49 persons employed), medium-sized firms (50-249 persons employed), and large firms (250+ persons employed). The advantage of using Eurostat data is that the statistics are harmonised and comparable across countries. The disadvantage is that for some countries the data may be different from those published by national authorities.

<sup>52</sup> According to an estimation of the Registry Agency

<sup>53</sup> During meetings with stakeholders, it has been reported that given the rigid and long insolvency procedures, entrepreneurs often prefer to dismantle companies in financial distress, establish new companies with similar names, change the shareholding patterns of the dismantled company (often the ownership is transferred to a figure head) without formally striking off the business, transferring most assets to the newly established company. Data aggregators and Experian seem to offer banks a range of services based on data



### 6.1.2 Availability

63. **An electronic tool for submitting annual accounts has not been developed yet by the Registry Authority, therefore companies only have the option to submit unstructured information in paper on Registry Authority desks or in PDF format digitally.** A project is under way to digitalize this information flow through a more usable format (XBRL) and is part of the e-government project, whose implementation is expected to take place within 2 years.
64. **Information submitted to the Trade Register is public and freely accessible to any interested party.** In fact, both company data (address, legal form, ownership, shareholding patterns), and financial information of a specific company are freely accessible through the Registry portal. No commercial agreements currently exist between the Register and private sector operators (for example data aggregators) to automatically share bulk information or alerts on active companies.

### 6.1.3 Challenges

65. **The following obstacles should be considered when using financial information on a company in Bulgaria to design the EWT:**
- 1) **Format and structure:** Sharing of financial information is still paper-based or in an unstructured and non-machine-readable fashion (i.e., scanned documents in pdf formats shared with Registry Agency through electronic channels). Naturally, the adoption of such format undermines the usage of financial information, as its elaboration is subject to labor-intensive procedures<sup>54</sup> with a high exposure to risks of low data quality deriving from manual errors. As stated before, the Registry Authority is planning the migration of data submission towards a machine-readable format (XBRL or similar), as adopted in several Countries that comply with the Accounting Directive.
  - 2) **Limitations in scope:** The financial analysis performed by the EWT will be fairly limited, as roughly 90 percent of Bulgarian companies submit only minimal financial information<sup>55</sup>. Based on that, for sole proprietors and many companies (347.703), no financial analysis will be possible, as the mere information on revenues and costs is normally not considered sufficient to perform a comprehensive financial analysis.
  - 3) **Outdated data:** The annual reports submitted will typically be dated as of the end of the calendar year and become fully available only as of October of the following year. This implies that by the time the financial statements become available to the EWT, the records reported will be 15–21 months old. If financial problems are already apparent in such out-of-date information, it is highly probable that the debtor has not implemented any measures to reverse the financial distress, and therefore, insolvency is inevitable. This important shortcoming should be analyzed in the context of the EU Directive, which emphasizes the word *early* in EWT. From this perspective, it can be argued that an EWT that is designed solely on financial information cannot be considered an “early” warning tool.
  - 4) **Potential inaccuracies:** The quality of annual reports will vary greatly depending on the expertise and diligence of the managers in charge of preparing them. There will necessarily be cases of underreporting the financial distress of a company, and in these cases, the EWT will not be able to identify potential problems based solely on financial information. The Registry Authority has reported that only about 6,000 companies

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intelligence aimed at identifying these companies.

<sup>54</sup> E.g., use of scanner and/or specific software to transform Pdf files in readable formats, extraction of relevant information, transformation of extracted data into a structured and machine-readable format, to enable the necessary aggregations and calculation of indicators.

<sup>55</sup> i.e., a synthetic statement of revenue and costs

audit their annual accounts.

- 5) **Inactive companies:** The estimation of the share of these businesses (i.e., companies that still appear as going concerns and submit financial information but ceasing to exist under an operational perspective) is not fully clear. Ideally, the presence of these inactive companies in the whole data set of financial information has a detrimental effect on the elaboration of reliable benchmarks and effective statistical models supporting the EWT. In the perspective of setting-up an e-government project centralizing the information about businesses, data intelligence and cross-checks of the information submitted by a business to the different authorities should be used to identify these companies.
- 6) **Distrust of the public sector:** Based on the points above and on interviews with several representatives of the private sector in Bulgaria, the current level of services rendered by the Public Authorities (including the Registry Agency) is not perceived as client-oriented by private sector operators (such as banks). In fact, these institutions normally prefer to gather financial information directly from their clients or from other sources (data aggregators, performing data gathering from several sources, data integration and data intelligence to profile financial sector operators). This distrust may potentially undermine the reputation and effectiveness of the EWT, if the information used by an outbound model is perceived as non-reliable and timely.

#### 6.1.4 Suggested indicators

66. **There is potentially a myriad of indicators of early financial distress.** To identify the most predictive ones, it should be first determined those areas where business distress significantly impacts financial statements. Consequently, financial difficulties normally result in barely sustainable financial debt, weakened capital adequacy, low liquid return on assets, decreased available short-term liquidity, and a higher share of tax and social security debt on assets.
67. **Considering the above, the following indicators should be effective for Bulgarian companies, as illustrated in Box 6.**

##### BOX 6: INDICATORS HIGHLIGHTING FINANCIAL DISTRESS

- 1) **Financial debt sustainability: to be measured as the percentage of financial debts on sales.** This indicator aims at monitoring business sustainability. An increase or decrease in sales should not be considered in isolation, but only as relative to the levels of corporate debt. If sales increase less than financial debt, then the business risk increases. This indicator is often referred to as return on debt (ROD) and it's a key variable for calculating return on investment (ROI). A similar indicator that is widely used to track debt sustainability is debt to EBITDA.
- 2) **Capital adequacy: to be measured as net worth on total debts.** As a company receives the funds it needs from stakeholders (net worth), voluntary funding (financial institutions), and non-voluntary funding (for example, the tax authority), a decrease of capital adequacy indicates a shift of company control from stockholders to stakeholders. In other words, the company depends more on third-party resources than on its own resources. This indicator is strictly correlated with the leverage ratio (total assets/net worth), which in turn is a component of the Dupont triangle<sup>56</sup> and Altman's Z-score.
- 3) **Liquid return on assets: to be measured as cash flow on assets.** Although other indicators track asset profitability (see, for example, ROI and asset turnover), cash flow becomes paramount for SMEs as they try (typically with difficulty) to rapidly obtain from the market the liquidity necessary to meet financial obligations or to resolve emergencies. Therefore, a decreased share of cash flow on assets indicates an increased business risk for the company.

<sup>56</sup> ROE = ROA \* Leverage.

- 4) **Liquidity: to be measured as short-term assets on short-term liabilities (commonly referred to as current ratio).** Although the indicator helps monitor how well the company is managed (for example, when short-term liabilities grow less than assets), some components of the liquid assets (for example, credits, inventory) also should be monitored to ensure that they move in harmony with the increase (or decrease) of sales.
- 5) **Tax and social security debt: to be measured as a percentage of the debt on assets.** Getting funding from NRA can be cheaper and less burdensome than applying for a new loan or a loan extension. Nevertheless, an increase of tax debt without proper planning can be disastrous for a business. As described earlier, NRA can become an unaware funder, and delaying tax or social security payments is usually considered one of the earliest signs of a company's distress.

68. **Unfortunately, most, if not all these indicators, cannot be calculated in a timely and effective manner from most companies' financial statements in Bulgaria using Registry information.** Such indicators might be calculated (eventually including perspective indicators) under the inbound/self-assessment approach, where a company estimates the values through its accounting and management control systems. Obviously, a company can be vulnerable based on the results of more than one indicator. The challenge for the EWT is to determine the extent to which a deterioration in one (or several) of the proposed indicators constitutes a deterioration severe enough to justify the submission of an alert. Naturally, a worsening of all indicators usually indicates that a company should be considered in distress. However, deterioration typically will be observed based on one or two indicators only.

## 6.2 Credit History

### 6.2.1 Description

69. **Along with financial information, credit information also plays a fundamental role when measuring a probability of future distress of a debtor.** In fact, increasing financial exposures with the financial system, rejected loan applications, or increasing past due debt can all flag a lowered capacity to meet current and future obligations. Credit information and credit histories are currently available in Bulgaria only through the Central Credit Register (CCR), established and maintained by the Bulgarian National Bank (BNB). The establishment and operation of the Central Credit Register is governed by Ordinance No.22 on the Central Credit Register (CCR). The Register is an information system, which is set up and run by the BNB, on customers' credit indebtedness to the banks, financial institutions, payment institutions and electronic money companies operating in Bulgaria. The Register centralizes the information on customers' credit indebtedness to banks, financial institutions, payment institutions and electronic money companies; enables banks, financial institutions, payment institutions and electronic money companies to use information on their customers' credit indebtedness; and aggregates the collected information to be used for the needs of the BNB.
70. **Subject to reporting to the Central Credit Register are all loans, regardless of their amount, granted to customers by banks, financial institutions, payment institutions or electronic money companies.** These institutions must submit monthly to the Central Credit Register, by the 15th of each month following the reporting month, information on the current status of all active loans of their customers as at the last date of the reporting month. Also, by the same deadline they must submit information on the corrections made in their customers' loans for previous reporting periods. When the 15th of the month is a non-business day, the information is to be submitted on the first business day following the 15<sup>th</sup>. As of 1 December 2020, for the duration of the emergency epidemic situation, introduced under Art. 63, para. 2 of the Health Law, the Central Credit Register has suspended the issuance of paper reports within 4 working hours and up to 24 hours. An additional service is introduced for issuance of paper report within 3 working days against payment of a fee. Information from the Credit Registry is accessible by reporting entities through online queries and disseminated both through a credit report (with all

relevant information on borrower, loan agreements, aggregate exposure at the last reporting date, credit history) and a monthly monitoring report shared with each reporting entity with the aggregate information from the CCR referred to each borrower. Legal entities, individuals and other institutions entitled to do so (for example: NRA, or Tribunals for criminal proceedings) can also have access to their data in the CCR, after filling a form available online on the BNB website.

71. **Three key facts about the CCR are as follows:**

- 1) A stringent regulation aimed at ensuring a significantly high level of data quality seems to be applied by BNB<sup>57</sup>. However, the CCR only relies on banks and financial institutions in the data gathering phase, and no other legal sources (for example: chamber of commerce, NRA) is accessed by the CCR to ensure a proper identification of all entities stored in the CCR database.
- 2) With roughly 20 data fields, the current data sharing model covers most relevant borrower, loan, and collateral information (such as type of loan, type and role of entity, economic activity, purpose of loan, reason for impairment). However, the registry coverage in terms of data points shows space for improvement, keeping into consideration relevant benchmarks<sup>58</sup>.
- 3) Complying with the EBA guidance on loan origination and monitoring<sup>59</sup>, large banks have implemented Internal Rating Based models and Early Warning Tools<sup>60</sup>, to apply a proactive, data-driven, and forward-looking approach to credit risk management. These platforms mostly rely on internal transactional data and credit registry information.

72. **Contrary to most European countries, there are no private credit reporting service providers operating in Bulgaria<sup>61</sup>.** The lack of private operators on one hand and the limited service provided by the Public Registry on the other, generate a challenging context for information sharing and related services, which is not limited to the specific context and requirements of the EWT, but rather to the entire process of financial sector's decision-making processes.

73. **Further evolution of the credit information sharing infrastructure should be considered as a high-level priority for policy makers in Bulgaria.** Alignment to internationally acknowledged good practices should involve, inter alia: a) reviewing and upgrading the Central Credit Register (CCR) maintained by the BNB, and b) enabling the offering of credit histories and value-added services by private credit reporting operators. The rationale for the suggested enhancements is based on the broadly accepted principle of complementarity of public and private credit information sharing platforms. In fact, on one hand a key trend of public credit information sharing platforms is to gradually become a vital tool to support the evolution towards a permanent, data driven and forward-looking approach to macro and micro prudential supervision activities performed by the regulator. On the other hand, data collection from multiple sources (including credit information, financial information, alternative data, legal sources) by private credit reporting operators supports the fast paced evolution of credit risk management and financial services, enhancing data integration, data quality, process automation and data analytics. Retail and SME segments typically benefit the most from the implementation/enhancement of service offer by private credit reporting operators, whereas credit scoring and other value-added services can enhance

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<sup>57</sup> In fact, BNB can revoke a bank's license in case of systematic breach of reporting duties

<sup>58</sup> See for example the same credit information platforms in Germany, Italy, Spain, and ECB, where the average number of data fields is 80.

<sup>59</sup> On this matter, see EBA's Guidelines on loan origination and monitoring, <https://eba.europa.eu/regulation-and-policy/credit-risk/guidelines-on-loan-origination-and-monitoring>

<sup>60</sup> Worth to be noted that the EWT under EBA's regulation are mostly focused on creditor's protection against impairment rather than supporting debtors, as described in Art. 3 of the preventive restructuring Directive.

<sup>61</sup> See ACCIS (Association of Consumer Credit Information Suppliers) Factsheet

process automation, dramatically decreasing the cost of credit, and improving financial inclusion of such entities.

74. **Among common solutions adopted in other jurisdictions to enhance the credit information sharing infrastructure, two key activities could be: i) a gap assessment of the CCR and ii) a strategic/regulatory assessment aimed at understanding how private credit information sharing could be established and enhanced in Bulgaria.** Regarding the first topic, the gap assessment should aim at analyzing the main margins for improvement of the CCR compared to internationally acknowledged good practices, in terms of data collection, data dissemination and service delivery, and technological infrastructure. The assessment should lead to the definition of an array of feasible implementation solutions, as well as a roadmap of key activities to perform in the short, medium and long term so to align the registry to best practices. These elements are normally critical to support the adoption of an informed decision-making process by public authorities on how to enhance public credit information sharing.
75. **Regarding the delivery of credit reports, credit histories and value-added services by private credit reporting operators, the assessment should carefully analyze the costs and benefits deriving from the feasible solutions to encourage information sharing by private credit reporting operators.** These could be a) application of a reporting threshold to data collection by the CCR (i.e. minimum amount below which credit exposures are not shared with the CCR by lenders), b) application of a reporting threshold to data dissemination (same concept applied to delivery of information and reports by the CCR to Lenders, so to encourage the use of credit histories and value added services offered by private operators, especially for retail and SME lending), or c) application of regulatory prescriptions making credit information sharing and/or enquiring of credit histories (when extending loans) with at least one licensed credit reporting operator mandatory for supervised entities, at least for retail/SME loans.

### 6.2.2 Availability

76. **In principle, neither positive information (i.e., borrower, loan, collateral, payment data) nor negative data (i.e., arrears, defaults, written-off loans) can be made available to third parties through the CCR, without a specific consent from the involved individual/legal entity (like it happens when banks enquire the CCR).** Moreover, the approach to the application of the EU General Data Protection Regulation (GDPR) in Bulgaria<sup>62</sup> seems quite rigid and rule-based. Even if the purpose of assessment of the data subject's creditworthiness or any other similar purpose can fall under the permissible uses of data, a specific regulation seems needed to allow the use of CCR data for the purpose of the EWT. The only case where the use of CCR data by the EWT might be possible without substantial regulatory interventions seems the self-assessment under the inbound model. In this case, a credit report might be solicited by the debtor and be part of the evaluation of a perspective insolvency. Given the state-of-the-art ICT standards adopted by BNB, from a purely technical standpoint, no relevant issues seem to emerge for credit information sharing to support the EWT, as the platform already supports online enquiring.

### 6.2.3 Challenges

77. **As described before, availability of positive and negative data extracted from a credit information sharing platform can be highly beneficial for the EWT, as emerging difficulties at paying debts when they become due can be a significant indicator of likelihood of distress.** In the case of Bulgaria, availability of positive and negative information under the current data model<sup>63</sup> could be highly beneficial for the purpose of an EWT

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<sup>62</sup> See the Bulgarian Personal Data Protection Act ("PDPA"), amended on 21 February 2019 to implement the GDPR and to transpose the Law Enforcement Directive. PDPA was last amended on 26 November 2019. The GDPR has applied since 25 May 2018. For an overview of the implementing regulation, see <https://www.dataguidance.com/notes/bulgaria-national-gdpr-implementation-overview>

<sup>63</sup> In particular, for the purpose of the EWT the data points referred to a) Revision of the loan agreement, b) Reason for impairment.

highlighting a likelihood of distress. However, confidentiality of data stored in the CCR make the usage of data on debtors' indebtedness and payment default challenging in the short term, as most likely a regulatory intervention might be needed to enable the provision of such information to the EWT. As stated before, the exploitation of such data might be possible under the scenario of an inbound model based on a self-assessment, where debtors or other individuals with the right to do so under current regulation might have access to the credit information stored in the CCR. Lastly, the lack of value-added services (like credit scoring, measuring a probability of default on a 12-month horizon) based on credit histories provided by a private credit reporting operator also has a negative impact on the EWT, as these added services can also be beneficial for the purpose of the EWT, and are used by the Tool in some jurisdictions<sup>64</sup>.

## 6.3 Tax Information

### 6.3.1 Description

78. **Since distressed enterprises typically delay their tax and social security payments first, NRA may recognize financial difficulties before other creditors do.** For this reason, the detailed data NRA collects, especially when combined with those from the sources mentioned earlier, could be extremely useful in preventing financial distress (indeed, the Directive refers to incentives to public creditors, including tax authorities, as an example of EWTs). With a population of roughly 7 million habitants, the NRA counts roughly 600.000 companies and 400.000 self-employed individuals filing for a tax return (active taxpayers). Regarding the Tax Identification Number, in case of individuals who are Bulgarian citizens the TIN is provided automatically on birth. In case of foreign citizens, the TIN is provided upon registration for tax purposes or when the person receives Bulgarian ID documents.
79. **The Official number from the NRA is assigned by the National Revenue Agency and could be found in official certificates issued by the Agency.** The following TINs are used:
- 1) For Bulgarian citizens – Unified Civil Number (UCN) which consists of a block of 10 digits;
  - 2) For foreign citizens who receive permission for long-term or permanent residence in Bulgaria – Personal Number of a Foreigner which consists of a block of 10 digits;
  - 3) For other foreign citizens who are residents for tax purposes in Bulgaria – Official number from the National Revenue Agency (NRA) which consists of a block of 10 digits. The Unified Civil Number and the Personal Number of a Foreigner are assigned by the Ministry of Interior and could be found in all identity documents.
80. **Regarding companies, all entities receive a TIN automatically upon their registration or incorporation.** The TIN is assigned by the Registry Agency who manages the Trade Register and the BULSTAT Register and consists of a block of 9 digits. Depending on the type of the entity it receives either Unified Identification Code (UIC) or Unified Identification Code of BULSTAT. Entity's TIN could be found in official certificates issued by the National Revenue Agency or Registry Agency. Also, VAT registration is done either electronically or physically at NRA desk after a company incorporation. VAT registration is voluntary if the annual turnover does not exceed 50.000 Lev<sup>65</sup>.
81. **It is worth to be noted that Bulgaria has a flat-tax system- a single 10% rate applied on personal income and a 10 percent rate applied on corporate income (imposed respectively in 2008 and 2007).** Since 1999, the standard rate of value-added tax in Bulgaria has been set on 20 percent, with the exception of hotel services,

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C) Reason for revision of loan agreement, d) Period of default of the debt seem relevant

<sup>64</sup> See for example the case of Belgium, further described in the Benchmarking Report.

<sup>65</sup> Corresponding to roughly 25.000 EUR.

where a reduced rate of 9 percent is applied. In the middle of 2020 Bulgaria decided to reduce the VAT until 2021 on 9 percent for some products and services (children's goods, restaurant and catering services and books). In Bulgaria taxpayers are released from payment of corporate tax in regions with high unemployment rates. In 2019, about 2/3 of municipalities – 169 (of total 265 in Bulgaria) had 25 percent higher than the average rate of unemployment for the country and there is 0 percent corporate Income Tax. As a result, the compliance rate in Bulgaria is as high as 85 percent.

82. **Consistently to the tax regulation in Bulgaria, taxpayers submit their declarations on a monthly (VAT), quarterly and annual basis (income taxes).** In particular, VAT taxation under Bulgarian tax law is regulated by VATA, the Regulation for the Application of VATA (RAVATA) and Directive 2006/112. This type of indirect tax is payable monthly for all supplies of goods or services for any intra-European Union acquisition whose place of performance is within the country, carried out by a registered person, as well as for importation of goods.
83. **VAT is a tax levied on newly created value during the implementation process of goods or services.** The tax is levied on the consumption thereof and the group of turnover taxes. The VAT model under Bulgarian law follows the common VAT regime within the EU model, where personal expenses are taxable by applying the credit (invoice) method. According to this method, each stage of production of goods or services and the implementation thereof to end users is chargeable with VAT on the entire value of the supply, such that through the mechanism of tax credit the final price of the goods or services includes a single VAT charge in the amount of the respective tax rate.
84. **Ideally, the data fields most beneficial for the purposes of this TN are:**
- 1) *Submitted tax declarations:* under the Taxation Act, all companies that have made payments subject to tax calculations are obligated to submit tax declarations to the NRA. Like tax payments, the timely submission of tax declarations is also an indicator of distress, as one can anticipate that if the tax declarations are not submitted on time, tax payments will not be on time either. The delay between the declaration and payment due dates varies depending on the tax, and this needs to be considered by the EWT. Tax declarations that are VAT related are the most valuable to the EWT. Property tax and income tax are payable annually in Bulgaria, which limits their value to the EWT.
  - 2) *Paid taxes and tax arrears:* the most useful tax data field. Any differences between the amount of tax declared and the amount actually paid are an objective sign of distress. This is particularly revealing in the case of VAT taxes and labor taxes, which are typically the tax payments that an entrepreneur in trouble misses first. The fact that they are due quarterly and monthly, respectively, allows the EWT to monitor performance of the business multiple times a year. Delinquent payments are not the only useful information here: evolution of the paid amounts is also powerful information. The sudden decrease in the amount of taxes declared and paid indicates potential problems in the activity of a company.
  - 3) *Total tax debt and interests,* showing the total owed by a company to the tax authority, is a clear indication of liquidity problems of a distressed debtor.
  - 4) *Postponed tax debt and interests* is the result of a distressed debtor's successful negotiation with the tax authority to reschedule payment dates, increasing the likelihood of full payment. The mere existence of postponed tax debt is an objective indicator of financial problems, which should prompt the EWT to monitor these taxpayers. The trends associated with the postponed debt are also a key input for valuable information: the increase of the postponed debt implies a deterioration of the debtor's financial condition. Conversely, the decrease in postponed amounts, together with on-time payments of the new tax obligations as they accrue, is a sign of increased creditworthiness.

### 6.3.2 Availability

85. **The key findings about availability of tax information in Bulgaria are as follows:**

- 1) Through different types of authentication (i.e., physical authentication, e-signature), taxpayers can have access to the above information, including expected payments and payment history.
- 2) A project of NRA is currently under way to develop a tool measuring taxpayers' tax behavior, risk of non-compliance with tax duties and risk of fraud. The model draws its inspiration from a machine learning based tool, developed by the Belgian Tax Authority<sup>66</sup>. However, the focus of the tool will be the support to NRA's recovery actions rather than debtors. In any case, the project seems still at a very early stage.
- 3) Under Bulgarian law, tax privacy applies to most of these data fields as potential indicators of economic distress. The only publicly available information is the list of taxpayers with past due tax or VAT debt. However, neither the number of days past due nor the amount of arrears (debt+interest) are disclosed. This means that the EWT may not be able to use all of this tax information without the need to obtain prior consent from the taxpayer to use its data.
- 4) Most likely as a consequence of the application of a low and flat tax rate, NRA seems to apply a quite rigid approach toward the negotiation of its credits and the support to the rehabilitation of companies in distress. While this sounds detrimental for the purpose of the improvement of the performance of the insolvency framework as a whole, under this scenario existing (or even increasing) past due Tax or VAT debt seems a quite significantly predictive indicator of a likelihood of distress, that is valuable for the purpose of the EWT.
- 5) Apart from the interaction between the Trade Registry and the NRA for company identification purposes and attribution of a TIN, no significant interaction exists between the NRA and other public entities (for example: set up of a Memorandum of Understanding for the development of a one-stop-shop and e-government portal).

### 6.3.3 Challenges

86. **Because of the rigid application of tax privacy principles, exploitation of Tax and VAT information does not seem feasible under the scenario of an outbound model for the EWT.** In fact, current publicly available information on existing past due tax and VAT debt does not seem sufficient for the purpose of the EWT and may flag a significant number of false positives (being the number of days past due and the amount of the debt not disclosed). While, and not only for the purpose of the implementation of an Early Warning Tool, adoption by the NRA of a more proactive and client-oriented attitude is strongly recommended in the future, under the current circumstances the predictive power of Tax and VAT information can only be used under the inbound/self-assessment scenario, where a debtor has access to its tax information, that can be extracted and used for the purpose of analyzing a likelihood of distress.

## 6.4 Governance

### 6.4.1 Description

87. **One of the most predictive sources of data when assessing the potential insolvency of a business is the financial status of those parties having legal or economic connections to the business.** Specifically, assessing

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<sup>66</sup> On this matter, see the Report of the European Commission "The concept of Tax Gaps: Report III – MTIC Fraud Gap Estimation methodologies at [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/tax\\_gaps\\_report\\_mtic\\_fraud\\_gap\\_estimation\\_methodologies.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/tax_gaps_report_mtic_fraud_gap_estimation_methodologies.pdf)



whether the directors and/or shareholders of a given business are in financial difficulty has been identified by other models implemented in Europe as the most relevant factor when predicting financial distress.

88. **There are different options for integrating the analysis of these data into the EWT.** A first option is to conduct a full analysis of those related parties identified as potentially relevant. This may, however, be overly ambitious and not always possible, especially considering that the directors and shareholders of a distressed business may be natural persons on which no financial information is available. To mitigate this challenge, a simpler approach—tracking whether those related parties have filed for insolvency, or whether there are any judgments issued against their assets for the non-payment of debts—may be used.
89. **The governance information that may potentially be used by the EWT would therefore consist of two different sets of data:** (1) the identity of the director(s) and the ultimate beneficial owner(s) of a given company; and (2) whether they have been declared insolvent and / or whether there are any judgments rendered in civil or commercial procedures against their assets.

#### 6.4.2 Availability

90. **The new Measures Against Money Laundering Act (MAMLA) adopted in accordance with EU Directive 2015/849, introduce obligations and practical measures aimed at transparency and publicity regarding the ownership of companies, non-profit legal entities, and legal entities, for the purpose of tackling money laundering.** Pursuant to the Act, all legal persons and other establishments registered in Bulgaria are required to announce information about their ultimate beneficial owners – physical persons (UBOs) and the legal persons and other establishments that directly or indirectly control them.
91. **Sole proprietorships, sole owned companies with sole owner of the capital, natural persons, limited liability companies with shareholders, natural persons who own up to 25 percent of the capital, collective partnership with shareholders, natural persons, submit this declaration only if their beneficial owners are other than those who are already registered.** The declaration for the announcement of the beneficial owners must be registered in the Commercial Register, the Register of Non-Profit Legal Entities and BULSTAT - Register.

#### 6.4.3 Challenges

92. **In principle, this information is of key relevance for advanced scoring models to predict a likelihood of distress, also considering a potential spill-over effect (for example: personal financial distress of a company owner that may affect a business).** In practice, the challenges derive from the format, reliability, and timeliness of the submitted information, as described in Section 5.1. Considering the lack of alert services from the Registry Agency to inform about changes in company ownership or shareholding patterns, under the current circumstances company governance information might be only relevant under an inbound/self-assessment approach adopted by the EWT, where company representatives disclose governance information.

### 6.5 Macroeconomic Information

#### 6.5.1 Description

93. **Macroeconomic information should play a role when implementing an EWT only when an outbound approach is adopted, in order to validate, back test and sync a statistical model to the variations of the macroeconomic environment.** In fact, improving or worsening trends of the economic cycle should be reflected in the number of businesses in distress. These variables should therefore be taken into consideration when validating the models and establishing relevant thresholds, allowing the identification of businesses in distress. The most relevant macroeconomic variables are: GDP growth; consumer price index (inflation);

unemployment rate; income and wages; reference interest rates; balance of trade; and sector-specific statistics<sup>67</sup>.

### 6.5.2 Availability

94. **This type of information is generally available in Bulgaria.** In fact, it can be retrieved from various public sources, such as Statistics Bulgaria, the National Bank of Bulgaria, and the European Central Bank<sup>68</sup>.

### 6.5.3 Challenges

95. **Although there is no relevant challenge regarding data availability and data gathering, relevant capacity is needed for capturing country specificities, infra-sector correlations, and impact on sectorial trends in the economic cycle of the EWT.** Even though solutions based on artificial intelligence usually perform auto-fitting adapting model outcomes to changing macroeconomic contexts, statistical model validation considering these factors is typically more complex. Under this perspective, the lack of relevant know-how normally provided by professional operators providing credit scoring products<sup>69</sup> based on statistical models should also be considered as a significant factor making the development of statistical models more challenging.

## 6.6 Other Information

### 6.6.1 Description

**Other data can be relevant to support the Tool at detecting patterns of perspective insolvency.** Even if relevant data can vary significantly depending on the jurisdictions, some of the key information can be: payments to social security; seizure of goods; criminal proceedings; and fines. However, such information in isolation is not normally considered as sufficient to detect perspective insolvency.

### 6.6.2 Availability

96. **Delayed payments for social security are subject to data privacy in Bulgaria, therefore the information is not available for the purpose of the EWT in the short term.** The only publicly available information is about the number of staff of a given business (as reported to the National Social Security Institute, NSSI). Significant variation of the number of staff may highlight financial distress of the company. The other above listed information is available in Bulgaria through several different registries. Some Fintech aggregators already provide such information to clients to support credit evaluation and credit risk management activities.

### 6.6.3 Challenges

97. **As described above, information from NSSI (number of hired staff) can be relevant only in the case it is not considered in isolation.** In fact, a trigger alert only based on this variable may flag false positives, especially in light of the current COVID-19 and expected post-COVID-19 phase. The other information is already digitally available and distributed by data aggregators<sup>70</sup>. Therefore, the only challenge for the EWT should be to bear the costs of data extraction and elaboration through these operators.

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<sup>67</sup> Agriculture, manufacturing, and services contribute to GDP and sector interlinkages.

<sup>68</sup> ECB Statistical Data Warehouse, macroeconomic and sectorial statistics.

<sup>70</sup> See for example ICAP <https://www.icap.bg/> and APIs <https://apis.bg/en/>

## 7. THE MODEL/ALGORITHM FOR THE EWT

### 7.1 What Exactly Should Be Measured?

98. **As explained in previous sections, the EU Directive aims at shifting authorities' focus to a prognostic approach and a "proactive justice," rather than just performing damage control measures:** the concept of "early intervention" is a key pillar of applying the Directive more generally. This has important implications for the EWT's foundation.
99. **A description of what should be measured and when is provided in this Section.** Moreover, further details of the "how" (a detailed description of the proposed methodology) for the approach based on a self-assessment is provided in Annex 1. Lastly, key indicators to support debtors' assessment in case an inbound approach is adopted are described in Annex 2.

#### 7.1.1 The 'what'

100. **Identifying a clear definition of prospective insolvency is perhaps the most complex task of implementing the EWT.** To do so, the TN suggests two different (and ideally complementary) approaches:
- 1) An approach aimed at identifying a perspective insolvency based on the debtors' characteristics and the business approach;
  - 2) A "prudential approach" based on the observation of a significant increase in credit risk deriving from a range of alert indicators, to detect the emerging difficulties before they occur.
101. **As indicated in the introduction, some advantages and disadvantages derive from each of the above indicated approaches<sup>71</sup>, as:**
- 1) The "qualitative" approach helps at detecting those situations of structural difficulties that might be addressed in a timely manner, but it is based on the good will of the entrepreneurs that ask for support (and on the capacity of the EWT of highlighting the difficulties);
  - 2) The quantitative approach helps at detecting objectively those difficulties that are threatening the business' going concern and might help at identifying the patterns of distress of debtors that are still unaware of the emerging risk of future insolvency. This is probably the most relevant segment of debtors to be addressed by the EWT. Conversely, those situations that have already materialized in quantitative indicators might be hardly recoverable. The quantitative perspective is described in Annex 1.

#### 7.1.2 The qualitative perspective

102. **Regarding the first approach<sup>72</sup>, there are a number of subject matters about debtor's and business situation.** The key topics that should be addressed by the Tool are: debtor's psychological characteristics; strategic management and development; operational and stakeholder management; financing and marketing aspects; resilience and innovation aspects.

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<sup>71</sup> The following Sections describe what should be measured under a qualitative and quantitative perspective.

<sup>72</sup> On this matter, see Interreg Danube Transnational Project, *Methodology on Second-chance Entrepreneurship readiness*

103. **The first step of the Tool should be to identify the basic and psychological characteristics that produce a successful entrepreneur.** The most important features that entrepreneurs have to possess is the ability to perceive the importance of the business on personal life and to obtain the necessary resources needed for the business success. Other characteristics that have to be followed are: positive attitude, the ability to overcome risks, ingenious and creative, credibility and reputation, received support from family. The basic and psychological characteristics are divided into 3 categories: (i) the attitudes towards risk posted by entrepreneurs; (ii) the psychological and individual characteristics relevant to entrepreneurs' success; and (iii) the enabling environment.
104. **Regarding the strategic management and development, before starting a business, the first thing a potential entrepreneur must do is to check whether it is possible to turn the business idea into reality,** meaning that one must see if the idea is profitable, clear and attractive. It is very important to have a good business plan, that will involve thinking about the prospect of the business and of the stages necessary for the development of the business. The business plan must consider the previous experience, the learned lessons and ways of including the experience into the business.
105. **In addition, the entrepreneur must check the availability of the necessary resources needed to start or expand a business.** These include technical skills, finance, know how, equipment, management, human resources. In order to lower the risk of any business, it is necessary to plan the actions and future results. In this idea, every entrepreneur should be able to answer the questions of a) where do I intend to get in the future?; and b) Where is the business leading to?
106. **Defined objectives and strategies help identify the steps to be taken in the future.** Because it is related to a future that is unknown, strategic planning can be influenced by unforeseen factors. When planning, flexibility must be an important factor, so that the plan can be adapted to the changing realities of economic and social life. Common problems that may occur are: economic downturns; legislative changes; order failure by vendors; disturbances in distribution; essential changes in market demand; personal problems of the patron. It is very important to emphasize that the business plan needs to be constantly updated, according to the factors involved in the development of the business. It is necessary to compare the proposed objectives with the achieved ones, to make an analysis of the possible deviations, as well as a solution search to adapt and remedy the business to the new conditions.
107. **Operational management refers to efficiency, control, and design of business practices in the context of production and manufacturing goods or services.** The main objective of operational management deals with maintaining the production function within the limits of the quality, quantity, and time parameters. Stakeholder management deals with identification, study, planning and communicate with partners. By defining and identifying the influence and the level of interest of the peoples, groups and organizations that could develop appropriate strategies and tactics of the business, stakeholders are involved throughout all the lifecycle of the project. To develop an efficient Stakeholder Management Plan, several steps need to be followed: (i) Identify, recognize, and acknowledge stakeholder; (ii) Identify the strategies and mechanisms that will be used; (iii) Manage Stakeholder Engagement; and (iv) Control Stakeholder Engagement.
108. **Regarding the financing and marketing aspects, a business should have the capacity to clearly identify its financing needs,** and to decide which is the best financing source, which is the amount of money needed for the business success, if the business can afford the bank rate or what is the financial situation that indicates the performance of a firm over a certain period of time. Also, business financing helps at determining the sale price, taking into account the total costs and the profit. The key questions about financing requirements are: (i) How much does it cost to produce; (ii) Will the business have losses or profit; and (iii) Is it worth it for the company to produce that product.
109. **Correct answers to the above will determine if the business is a successful one, or not.** In the market economy, the determinant factor in setting the price policy is the market, besides the need to cover the costs. Marketing is a consumer – oriented activity with the role of satisfying the consumers, planning the creation, pricing

and promoting ideas / products. The main elements that must be considered in marketing activities in order to succeed are:

- 1) Defining the market;
- 2) Defining the market demand (consumer; client; final client);
- 3) Determining market groups for the product;
- 4) Finding the right pricing strategy (differentiation, minimum price, trap product to attract the customer)
- 5) Finding the product required by the market;
- 6) Finding the right product distribution channel (direct sale, through wholesalers, through retailers);
- 7) Finding the right communication channel with the clients (advertising, promotions, direct sale);
- 8) Analyzing the competition.
- 9) Product-position on the life cycle curve;
- 10) Competitor price analysis.

**110. There are several key subject matters to be evaluated by the Tool to analyze the financing and marketing aspects.** The most relevant are:

- 1) Number of funding possibilities identified for the business
- 2) Debt repayment plans
- 3) Market share, sales and exposure, including distribution
- 4) Market analysis, data collection and processing
- 5) Business sensitivity to customer payment deadlines
- 6) Liquidity level and business survival
- 7) Emergency financing sources
- 8) Approach to target market

**111. Regarding resilience and innovation, in a constant changing time, each business must adopt measures never considered before, in order to face challenges.** No matter the age and size of the company, any company must have the capacity to renew itself, adopting innovation changes. Resilient companies develop a portfolio of product innovations, adopting experimental strategies, in all parts of the company. Innovative companies must test new strategies and innovate aspects of its business model, such as pricing or industry alliances. The key indicators to be analyzed by the Tool to assess resilience and innovation are as follows:

- 1) Business and products brand and uniqueness
- 2) Innovative approaches employed
- 3) Crisis management mechanisms
- 4) Product/service diversification
- 5) Capacity to implement/adopt a restructuring plan
- 6) Reusability of business components if problems appear
- 7) Policy regulation supporting second chance
- 8) Awareness of the driving factors behind the organization

## **7.2 When should the EWT notify the debtor?**

**112. There is no indication in the Directive of how “early” those risks of perspective insolvency should be identified.** It is therefore understood that each Member State should be able to determine the time horizon applied by the EWT, and such determination must carefully manage the trade-off between prediction accuracy and effectiveness of the intervention. Within that margin of discretion, it is reasonable to assume that the goal of the EWT should be to

identify those companies that are likely to face severe difficulties in the following 6 to 18 months and whose situation can be recovered under a going concern. This is an adequate time horizon for several reasons:

- 1) Although projections within a time frame of less than six months may be more accurate, they most probably identify hardly recoverable situations (given the little time available).
- 2) Although projections of more than 18 months may ensure more effective interventions (given the significant time available), many concurrent factors materializing within this time frame may have an adverse impact on prediction accuracy (changed context, availability of new data, and so on) and therefore increase the possibility of false negatives.

**7.3 The process**

113. **Regardless the adoption of a purely qualitative inbound modelling or a self-assessment based on quantitative indicators, the model implementation process consists of three main phases:** (1) model design; (2) implementation; and (3) operationalization. As far as the fully inbound model based on qualitative data is concerned, the model design will consist in the definition/customization of domain areas and KPIs by a working group<sup>73</sup>.
114. **Model implementation will then consist of a set of tests mostly based on retrospective analysis<sup>74</sup> to validate and/or eventually integrate/fine tune the EWT to maximize its effectiveness.** The operationalization phase will then consist of a first pilot phase (i.e., operationalization of the EWT in one specific area, or for a particular type of debtor). The estimated timeframe for the implementation of the EWT under such approach is 6-9 months approximately. The key components, expected deliverables and elapsed time for implementation are described in the table below:

**Table 4 : EWT implementation under a fully inbound approach, key activities and elapsed time**

Phase	Key Activities	Elapsed time
<b>Design</b>	<ul style="list-style-type: none"> <li>• Set-up of working group</li> <li>• Definition of perimeter and key variables</li> <li>• Definition of areas of concern, main KPIs and evaluation methodology</li> </ul>	2 - 3 Months
<b>Implementation</b>	<ul style="list-style-type: none"> <li>• Detailed definition of evaluation methodology</li> <li>• Retrospective analysis</li> <li>• Model fine tuning</li> <li>• Final tests</li> </ul>	2-3 Months
<b>Operationalization</b>	<ul style="list-style-type: none"> <li>• Pilot phase</li> <li>• Go-live</li> </ul>	1-2 Months

115. **As far as the adoption of an inbound approach based on a self-assessment, regarding model design, based on the complexity of the definition and the wide range of eligible alert indicators, the model implementation process should consist of two main streams of activities:**

<sup>73</sup> The key participants of the EWT should be: the owner of the system (to be defined, see Section 7), the key creditors (e.g., Banks, NRA, NSSI), the Registrar (Registry Agency), the Central Bank, and representatives of the private sector (BSMEPA, BCCI, Insolvency Practitioners, Association of Chartered Accountants)

<sup>74</sup> I.e., working on a sample of distressed companies, to identify the escalation process toward risk materialization and the key drivers

- 1) Definition of a clear perimeter of variables, ratios, benchmarks, and thresholds by a working group<sup>44</sup>, for which a retrospective analysis of bankrupt or forcefully deleted companies may be used.
  - 2) Once the perimeter has been defined, a quantitative analysis should validate the preceding definition through statistic methodologies<sup>45</sup>, confirming that the range of indicators under consideration accurately separates healthy companies from distressed companies.
116. **A blended qualitative and quantitative approach combining these factors is the best option to apply, as:**
- 1) The working group can provide overall indications (suggestions about data and indicators in the report might be taken into consideration) and key inputs on the perimeter to be identified.
  - 2) The quantitative and sampling analysis will provide key inputs to confirm the definitions or highlight the need for further fine-tuning to enable better perimeter identification.
117. **After the design phase, the working group will complete the implementation and operationalization of tasks<sup>46</sup>:**
- 1) Establish a project governance framework<sup>75</sup> (including a definition of roles and tasks of entities involved, and an implementation roadmap).
  - 2) Establish a data governance framework (including current and prospective information needs, a definition of data sources and information providers, elaboration of a data dictionary, a definition of relevant acceptance based on data quality, key performance indicators, key risk indicators<sup>76</sup>, and potential redundancies).
  - 3) Plan, define, and implement impact studies and testing methodologies.
  - 4) Plan, define, implement, and support the definition of a communication strategy before EWT go-live.
  - 5) Plan the EWT's operationalization phase and oversee the first period<sup>77</sup> after platform go- live (EWT's consolidation phase).
118. **Roles and tasks of the working group may vary depending on the definition of the institutional arrangements surrounding the EWT (i.e., ownership and management).** The estimated timeframe for the implementation of the EWT under such approach is 12-15 months approximately. The key components, expected deliverables and time for implementation are described in the table below:

**Table 5: EWT implementation under a self-assessment, key activities and elapsed time**

Phase	Key Activities	Elapsed time
Design	<ul style="list-style-type: none"> <li>• Set-up of working group</li> <li>• Set up of a project governance framework</li> <li>• Definition of benchmarks, exemptions, perimeter, and key variables</li> <li>• Definition of the potential range of trigger alerts and evaluation methodology</li> <li>• Set up of a data governance framework (including costs vs benefits analysis)</li> </ul>	3-6 Months

<sup>75</sup> The project governance framework is important for this approach, as several counterparts should proactively participate to define complex aspects of definition of alerts (also through a cost/benefit analysis), and the set of measures (sanctions and incentives) to ensure the debtors' commitment to the Reporting to the EWT.

<sup>76</sup> For a reference data governance model, see [Organising Accountabilities for Data Quality Management](#).

<sup>77</sup> Normally from 6 to 12 months

<b>Implementation</b>	<ul style="list-style-type: none"> <li>• Definition of statistical models (through a multivariate regression analysis) for the selection of relevant indicators</li> <li>• Definition of benchmarks and benchmarks values</li> <li>• Retrospective analysis to test the predictivity of alert indicators and established benchmarks</li> <li>• Model fine tuning</li> <li>• Final tests</li> </ul>	3-6 Months
<b>Operationalization</b>	<ul style="list-style-type: none"> <li>• Pilot phase</li> <li>• Go-live</li> </ul>	2-3 Months

## 7.4 Review of options

119. **As described in Section 2, the EU Directive does not provide a clear guidance on the optimal model to support an early alerting on debtor’s perspective distress.** In fact, the Directive intends to leave the floor to the capacity of national authorities in each EU member Country to identify the best approach for the country. In this perspective, the key aspects that should support decision-making on the relevant solution to adopt when implementing the EWT are as follows:

**Table 6. Key aspects when defining an EWT**

<b>Topic</b>	<b>Impact on the EWT</b>
<b>Data availability, timeliness and quality from public sources</b>	If present, the EWT can rely on publicly available data and automatically elaborate the alert indicators and notifications to distressed debtors.
<b>Well-established culture of rescue and second chance in the country</b>	If present, no enforcement measures are needed to ensure the participation in the EWT; also, creditors will most likely be proactive in setting-up of a rehabilitation process supporting the set-up of a range of incentives for honest distressed entrepreneurs with viable businesses.
<b>Quality of insolvency frameworks</b>	A high-quality framework ensures a full coordination between the flagged perspective insolvencies and incentives that distressed debtors can have access to.
<b>Cooperation among public authorities for data sharing</b>	Well established cooperation among public authorities fully supports the set-up of data sharing schemes for the data gathering and data integration process of the EWT.
<b>Public Authorities are perceived as client-oriented and supportive to the private sector</b>	In this case, entrepreneurs do not feel threatened by Authorities notifying a perspective insolvency, as they are perceived as neutral and supportive to the debtor. Also, no concern is raised about information confidentiality.
<b>Debtors’ morphology (with a special focus on SMEs)</b>	Alert indicators should reflect the specificities of debtors
<b>Private or public sector entities able to manage an advanced EWT</b>	In this case, relevant economies of scale and means are normally found when implementing the Tool, with a significant decrease of project risk and complexity.

120. **The TN has analyzed the above topics in the previous Sections to capture the specificities of Bulgaria.** The key conclusions are summarized below:

**Table 7. Key aspects when defining an EWT in Bulgaria**

<b>Topic</b>	<b>Impact on the EWT in Bulgaria</b>
<b>Data availability from public sources</b>	Given the low data availability, timeliness and quality, automated trigger alerts elaboration by the EWT through an outbound model does not seem possible in Bulgaria, at least in the short-term. Worth to be reminded that low data availability has severe impacts on the general level of trust



	<p>between public and financial sector and entrepreneurs in Bulgaria, going far beyond the limitations imposed to the definition of the conceptual model of the EWT. Therefore, improving, enriching and digitizing data collection and dissemination should be considered as a top priority by National Authorities. In a view to pave the way for the implementation of an Outbound model, the Team’s opinion is that the the conceptual phase might be significantly complex and resource intensive, therefore the suggestion is to start working on the relevant key indicators and methodology that might be used for an Outbound model from the onset of the EWT development process..</p>
<b>Well-established culture of rescue and second chance in the Country</b>	<p>A culture of rescue and second chance seems yet to be established in Bulgaria. Some creditors<sup>78</sup> show rigidity when dealing with out of court proceedings and companies often prefer to remain dormant (changing the ownership and transferring the good assets to newly established entities) rather than envisage long and complex insolvency proceedings</p>
<b>Quality of rehabilitation and insolvency frameworks</b>	<p>The current access to the stabilization procedure by distressed companies seems very limited. Significant improvements are needed to align the insolvency framework to good practices<sup>79</sup>. Without significant interventions on this framework, the implementation of the EWT will mostly become a mere compliance duty and not a truly beneficial Tool for debtors.</p>
<b>Cooperation among public authorities for data sharing</b>	<p>The cooperation among authorities on data sharing and data disclosure seems still limited, also given the quite rigid interpretation of the application of the GDPR. A project aimed at implementing an e-government platform is still under way, and its completion is expected within 2 years. The platform may enable better data sharing and access to timely and well-structured information about debtors in the future.</p>
<b>Public Authorities are perceived as client-oriented and supportive to the private sector</b>	<p>In general, a feeling of distrust seems a common pattern of private sector representatives when dealing with Public Authorities both in terms of service levels (information shared by these Authorities is often perceived as unreliable and not timely) and reliability (i.e., concern that information collected by Public Authorities might not be used properly, and might become part of a “data black market” where some data are shared to privileged entities). Naturally, this should have a strong impact on the EWT’s approach and institutional/operational arrangements, being the Tool’s implementation conceived for the exclusive benefit of the debtors (and not for the creditors).</p>
<b>Debtors’ morphology (with a special focus on SMEs)</b>	<p>Being the vast majority (more than 90 percent) of debtors micro and small companies, any definition of trigger alerts should keep into consideration the availability of timely and accurate data from this specific type of entities, and how to achieve an acceptable compromise between Tool effectiveness (based on quite sophisticate information) and a reasonable cost of compliance to be borne by debtors to calculate the indicators and report the perspective insolvency, if an approach based on a self-assessment is adopted.</p>
<b>Private or public sector entities able to manage an advanced EWT</b>	<p>No public or private entity in Bulgaria seems to have the operational capacity to handle an advanced EWT in the short-term. In fact, a) The Registry Agency’s mission seems mostly to act as a Registrar, supporting the companies’ incorporation and periodic reporting process, b) No private credit reporting operator provides credit histories and value-added services (like a credit scoring based on a probability of default). These are normally the two main operators that could manage an EWT based on an outbound model.</p>

<sup>78</sup> NRA in particular

<sup>79</sup> On this matter, see the WBG report on the Insolvency Framework in Bulgaria

121. **Based on the above, regarding the model/algorithm for the EWT, this TN concludes that:**
1. A purely inbound model based on EWT’s analysis of debtor’s qualitative information should be considered as a “quick-win” by Bulgarian authorities and should be implemented in the short-term, complying with the preventive restructuring Directive.
  2. The Bulgarian authorities should also consider the opportunity to implement an inbound model based on a self-assessment in the medium-term (2 year). The model might either substitute or complement the fully inbound approach for a specific segment of debtors<sup>80</sup>. An in-depth cost versus merits analysis by a working group should be required to define the scope, the perimeter and the methodology adopted by the self-assessment.
  3. The eventual adoption of a more advanced approach through the elaboration of a set of alerts by the EWT (outbound approach) should be considered as an option in the long-term, well after the establishment of the e-government platform. However, Authorities might decide to work on the definition of a conceptual model for an outbound approach starting from the onset of the EWT implementation project.
  4. Regardless of the implementation approach identified as the best fit, two key enabling features surrounding the EWT are as follows: a) availability of sufficiently encouraging incentives to support distressed and honest debtors with viable businesses when addressing the EWT; and b) a widespread information campaign to inform debtors about the opportunities deriving from the access to the EWT.
122. **Lastly, there are a number of key advantages and downsides deriving from the selection of one of the three approaches.** These are summarized in the Table 8 below:

**Table 8: Key advantages and downsides deriving from EWT implementation solutions**

Model	Key advantages	Key disadvantages
Purely inbound (recommended solution)	<ul style="list-style-type: none"> <li>• Fast and easy implementation</li> <li>• All debtors can be easily covered by the Tool (e.g., the compliance duty is fulfilled)</li> <li>• It captures patterns of distress not necessarily reflected by quantitative indicators.</li> <li>• Performs better under the current exceptional circumstances.</li> <li>• Low cost of compliance for debtors</li> <li>• Only motivated debtors will access the Tool</li> </ul>	<ul style="list-style-type: none"> <li>• The model does not capture the segment of unaware distressed debtors (probably the most relevant target of the EWT)</li> <li>• Evaluation is judgmental and based on discretion, therefore, the disclosure of the situation of distress to benefit from incentives should only be made by the debtor.</li> <li>• Only a small component of well-motivated debtors will access the EWT</li> </ul>
Self-assessment	<ul style="list-style-type: none"> <li>• It covers all debtors, and it might complement the purely inbound model for the segment of medium/large entities.</li> <li>• It can flag perspective insolvency of a segment of unaware debtors (probably the most relevant target of the EWT), supporting early interventions to address difficulties in a timely manner.</li> <li>• It is an opportunity for debtors to set-up the necessary organizational arrangements aimed at detecting risk</li> </ul>	<ul style="list-style-type: none"> <li>• Higher complexity than the purely inbound approach</li> <li>• Higher cost of compliance for debtors</li> <li>• Application of different methodologies to different segments might add complexity to the Tool.</li> <li>• Identification of relevant indicators and benchmark values through statistical analysis might be complex and costly.</li> <li>• Cost of model implementation and</li> </ul>

<sup>80</sup> For example: sole proprietors and micro/small businesses might continue to address the EWT for an assessment, while medium and large companies might be mandated to perform the self-assessment and report a perspective insolvency (at a more advanced stage of EWT).

	<p>in a timely manner and to spread a risk management culture within the entity.</p> <ul style="list-style-type: none"> <li>• It is based on an objective and well-defined methodology. Based on that, the EWT can flag the debtor as a perspective insolvency without its consent</li> <li>• Debtors or their chartered accountants might be mandated to undergo the self-assessment on a periodic basis</li> </ul>	<p>maintenance is high (for the EWT)</p> <ul style="list-style-type: none"> <li>• Cost of compliance for debtors is high (to develop sufficiently advanced information systems to calculate the current and perspective alert indicators).</li> <li>• The model doesn't capture the patterns of distress not necessarily reflected in quantitative information.</li> </ul>
Outbound	<ul style="list-style-type: none"> <li>• Low cost of compliance for debtors (the EWT elaborate the alert indicators from already shared and publicly available information)</li> <li>• It improves the dialogue between private and public sector, being the EWT conceived for the exclusive benefit of debtors.</li> <li>• It can flag perspective insolvency of a segment of unaware debtors (probably the most relevant target of the EWT), supporting early interventions to address difficulties in a timely manner.</li> <li>• It is based on an objective and well-defined methodology. Based on that, the EWT can flag the debtor as a perspective insolvency without its consent</li> </ul>	<ul style="list-style-type: none"> <li>• Higher complexity than the other approaches</li> <li>• High cost of compliance for the Public Authorities</li> <li>• High responsibility (and potential reputational risk) of public authorities if the EWT flags false positives.</li> <li>• Application of different methodologies to different segments might add complexity to the Tool.</li> <li>• Identification of relevant indicators and benchmark values through statistical analysis might be complex and costly.</li> <li>• Cost of model implementation and maintenance is high (for the EWT)</li> <li>• Given the situation in Bulgaria (no similar service provided neither by the Registry Authority, nor by the credit reporting operator), need for establishing the necessary operational framework to support the EWT.</li> <li>• The model does not capture the patterns of distress not necessarily reflected in quantitative information.</li> </ul>

## 8. THE PROCESS OF ALERTING DEBTORS

### 8.1 The Importance of Confidentiality

123. **Regardless of the notification procedure selected (the main options are described in the following section), the results of the evaluation methodology should be made accessible anytime to debtors.** In fact, entrepreneurs should have the right to access the results of the model at any time in order to check their situation (for example, whether they are on the list of notified companies). Results of the questionnaires and key variables highlighting the perspective insolvency should be showed by the EWT or third parties (for example: accountants, depending on the model implementation solution adopted).

As a preliminary condition to information sharing about perspective insolvency, any third party involved in the evaluation process must sign a Non-Disclosure Agreement (NDA), committing him/herself in keeping both debtor's information and the outcomes of the evaluation strictly confidential.

## **8.2 Performing the assessment and submitting a notification (purely inbound model)**

124. **This Section covers the workflow of evaluation and communication from a third party (i.e., representatives of the EWT) to debtors to notify a perspective insolvency.** As summarized in Section 4, debtors under this approach can contact the EWT and perform an assessment to evaluate the debtor’s capacity to manage their business. This should be a first opportunity for debtors, who will learn through the assessment what are the key relevant indicators to be tracked in order to detect early signs of distress. Ideally, the evaluation process covers three different steps: (i) First contact; (ii) Pre-qualification and evaluation; and (iii) Decision-making on notification of perspective insolvency. The rationale of the three steps, key options and advantages/drawbacks deriving thereof are described in Table 9 below:

**Table 9: Evaluation process (purely inbound model)**

Step	First contact	Pre-qualification and evaluation	Decision-making on notification of perspective insolvency
<b>Key Activities</b>	Debtors address the EWT to ask for information and support	Debtors share information about their business, upon signature of an NDA by the EWT	The EWT performs the assessment and eventually decides to notify the debtor a perspective insolvency
<b>Option 1</b>	<b>Online contact (online request with key information on why the service is addressed)</b>	<b>A pre-qualification is made to: a) get a broad understanding of why the debtor is addressing the EWT; b) identify those debtors with a sound intention of addressing the difficulties</b>	<b>The EWT identifies short-listed and potentially distressed debtors and then adopts a final decision-making on flagging a perspective insolvency (i.e., four-eyed check)</b>
<b>Key advantages</b>	<ul style="list-style-type: none"> <li>• Less costly for the EWT</li> <li>• Less time consuming for debtors</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate analysis to identify honest entrepreneurs that deserve to have access to support and incentives</li> <li>• The evaluation process is more streamlined as numbers of debtors are reduced</li> </ul>	<ul style="list-style-type: none"> <li>• Accurate analysis to identify perspective insolvencies, aimed at minimizing the share of false positives</li> <li>• Detrimental impact of discretionary decision-making is substantially reduced</li> <li>• Opportunity of adopting a “learning-by-doing” approach, where less experienced EWT representatives will work on the debtors’ shortlists, while more experienced representatives will support the final decision-making</li> </ul>
<b>Key downsides</b>	<ul style="list-style-type: none"> <li>• Prone to misunderstandings on the purpose of the EWT</li> <li>• Debtors might not feel the value of the EWT (impersonal communication)</li> </ul>	<ul style="list-style-type: none"> <li>• Prone to risk of highlighting false positives (i.e., debtors in real distress that are not provided access to the evaluation phase)</li> <li>• More complex (and costly) operational framework, with two different units (pre-qualification and evaluation)</li> </ul>	<ul style="list-style-type: none"> <li>• More complex (and costly) and less efficient operational framework, with two different units (short-list and final decision-making)</li> <li>• Complex allocation of responsibilities to flag the perspective insolvency where different opinions exist</li> </ul>
<b>Option 2</b>	<b>Hotline</b>	<b>One-off evaluation process for debtors agreeing to undergo the assessment</b>	<b>The EWT adopts a decision-making on whether to flag a perspective insolvency</b>
<b>Key advantages</b>	<ul style="list-style-type: none"> <li>• More effective and clear communication</li> </ul>	<ul style="list-style-type: none"> <li>• More streamlined process</li> <li>• The approach is less prone to reputational risk (no decision-making on debtors)</li> </ul>	<ul style="list-style-type: none"> <li>• More streamlined process</li> <li>• More streamlined and efficient implementation process (easier operational)</li> </ul>

		<p>deserving to have access to support is required from the EWT)</p> <ul style="list-style-type: none"> <li>• More streamlined and efficient implementation process (easier operational framework)</li> </ul>	<p>framework, shorter time to notify a perspective insolvency)</p>
<b>Key downsides</b>	<ul style="list-style-type: none"> <li>• More costly and complex (need to set up a phone center and operational arrangements to manage the communication with debtors)</li> <li>• More time consuming for debtors (in case lines are busy or the service is inefficient, debtors may decide not to address the service anymore)</li> </ul>	<ul style="list-style-type: none"> <li>• Given the higher number of debtors, the evaluation phase will be more burdensome for the EWT</li> <li>• Evaluation will become more complex, because of the different levels of motivation of debtors addressing the service</li> </ul>	<ul style="list-style-type: none"> <li>• The approach is more prone to reputational risk (in case of identification of false positives)</li> </ul>
<b>Suggested solution</b>	<p><b>Both online and voice communication channels should be made available by the EWT</b></p>	<p><b>The opinion of the Team is that the first option (separated pre-qualification and evaluation phases) better reflect the specificities of Bulgaria</b></p>	<p><b>The opinion of the Team is that the first option (short-list and final evaluation) may be the best fit</b></p>

125. **When a notification is submitted by a third party, the notification procedure can be based on one of two approaches:**

- 1) E-notification to company administrators sent via EWT’s notification service. Depending on selected aspects of corporate law in Bulgaria that this TN does not cover, the notification may be extended to related parties, including shareholders and members of the supervisory board. The suggested communication channel for sharing the perspective insolvency is a combination of emails containing an “acknowledge receipt,” and a hard communication (a letter to a company’s official address as registered in the e-business register) to be sent by the notification service.
- 2) Combined notification from the EWT and contact by the counseling service for companies identified with severity 1 (being notified about a perspective insolvency), and companies identified with severity 2 (being shortlisted by the pre-qualification service, but not notified about a perspective insolvency), who could contact the counseling service themselves.

126. **The Table below describes the main advantages and drawbacks deriving from the different notification options.** Final decision making on the notification process option should be made by the working group during the design and operationalization phases.

**Table 10: Opportunities and Drawbacks Deriving from Highlighted Solutions (Company Notification Procedure)**

	MAIN OPPORTUNITIES	MAIN DRAWBACKS
<b>Option 1: notification from EWT</b>	<ul style="list-style-type: none"> <li>EWT is perceived as a neutral counterpart by companies.</li> <li>Debtors receive a notification from an already known (and trusted) counterpart</li> </ul>	<ul style="list-style-type: none"> <li>Company owners may fear consequences of the notification by a public authority, and this may lead to unintended effects of notifications.</li> </ul>
<b>Option 2: combined notification from EWT and counseling service according to level of severity of company distress</b>	<ul style="list-style-type: none"> <li>Support by EWT and counseling service for different levels of likelihood of insolvency may help solve the issues described in options 1 and 2 (e.g., low EWT capacity to deal with personal distress, lack of confidence of entrepreneurs toward a third party, and unknown institution).</li> <li>Counseling service focuses on situations where likelihood of insolvency is more significant.</li> </ul>	<ul style="list-style-type: none"> <li>Increased complexity of the model to identify different and homogeneous risk classes</li> <li>Model's reputational risk may increase significantly (e.g., risk of incurring false positives).</li> </ul>

### 8.3 Network Responsible for Delivering Advice

127. **As mentioned earlier, the network responsible for delivering advice may adopt an inbound model (where the distressed company requests assistance from the counseling service) or an outbound model (where the counseling service approaches the distressed company and highlights the likelihood of distress and offers assistance).** Even if both approaches have proved to be valid, based on cultural specificities (for example, the overall willingness of public authorities to minimize the interference with the private sector and entrepreneurial activity), a hybrid model may be the best fit for Bulgaria. Therefore, companies receiving the notifications may decide to contact the counseling service to receive support.
128. **For the purpose of identifying the entity that may deliver advice to distressed companies, some key aspects to consider are:**
- 1) Target companies are expected to be SMEs, as roughly 98 percent of companies are SMEs in Bulgaria, and larger companies usually have easier access to advisory services for support;
  - 2) The potential availability of a network of volunteers (mostly ex entrepreneurs or matter experts willing to fully support *pro-bono* activities, like in Germany) should be inspected by Bulgarian Authorities. Alternatively, a combined model might be the best fit, where a first high-level screening is performed by remunerated experts<sup>81</sup>, with a limited number of distressed businesses<sup>82</sup> having access to technical assistance activities (a similar approach is adopted in Poland);
  - 3) Given the combination of financial and personal difficulties that company owners typically face when their business is in distress, trust in known counterparts is critical, and;
  - 4) Public authorities might benefit from the support provided by representatives of other EWTs or by Early Warning Europe (EWE) to establish a support workflow and methodology that will be adapted to the specificities and needs of debtors in Bulgaria.
129. **Several institutions seem well-positioned to deliver advice in Bulgaria, with well-established**

<sup>81</sup> Called upon demand, with a remuneration based on hourly fees.

<sup>82</sup> I.e., debtors whose situation is deemed recoverable, whose entrepreneurs show a genuine will to rehabilitate the business under a going concern.

**training programs and regional networks**<sup>83</sup>. When taking the decision on the best-positioned institution, capacity and network should not be considered as the only relevant factors. In fact, debtors' trust towards a valid counterpart with no other interest than supporting them is fundamental. The entity should support the following operational framework:

- 1) A company contacts the counseling service;
  - 2) A first screening is made to clearly identify criticalities and company needs;
  - 3) Upon decision of the company, the service may contact a professional subject-matter expert to provide financial advisory support to the company on specific topics.
130. **Although the activity of the counseling service may be free of charge, support by the matter expert should be remunerated based on two distinct components:** a) an hourly fee; and b) a success fee. The main advantages of this approach are:
- 1) The company views the counseling intervention as neutral, and not aimed at making a profit from its distress;
  - 2) The company needs to only pay for the expert's services (if it chooses additional support);
  - 3) The company perceives the value of the expert's services because they are not free; and
  - 4) Reliance on a network of matter experts is flexible, that is, based on the needs expressed by the company
131. **The main drawbacks of this approach are:**
- 1) The company in distress may not be willing or able to remunerate an expert, even based on success; and
  - 2) Due to company demand, a matter expert may not be available to the company. This may have a serious impact on when financial distress should be tackled rapidly.
132. **Regardless of the hosting authority selected for company support, counseling support should be given by a team of experts with a comprehensive professional and personal skillset,** ensured through the following activities:
- 1) An intensive and ongoing counseling team capacity building process;
  - 2) Identification of the right mix of team skills both in terms of technical capacity (for example, adequate skills to support all types of companies from different industries) and personal capacity (for example, adequate skills to support people living in distressed personal situations, empathy, communication skills); and
  - 3) Setup of adequate organizational infrastructure (for example, a backbone of full-time staff supported by a network of volunteers—ex-entrepreneurs who have experienced failure or a second start in their working life—may be the best option).
133. **The identification of the most suitable counseling service for companies notified by the EWT should start as soon as possible,** as the adequate skillset and service infrastructure implementation may require at least 12 months.

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<sup>83</sup> See for example the SME association (BSMEPA) and the Chamber of Commerce and Industry (BCCI)



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## ANNEX 1 – QUANTITATIVE ANALYSIS TO DETECT PERSPECTIVE INSOLVENCY

This Annex describes a common methodology aimed at identifying debtors' perspective financial distress if an approach based on a self-assessment is adopted. To do so, three key topics are addressed:

- 1) What should be measured,
- 2) How it should be measured (i.e., how trigger alerts should be combined)
- 3) How the notification process should be managed

### *The quantitative perspective: The “what”*

As far as the quantitative alert indicators are concerned, to achieve the objective of identifying perspective insolvency, the starting point should be the liquidity test (see subsection 2.4.1), complemented by the balance sheet test to avoid the identification of false positives (for example, companies experiencing temporary, and not structural, liquidity issues).

To track the liquidity test, the EWT should take into consideration the businesses' capacity to pay the following obligations as they become due:

- Debts to suppliers;
- Debt service;
- Tax and VAT; and
- Payments to employees and social security.

Key questions that immediately arise are how to track an increase in credit risk<sup>84</sup> based on the ability to pay these debts, and of course, what indicators could be used to signal those early difficulties. A subsequent question is: what distress severity must be reached to trigger an alert and lead to the objective perception that the risks identified *may* give rise to insolvency? For the purpose of highlighting the risk of future insolvency through a set of quantitative data, this Annex suggests the below data points:

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<sup>84</sup> For the purpose of this definition, it should be noted that a similar approach has been identified in the IFRS9 Standard. In view of applying prevention rather than damage control, financial institutions are mandated to apply additional provisioning (e.g., based on a lifetime instead of 12 months of expected losses) to those exposures where a significant increase of credit risk has taken place.

**Table 1: Financial Obligations, Data Sources, and Prospective Insolvency Indicators**

TOPIC	DATA SOURCE	MAIN PERSPECTIVE INSOLVENCY INDICATORS (ALERT TRIGGERS)	RATIONALE
Debts to suppliers	Financial reporting	Increased payable days, increased gap between receivable and payable days, unsubmitted financial statements	Increased number of days needed to pay suppliers <sup>85</sup> may highlight increasing liquidity issues. Increased time to receive payments may highlight internal difficulties (debt collection) or decreased debtors' creditworthiness.
		Cash flow <sup>86</sup> (decrease), sales (decrease), EBITDA or sales/financial debt (decrease), leverage (increase), capital adequacy (decrease), current ratio (decrease), quick ratio (decrease)	All these ratios provide key indications of business sustainability and capacity to repay debts.
	Tribunals and other sources	Court notifications, debt rescheduling agreements, public announcements referred to company, shareholders, beneficial owners, managers' or owners' involvement in bankruptcy procedures	All of these indicators are strong alerts of decreased overall debt repayment capacity.
Debt service	Financial reporting	Cash flow (decrease), sales (decrease), EBITDA or sales/financial debt, leverage, capital adequacy, current ratio, quick ratio, cash ratio, decrease of client base, decreased number of suppliers, unsubmitted financial statements	All these ratios provide key indications of business sustainability and capacity to repay debts.
		Payment performance (e.g., negative information) of companies, shareholders, beneficial owners and warrantors	Emerging loan repayment difficulties of companies, owners and ultimate beneficial owners, warrantors are highly predictive alerts of prospective insolvency.
	Credit bureau	Payment behavior and credit exposure (positive information): decreased number of credit facilities, decreased number of reporting institutions, rejected applications, increased number of queries, decreased credit limits, increased use of credit lines, rejected renewals of credit facilities, switched financing from short-term and self-liquidating credit facilities to term loans, debt rescheduling. All the above indicators can be referred to companies, shareholders, beneficial owners and warrantors.	All these indicators can significantly help to predict future difficulties. <b>These indicators will only be available when positive credit information sharing is operational in Bulgaria.</b>
	Financial reporting	Cash flow (decrease), sales (decrease), EBITDA, sales/financial debt, leverage, capital adequacy, Current ratio, quick ratio, cash ratio, decrease of client base, decreased number of suppliers, unsubmitted financial statements	All these ratios provide key indications of business sustainability and capacity to repay tax and VAT debt.

<sup>85</sup> Estimation of payable and receivable days can be done through balance sheet items used to calculate the current ratio (payables and receivables) and sales and cost of raw materials (or cost of goods sold) in the income statement.

<sup>86</sup> Estimation of cash flow (for all companies not mandated to report the cash flow statement) can be done using the balance sheet items, yearly variations, and income statement at the reporting date (direct or indirect method).

<b>Tax and VAT</b>	National Revenue Agency	Unsubmitted tax declarations, emerging tax arrears, increased tax debt and interest, postponed tax debt and interest (company, beneficial, owners, shareholders)	All of these indicators are highly predictive and provide alerts on company capacity to face obligations.
<b>Staff social security</b>	Same information sources as tax and VAT	Same financial indicators, increase of social security debt, unpaid social security debt (company, beneficial, owners, shareholders)	

### *The quantitative perspective: The “how”*

The use of quantitative data can help at identifying a likelihood of distress, as the probability of materialization of the risk of insolvency within the established time frame. Given the lack of publicly available data (as highlighted in Section 6), the implementation of such approach is only possible under a self-assessment perspective, i.e., where companies perform the assessment based on internal data, and apply the methodology and benchmarking analysis provided by the EWT.

For the purpose of implementing the self-assessment methodology, the suggested approach is based on logistic regression (or logit model), as the commonly used to predict the probability of an event occurring<sup>87</sup>. Logistic regression is an algorithm borrowed from statistics and uses a logic/sigmoid function (purple formula) to transform its output, making it either 0 or 1.

The approach can then be extended to model several classes of events, and each observation can be assigned a probability between 0 and 1. Using multivariate analysis means acknowledging the complexity of reasons for which the likelihood of insolvency can increase (for example, combining several different risk alerts—each one with a risk weight—to calculate the confidence score).

A multitude of concurrent factors (for example, risk drivers) can be approached in different ways in combining risk alerts. When suggesting the optimal approach, the report takes into consideration certain aspects:

- 1) Some risk alerts can be significantly more important than others (for example, higher correlation with the likelihood of a future insolvency event); and
- 2) Importance of minimizing the quantity of false positives<sup>88</sup>.

Based on these aspects, the Annex suggests a modeling approach structured around a decision tree.

This approach allows (1) the definition of a clear workflow that identifies companies with early signs of distress; as well as (2) the identification of the most predictive signals, and therefore the measurement of the weight of each indicator within the dataset.

The Figure below gives an example of a decision tree. Country specificities are not considered when showing indicators in the decision tree. Preliminary correlation and univariate analysis on financial ratios of a sample of Bulgarian companies may lead to the identification of different ratios.

Regardless the Country specificities, the KPIs should cover (at least):

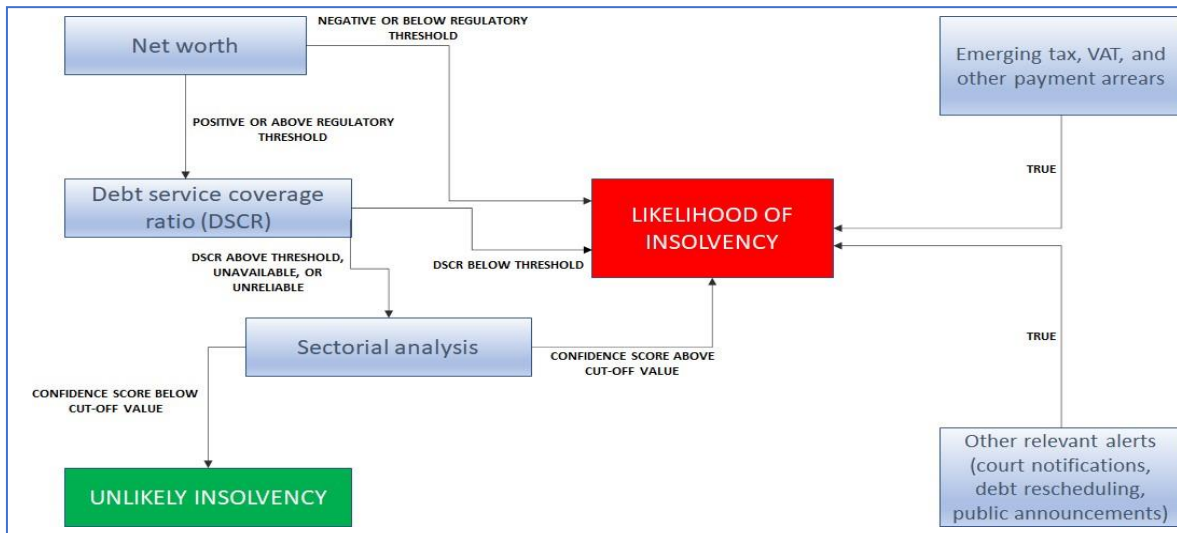
- 1) The measure of the own funds as a key element to support the debtor under a going concern

<sup>87</sup> See for example the EBA Guidance on loan origination and monitoring: most Internal Rating Based (IRB) systems complying with ECB regulations are implemented using logistic regression.

<sup>88</sup> See the WBG team’s considerations in section 2, and the importance of avoiding companies’ reputational risk of being notified at all costs.

- 2) The current and perspective capacity to face current and perspective obligations through the income statement
- 3) A set of other relevant ratios to be compared with relevant benchmarks
- 4) Other relevant negative events or trigger alert that may potentially undermine the debtor's activity

**Figure 1: EWT's Decision Tree (Example)<sup>89</sup>**



As anticipated, key indicators in the decision tree may reflect national specificities and outcome of univariate and multivariate analysis. A key phase of building up the model is the identification of early warning indicators. The ratio identification process should cover at least the following topics:

- 1) Debt sustainability;
- 2) Capital adequacy;
- 3) Liquidity;
- 4) Liquid return on assets; and
- 5) Tax and social security debt.

Alert triggers deriving from each of these areas should be based on the benchmarking analysis of each company in its group of peers (for example, sectorial analysis). As described, selecting the ratio shortlist should be based on the following steps:

- 1) Statistical univariate analysis of each statistical indicator of those areas (for example, correlation of each risk driver with a future insolvency event); and

<sup>89</sup> The example takes its inspiration from the Italian early warning system, whose adoption is still underway. The tool identifying a list of companies at risk in Belgium is also based on a decision tree (e.g., key predictive indicators and statistical analysis measuring a probability of insolvency within 12 months).

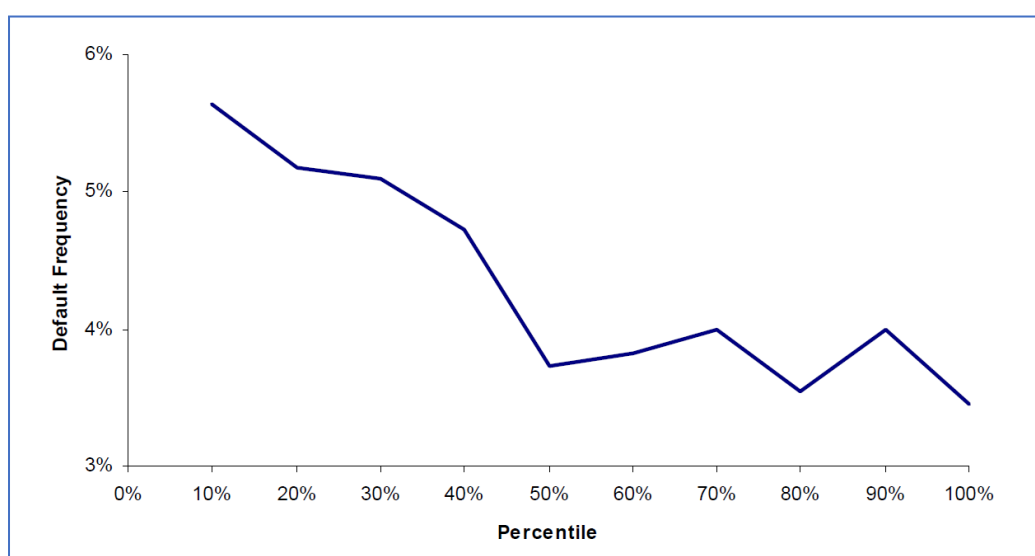
- 2) Multivariate analysis of shortlisted indicators aimed at identifying the optimal combination of indicators identifying future distress.

As for point 1, indicators' predictive capacity can be calculated using the following ratios:

- 1) Gini<sup>90</sup>;
- 2) Gap between “good” and “distressed” companies' ratios median values; and
- 3) Insolvency rates of indicator's quantiles, focusing on its risk area (tail of indicator's distribution).

Examples of correlation analysis between some indicators and the probability of a default event within a 12-month horizon to identify a shortlist of indicators through univariate analysis are described here:

**Figure 2: Correlation Analysis - Current Ratio<sup>91</sup>**

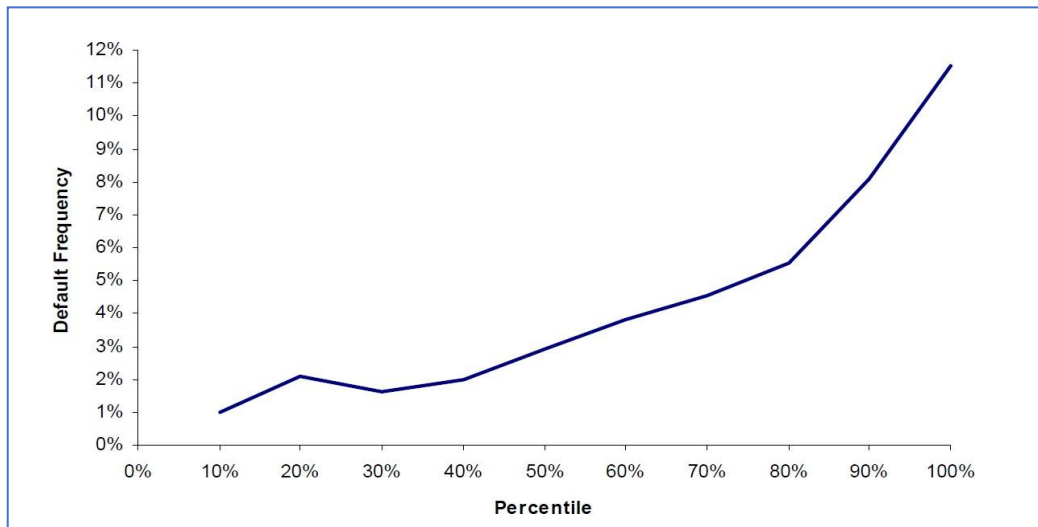


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<sup>90</sup> The Gini coefficient is one of the most popular metrics used by the financial industry for evaluating the performance of credit score models. In practice, the Gini coefficient is a metric that indicates the model's discriminatory power, namely, the effectiveness of the model in differentiating between “bad” borrowers, who will default in the future, and “good” borrowers, who won't default in the future. See: <https://towardsdatascience.com/using-the-gini-coefficient-to-evaluate-the-performance-of-credit-score-models-59fe13ef420> for more details on Gini and other most relevant credit scoring performance metrics (e.g. ROC and AUC)

<sup>91</sup> The indicator is calculated by CERVED (Italian balance sheet register) and clearly indicates a high correlation between default frequencies and percentiles of the statistical distribution of the current ratio (e.g., percent current assets/current liabilities): an increase of current ratio normally results in a decrease of insolvency rates.

**Figure 3: Correlation Analysis - Percent Interest Costs / Sales**



Other criteria to be used when selecting indicators are:

- 1) Ease of calculation;
- 2) Lack of computational problems;
- 3) Interpretability;
- 4) Minimum share of outliers; and
- 5) Low correlation among shortlisted indicators.

Analysis aimed at shortlisting relevant alert indicators should be allowed at least four years (the best option would be an entire economic cycle) before the insolvency event takes place.) As a result, univariate analysis should lead to a shortlist of indicators, as follows (example). Selected highlighted indicators have higher values of the accuracy ratio<sup>92</sup> (AR)<sup>93</sup>:

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<sup>92</sup> AR measures the overall predictive capacity of minimizing false positives and false negatives, e.g., the discriminatory power in a classification model. Percent Debt/Sales and DSCR have the higher AR

<sup>93</sup> For more details about this table, see “Corporate credit risk modelling: Quantitative rating system and probability of default estimation – Joao Eduardo Fernandes”: [http://www.ratingexpress.net/content/JEF\\_CorporateCreditRisk.pdf](http://www.ratingexpress.net/content/JEF_CorporateCreditRisk.pdf).



**Figure 4: Shortlisting Financial Indicators (example)**

Type	Name	Definition	Expected Effect on PD	AR
Profitability	Net P&L / Assets	[Net Profit & Loss] / [Total Assets]	-	15.60%
	Current Earnings / Assets	[Current Earnings] / [Total Assets]	-	16.60%
	Current Earnings and Depreciation / Turnover	[Current Earnings + Depreciation] / [Turnover]	-	-1.00%
	P&L / Assets	[Net Profit & Loss + Depreciation + Provisions] / [Total Assets]	-	5.80%
	Gross Earnings / Production	[EBT + Depreciation + Provisions] / [Production]	-	-3.20%
	EBITDA / Production	[EBITDA] / [Production]	-	-15.80%
Liquidity	Liquidity / Current Liabilities	[Bank Deposits & Cash + Marketable Securities] / [Short-Term Liabilities]	-	10.60%
	Current Ratio	[Current Assets] / [Short-Term Liabilities]	-	9.20%
	Liquidity / Assets	[Bank Deposits & Cash + Marketable Securities] / [Total Assets]	-	12.00%
Leverage / Gearing	Equity / Assets	[Equity] / [Total Assets]	-	3.80%
	Equity / Accounts Payable	[Equity] / [Accounts Payable]	-	4.40%
	Bank Debt / Accounts Payable	[Bank Debt] / [Accounts Payable]	+	1.80%
	Accounts Payable / Assets	[Accounts Payable] / [Total Assets]	+	5.20%
	Liabilities / Assets	[Total Liabilities] / [Total Assets]	+	3.80%
	Net Current Accounts Payable / Assets	[Short-Term Accounts Payable - Bank Deposits & Cash] / [Total Assets]	+	-0.40%
Debt Coverage	Gross Earnings / Liabilities	[Current Earnings + Depreciation + Provisions] / [Total Liabilities]	-	9.80%
	Debt Service Coverage	[Current Earnings + Depreciation] / [Interest & Similar Costs]	-	25.20%
	P&L / L-T Liabilities	[Net Profit & Loss + Depreciation + Provisions] / [Long-Term Liabilities]	-	0.00%
	Operating Earnings / Debt Service	[Operating Earnings] / [Interest & Similar Costs]	-	16.60%
Activity	Interest Costs / Sales	[Interest & Similar Costs] / [Turnover]	+	40.20%
	Inventories / Turnover	[Inventories] / [Turnover]	+	12.00%
	Turnover / Assets	[Turnover] / [Total Assets]	-	20.40%
Productivity	Productivity Ratio	[Personnel Costs] / [Turnover]	+	15.80%

Note: Turnover = Total Sales + Services Rendered

In order to shift from a univariate towards a multivariate statistical model, the Team suggests testing the predictivity of shortlisted indicator both on the overall sample and on segmented portfolios (sectors). In fact, different cut-off values may characterize different sectors<sup>94</sup>. Training sector-specific risk alerts can be fundamental to achieving acceptable model performance.

Sector-focused analysis should be aimed at minimizing the trade-off between information granularity and predictivity. In line with global regulatory standards, the opinion of the report is that the classification complying with NACE standards established by EU Regulation 1893/2006<sup>95</sup> may well suit the purpose of the Tool.

- 1) To enhance the effectivity of the Tool, different benchmark models should be defined based on expert analysis and on single ratios identified in the univariate and correlation analysis.
- 2) Identified conceptually robust models should be compared with many alternative models selected using ratios from the earlier listed areas of analysis through a supervised combination analysis, to maximize the

<sup>94</sup> Imagine for example the totally different liquidity patterns of different sectors within the NACE hierarchy: same levels of short-term liquidity ratios (for example: current ratio) may highlight situation severe distress for a retailer, while it might indicate a normal going concern of a company in the real estate sector.

<sup>95</sup> The first level of the NACE hierarchy may be applied, e.g., single-digit classification. Considering more detailed clusters may lead to statistically weak conclusions given the limited number of companies in Bulgaria.

heterogeneity of signals and full coverage of areas of concern.

- 3) As anticipated, as model accuracy is fundamental in general, minimizing the number of potential false positive companies receiving notifications should be a key criterion when identifying the optimal model.
- 4) Once the optimal model has been defined in terms of sectors and ratios, insolvency rates for companies falling within the established ranges of selected indicators are calculated. Based on this, the model establishes critical thresholds for every sector (see below).

**Table 2. Critical Values by Sector and Indicators (template)**

<i>NACE CLASSIFICATION</i>	RATIOS ALERT THRESHOLDS				
	DEBT SUSTAINABILITY	CAPITAL ADEQUACY	SHORT-TERM LIQUIDITY	CASH FLOW / ASSETS	TAX AND SOCIAL SECURITY DEBT
<i>A - Agriculture, forestry and fisheries</i>					
<i>B+C+D</i>					
<i>E</i>					
<i>F41</i>					
<i>F42+F43</i>					
<i>G45+G46</i>					
<i>G47+I56</i>					
<i>H+I55</i>					
<i>J+M+N</i>					
<i>P+Q+R+S</i>					

Companies' ranking in the statistical distribution of each indicator allows the calculation of a weighted expected insolvency rate for every reporting date. Insolvency rates above an established value (highlighting a significant likelihood of insolvency within one year<sup>96</sup>) are the trigger of the alerting system (for example, when the company is notified of the status calculated by the system).

Finally, for implementation and validation purposes, a comparison of historical trends of estimated 12, 24, and 36 months calculated by the model and the overall insolvency rates of companies should help sterilize the market effect and periodically evaluate the reliability of model outcomes.

It is a common opinion that the below indicators can concur at identifying a relevant risk of perspective insolvency:

- 1) Own funds indicator falling beyond the established threshold, or
- 2) Current and perspective liquidity/cash flow ratio falling beyond the established threshold, or
- 3) Sectorial benchmarking analysis highlighting 3 or more indicators above the 1<sup>st</sup> quartile<sup>97</sup> or beyond the 3<sup>rd</sup> quartile<sup>98</sup>
- 4) Existence of negative events potentially undermining the viability of the business as a going concern (i.e., alert triggers).

<sup>96</sup> E.g., the risk of migration toward insolvency is significantly higher than the median insolvency rate. The risk of migration is calculated through a transition matrix

<sup>97</sup> For indicators with an inverse correlation with the risk of insolvency (for example: profit indicators)

<sup>98</sup> For indicators with a direct correlation with the risk of insolvency (for example: cost indicators)

## **How to perform the assessment and submit a notification (self-assessment approach)**

This Section covers the workflow of evaluation and communication by the debtor of the detected perspective insolvency, in case a decision-making is adopted to complement the fully inbound model with a self-assessment element in the middle term.

The suggestion of the Team is that – in this case - a decision-making should be adopted on whether:

- a) To perform the self-assessment on a voluntary basis<sup>99</sup>
- b) Eventually, to mandate some clusters of debtors (typically SMEs) to perform the assessment. While the effects of mandating the self-assessment will positively affect the outreach of the EWT, establishing such requirement could be controversial, in a sense that the EWT might be perceived by entrepreneurs as intrusive of their freedom to take appropriate decisions for their business and not as a tool exclusively built in their sole interest. Therefore, this TN suggests that a careful decision-making should be adopted by the Working Group and Authorities, so to identify a solution that will be the best fit for the country.

The opinion of the TN on this matter is that:

- 1) The second option should be selected, as it supports a better risk awareness and preventive approach by these operators, who, in turn, will have to bear with relevant costs of compliance<sup>100</sup>
- 2) The self-assessment should be made on a yearly basis, but the authorities may decide that some clusters (for example: medium and large enterprises) may perform the self-evaluation more frequently (quarterly basis) after the consolidation of the process
- 3) Chartered accountants may be mandated to share the alert notification directly with the EWT<sup>101</sup>
- 4) In any case, the debtor's staff representatives should be readily informed about the alert on perspective insolvency as soon as it emerges
- 5) Sanctions must be applied to those companies not performing the self-assessment (if mandated to do so)
- 6) Companies or other appointed subjects should promptly inform the EWT about the alert on perspective insolvency as soon as it emerges
- 7) Finally, authorities may decide that in the long term also other entities (NRA, Central Bank through the Credit Registry, Tribunals, Registry Agency, NSSI or others) will share with the EWT the

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<sup>99</sup> In this case, sole proprietors (depending on the size of their assets and transactions) and micro-enterprises should be excluded from the assessment, as they typically do not have enough information and resources to support the elaboration and evaluation of predictive alert indicators

<sup>100</sup> For this purpose, a careful cost vs benefits analysis should be carried out by the Working Group

<sup>101</sup> Evaluation of opportunities and downsides deriving from this approach go beyond the scope of this Report and should be discussed by the Working Group

information on perspective insolvency based on established alert indicators (for example: relevant and persistent past due tax debt). In this case, the EWT will promptly share the notification with the Debtor.

## ANNEX 2 – DETAILED QUALITATIVE ASSESSMENT METHODOLOGY

This Annex describes a detailed methodology adopted in similar contexts<sup>102</sup> aimed at identifying debtors' perspective financial distress through a range of qualitative indicators. The rationale behind the application of this approach is the following:

- 1) Debtors that normally benefit the most from the support of an EWT are typically micro and small businesses. These entities typically struggle to elaborate reliable and sophisticated indicators in a cost-effective fashion.
- 2) As liquidity, profitability and capital adequacy patterns can vary significantly in different sectors and segments, availability of relevant benchmark values is key at properly identifying emerging risks, minimizing the share of false positives and false negatives. These benchmark values might not be available in a Country like Bulgaria, where an advanced culture of information sharing by public authorities seems yet to be established.
- 3) Quantitative materialization of risk might not flag perspective insolvencies early enough to set-up effective remedial measures.

Based on the above, combined with key financial indicators, a weak attitude towards risk-taking and entrepreneurship, lack of capacity when performing market analysis or ineffective definition of financial needs can be used as reliable alerts, highlighting debtor's weaknesses that may materialize in an insolvency risk.

### **Fully Inbound approach: The how (detailed methodology)**

As described in the previous Sections, the identification of patterns of perspective insolvency can be based on a set of indicators describing how the debtor manages its economic activity. Naturally, there's a strong judgmental component in this evaluation framework. and plenty of literature and case studies describing valid methodologies that are useful for the purpose of such assessment.

Lastly, there's no "one size fits all" methodology that can be applied in every Country and every type of debtor. Therefore, the array of proposed indicators<sup>103</sup> might be analyzed by a working group to see if they address the most common criticalities and enable a clear identification of perspective insolvencies of debtors in Bulgaria.

The key indicators for each of the areas described in section 7.1 are described below:

Regarding the debtor's psychological characteristics, the key topics to analyze are:

- 1) Readiness to take risks and deal with uncertainty in business
- 2) Family / friends / society support to business venture
- 3) Balance between business performance and personal life
- 4) Role of the business founder to support the success of the business model

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<sup>102</sup> See the EU-funded project DanubeChance 2.0 "Embracing failure to facilitate second chance entrepreneurship in the Danube Region" <http://www.interreg-danube.eu/approved-projects/danubechance2-0>

<sup>103</sup> The set of proposed indicators draw their inspiration from the EU financed Danube Chance 2.0 Project, and namely the "methodology on second-chance entrepreneurship readiness" component

- 5) Proficiency in performing business environment and risk analysis
- 6) Credibility and reputation in the marketplace
- 7) Awareness that failure is a normal part of doing business
- 8) In-depth analysis of internal reasons for former business failure

Regarding the strategic management, the key topics to be analyzed are

- 1) Organizational vision, mission, values and competencies
- 2) Favorable opportunities for the business
- 3) Understanding of the value chain regarding products and processes
- 4) Mutually beneficial relationships of different stakeholders of the business
- 5) Confidence in the capacity to transform opportunities into innovative projects
- 6) Company's support for overall employee learning and development
- 7) Developed contingency plans for unforeseen situations
- 8) Role of former business failure in supporting a better definition of the strategy framework

Regarding operational management, the key indicators tracked by the Tool should be:

- 1) Documentation and monitoring of business processes
- 2) Value creation processes leading to operational performance
- 3) Employment policies according to skills and perspectives
- 4) Planning methodology available for tracking business evolution
- 5) Within the business objectives, responsibilities, budgets are established adequately
- 6) Consistency of responsibilities, budgets with business objectives
- 7) Resource monitoring (materials, financial, personnel)
- 8) Capacity to outsource activities in case of difficulties
- 9) Internal early warning indicators

Regarding the market and financing aspects, the key indicators to consider might be:

- 1) Number of funding possibilities identified for the business
- 2) Debt repayment plans

- 3) Market share, sales and exposure, including distribution
- 4) Market analysis, data collection and processing
- 5) Business sensitivity to customer payment deadlines
- 6) Liquidity level and business survival
- 7) Emergency financing sources
- 8) Approach to target market

Lastly, regarding resilience and innovation, the key indicators to be analyzed by the Tool might be:

- 1) Business and products brand and uniqueness
- 2) Innovative approaches employed
- 3) Crisis management mechanisms
- 4) Product/service diversification
- 5) Capacity to implement/adopt a restructuring plan
- 6) Reusability of business components if problems appear
- 7) Policy regulation supporting second chance
- 8) Awareness of the driving factors behind the organization

All key performance indicators classified by domain are summarized in the Table below:

**Table 3: Business analysis and perspective insolvency – Key Performance Indicators (KPIs)**

<b>1 - Basic and psychological characteristics</b>
1.1 Readiness to take risks and deal with uncertainty in business
1.2 Family / friends / society support to business venture
1.3 Balance between business performance and personal life
1.4 Role of the business founder to support the success of the business model
1.5 Proficiency in performing business environment and risk analysis
1.6 Credibility and reputation in the marketplace
1.7 Awareness that failure is a normal part of doing business
1.8 In-depth analysis of internal reasons for former business failure
<b>2 – Strategic management and development</b>
2.1 Organizational vision, mission, values and competencies
2.2 Favorable opportunities for the business
2.3 Understanding of the value chain regarding products and processes
2.4 Mutually beneficial relationships of different stakeholders of the business
2.5 Confidence in the capacity to transform opportunities into innovative projects
2.6 Company’s support for overall employee learning and development
2.7 Developed contingency plans for unforeseen situations
2.8 Role of former business failure in supporting a better definition of the strategy framework
<b>3 – Operational management</b>
3.1 Documentation and monitoring of business processes
3.2 Value creation processes leading to operational performance
3.3 Employment policies according to skills and perspectives
3.4 Planning methodology available for tracking business evolution
3.5 Within the business objectives, responsibilities, budgets are established adequately
3.6 Consistency of responsibilities, budgets with business objectives
3.7 Resource monitoring (materials, financial, personnel)
3.8 Capacity to outsource activities in case of difficulties
3.9 Internal early warning indicators
<b>4 – Financing and marketing aspects</b>
4.1 Number of funding possibilities identified for the business
4.2 Debt repayment plans
4.3 Market share, sales and exposure, including distribution
4.4 Market analysis, data collection and processing
4.5 Business sensitivity to customer payment deadlines
4.6 Liquidity level and business survival
4.7 Emergency financing sources
4.8 Approach to target market
<b>5 – Resilience and innovation</b>
5.1 Business and products brand and uniqueness
5.2 Innovative approaches employed
5.3 Crisis management mechanisms



5.4 Product/service diversification
5.5 Capacity to implement/adopt a restructuring plan
5.6 Reusability of business components if problems appear
5.7 Policy regulation supporting second chance
5.8 Awareness of the driving factors behind the organization

Concerning the methodology aiming at classifying a debtor as “perspective insolvency” through the array of above KPIs, the Team suggests that no pre-established algorithm based on a set of weights of the different domains and KPIs should be used.

Nonetheless, a common opinion is that:

- 1) A range of scores should apply to each KPIs (i.e., through a scale from 1 – total agreement, meaning that the requirement is fully respected, up to 5 – full disagreement<sup>104</sup>) and might be helpful at guiding debtors to ascertain where the key difficulties are
- 2) An average score should be calculated for each domain
- 3) Where the average score equals 3 or more in two or more domains, the debtor should be considered as a potential perspective insolvency (and the debtor might be supported in a more in-depth self-assessment on these topics)
- 4) A further judgment should be applied on the “shortlist” of potential perspective insolvency to confirm the situation of distress
- 5) When the debtors’ evaluation framework is sufficiently consolidated, some additional Tools and methodologies (such as Radar graphs, showing in an intuitive fashion the debtors’ weakness and enabling comparison with relevant benchmarks) might be used to make the process more streamlined and less judgmental.

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<sup>104</sup> E.g.: 1 – Total disagreement, 2 – Disagreement, 3 – Neutral, 4 – Agreement, 5 – Total Agreement)