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Insolvency Regimes And Productivity Growth: A Framework For Analysis

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ABSTRACT/RÉSUMÉ

Insolvency Regimes and Productivity Growth: A Framework for Analysis

This paper develops an analytical framework to identify the policies relevant for firm exit and the channels through which they shape aggregate productivity growth. A range of potentially relevant policies are identified, spanning insolvency regimes, regulations affecting product, labour and financial markets, macroeconomic policies, subsidies, taxation and environment regulations. These policies can directly shape aggregate productivity along the exit margin through a variety of channels, including the strength of market selection and the scope and speed at which scarce resources consumed by failing firms can be reallocated to more productive uses. However, since market imperfections often generate obstacles to the orderly exit of failing firms, the efficiency of insolvency regimes emerges as particularly crucial. Thus, the paper analyses corporate and personal insolvency regimes in terms of their goals, optimal design (including trade-offs) and key features relevant for explaining cross-country differences in productivity. Finally, the paper proposes a strategy to obtain policy indicators that better capture cross-country differences in the key design features of corporate and personal insolvency regimes, with a view to facilitate further research on exit policies and productivity growth.

JEL Classification: K35, J63, O40, O43, O47.

Keywords: Bankruptcy, Institutions and Growth, Layoffs

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Régimes d'insolvabilité et croissance de la productivité – Un cadre d'analyse

Ce document établit un cadre d'analyse devant permettre de répertorier les politiques publiques qui interviennent dans les sorties d'entreprises, ainsi que les voies par lesquelles ces politiques influent sur la croissance de la productivité globale. On y recense un éventail de dispositifs publics susceptibles de jouer un rôle à cet égard : régimes d'insolvabilité, réglementations relatives aux marchés de produits, aux marchés du travail et aux marchés de capitaux, mesures macroéconomiques, subventions, fiscalité et réglementation environnementale. Ces instruments de politique publique peuvent avoir un impact direct sur la productivité globale au seuil de sortie, par différents biais tels que la puissance de la sélection par le marché ou encore la rapidité avec lesquels des ressources rares utilisées par des entreprises en difficulté peuvent être réaffectées à des emplois plus productifs, et l'ampleur de ces réaffectations. Cependant, étant donné que les imperfections du marché produisent souvent des obstacles à une sortie en bon ordre des entreprises en difficulté, l'efficacité des régimes d'insolvabilité apparaît comme particulièrement cruciale. Dans ce document, les régimes d'insolvabilité des entreprises et des particuliers sont donc analysés sous trois angles : les objectifs qui leur sont assignés, leur conception optimale (arbitrages compris) et les principales caractéristiques permettant d'expliquer les disparités de productivité entre les pays. Enfin, le document propose une stratégie pour construire des indicateurs permettant de mieux rendre compte des différences nationales dans les éléments clés de la conception des régimes d'insolvabilité des entreprises et des particuliers, afin de faciliter de futures recherches sur les politiques publiques intéressant les sorties d'entreprises et la croissance de la productivité.

Classification JEL: K35, J63, O40, O43, O47.

Mots-clés: Faillite, institutions et croissance, licenciements

TABLE OF CONTENTS

INSOLVENCY REGIMES AND PRODUCTIVITY GROWTH: A FRAMEWORK FOR ANALYSIS 6

1. Introduction and main findings 6
2. Exit policies and productivity growth 7
   2.1 Firm exit and aggregate productivity growth 7
   2.2 Public policy and the exit margin 9
3. Corporate insolvency regimes 14
   3.1 Goals and best practices 14
   3.2 Procedures 15
   3.3 Ex ante and ex post efficiency 16
   3.4 Key features of corporate insolvency regimes 17
   3.5 Cross-country differences in corporate insolvency regimes relevant for productivity 18
   3.6 Measurement of corporate insolvency regimes 26
4. Personal insolvency regimes 28
   4.1 The importance of a fresh start 29
   4.2 Cross-country differences in personal insolvency regimes 29
5. Discussion and next steps 32

REFERENCES 34

APPENDIX: SURVEY OF POLICY INDICATORS 39

Tables

Table 1. Specific features of insolvency regimes and productivity growth 20
Table A1. Initiation of restructuring by creditors 39
Table A2. Priority rules 40
Table A3. Key features of personal insolvency regimes 41

Figures

Figure 1. Cross-country evidence on firm exit and job churning 8
Figure 2. A stylised depiction of how policies can shape productivity growth along the exit margin .10
Figure 3. Key stages of the insolvency process 16
Figure 4. Key features of insolvency regimes 18
Figure 5. Possibility and priority of new financing 22
Figure 6. The fate of incumbent management 23
Figure 7. Possibility to cram-down a restructuring plan on dissenting creditors 24
Figure 8. The World Bank strength of insolvency framework indicator 27
Figure 9. The stigma of business failure and the availability of a fresh start 30
Figure 10. Insolvency and entrepreneurship 32

Figure A1. Stay on assets....42
Figure A2. Recovery rate of debt for secured creditors....43
Figure A3. Efficiency of insolvency regimes....45

Boxes

Box 1. Policy-induced exit costs, firm entry and experimentation....10
Box 2. The rationale for insolvency regimes: market imperfections on the exit margin....11
Box 3. Limitations of the case study approach underlying the World Bank outcome-based indicators....28
Box 4. Details on the proposed insolvency questionnaire....33
Box A1. The strength of insolvency framework index from World Bank Doing Business....44
Box A2. The features of insolvency regimes: European Commission data....45
Box A3. The basis of the World Bank outcome-based indicator: the case study....46

INSOLVENCY REGIMES AND PRODUCTIVITY GROWTH: A FRAMEWORK FOR ANALYSIS

By Müge Adalet McGowan and Dan Andrews[1]

1. Introduction and main findings

1. The productivity slowdown over the past decade brings into closer focus the barriers to productivity growth in OECD economies. While the role of policy-induced entry barriers is the subject of much research, considerably less is known about policies that shape the exit margin. Yet, the contribution of firm exit to aggregate productivity growth tends to be significant (OECD, 2003), highlighting the potential relevance of policies that influence the exit of low productivity firms for growth. Furthermore, the exit margin may have increased in importance over time to the extent that sub-par productivity growth may have its roots in weak market selection, whereby inefficient firms increasingly linger – as opposed to exit – the market. This is reflected in a rising prevalence of old and small firms in some economies, which can consume scarce resources and crowd-out the growth of more innovative firms.

2. A range of recent OECD studies have connected a high cost to close a business (based on World Bank Doing Business indicators) to weak productivity outcomes, via less scope for productivity spillovers and the misallocation of labour, capital and skills.[2] While this research suggests policy-induced exit barriers clearly matter, it is difficult to infer specific policy recommendations since less is known about the policy design features that influence exit costs.

3. Against this background, this paper – as part of a broader project on Exit Policies and Productivity Growth – develops an analytical framework to identify the policies relevant for firm exit and the channels through which they shape aggregate productivity growth. A range of potentially relevant policies are identified, spanning insolvency regimes, regulations affecting product, labour and financial markets, macroeconomic policies, subsidies, judicial efficiency, active labour market policies, intellectual property regimes, taxation and environment regulations. These policies can *directly* shape aggregate productivity along the exit margin through a variety of channels, including the strength of market selection – which increases in the economy's ability to dispose of non-viable firms and facilitates the restructuring of viable firms – and the scope and speed at which scarce resources consumed by failing firms can be reallocated to more productive uses. However, since market imperfections often generate obstacles to the orderly exit of failing firms, the efficiency of insolvency regimes emerges as particularly crucial.

4. The focus therefore shifts to a discussion of corporate and personal insolvency regimes, in terms of their goals, optimal design (including trade-offs) and key features relevant for explaining cross-country differences in productivity. With respect to the latter, eight design features of insolvency regimes emerge as relevant and we investigate the channels through which they affect aggregate productivity. In this regard, significant cross-country differences emerge in a number of areas, such as the initiation of restructuring, stay on assets, priority rules and the possibility of new financing, fate of incumbent

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2. For example, see Westmore (2013) and Saia et al. (2015) for links with productivity spillovers; Andrews and Cingano (2014) for links with labour misallocation; Andrews, Criscuolo and Menon (2014) for links with capital misallocation; and Adalet McGowan and Andrews (2015) for links with skill mismatch.

management, treatment of dissenting creditors, role of courts, emphasis on employment preservation and the availability of a fresh start.

5. Focusing on these key features, the paper assesses the suitability of existing policy indicators and identifies a number of gaps in terms of country and time series coverage, and different features of insolvency regimes. To address these deficiencies, a short questionnaire to member countries is proposed, which aims to better document country characteristics of corporate and personal insolvency regimes that are relevant for productivity outcomes. In turn, these indicators will be used to empirically identify the contribution of exit policies to capital allocation and aggregate productivity growth in the next phase of the project.

6. The paper is structured as follows. Section 2 presents the analytical framework linking policies to firm exit and aggregate productivity growth. Sections 3 and 4 discuss corporate and personal insolvency regimes in terms of their goals, implicit trade-offs, key design features relevant for explaining cross-country productivity differences and availability of suitable policy indicators. Section 5 proposes a strategy to improve policy indicators in the field of corporate and personal insolvency.

2. Exit policies and productivity growth

2.1 Firm exit and aggregate productivity growth

7. A well-functioning exit margin, which sorts successful market activities from unsuccessful ones, is vital to aggregate productivity growth. Across OECD countries for which estimates are available, exit rates of firms with at least one employee in the business sector averaged around 9% recently, although there is significant cross-country variation (Figure 1, Panel A). Firm entry and exit rates are also positively correlated across industries in OECD countries (OECD, 2003), suggesting a process of "creative destruction", whereby cohorts of new firms continuously displace obsolete firms. This market selection process is productivity-enhancing, in as much as the productivity level of exiting firms is, on average, lower than that of surviving firms. Indeed, the available cross-country evidence suggests that firm exit makes an unambiguously positive contribution to aggregate productivity growth – with this effect particularly strong in the United States where low productivity firms find it more difficult to survive – while the direct contribution of firm entry is more mixed (OECD, 2003; Alam et al., 2008).[3]

8. The gains to aggregate productivity are magnified if the scarce resources once consumed by exiting firms – capital, labour, skills and ideas – can be reallocated to more productive uses. Evidence suggests that firm exit creates space for new varieties to emerge and that new entrants productively recycle the assets of defunct firms across a range of activities.[4] While this typically reflects the reallocation of tangible inputs, there is also scope for the post-exit diffusion of codified knowledge to new entrants via employee mobility and the sales of patents (Hoetker and Agarwal, 2007).[5] These gains to aggregate productivity will be reinforced if workers displaced due to firm bankruptcy are more likely to become successful entrepreneurs than workers in stable firms (Røed and Skogstrøm, 2014).

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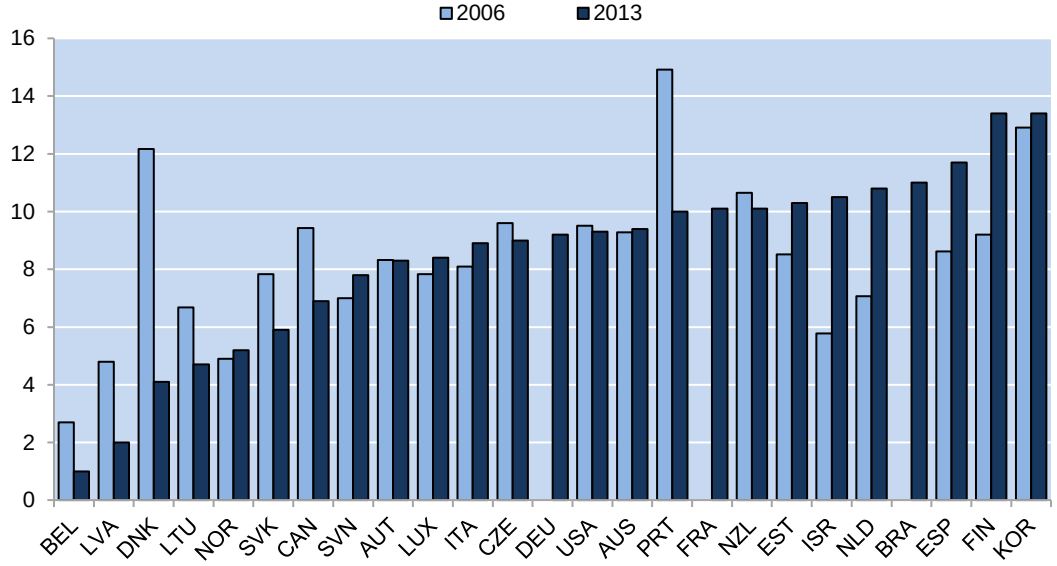
3. However, it is important to note that firm entry also exerts indirect effects on aggregate productivity growth, to the extent that it raises the pressure on incumbent firms to innovate.

4. For example, while prohibition laws in the United States led to the demise of breweries, it unexpectedly triggered the entry of new soft drink firms as entrepreneurs exploited the market opportunity for new beverages (Hiatt et al., 2009). Regarding the productive recycling of assets of exiting firms, see Australian PC (2015) for the airline industry; Hiatt et al., (2009) for beverages and Hoetker and Agarwal (2007) for the disk drive industry.

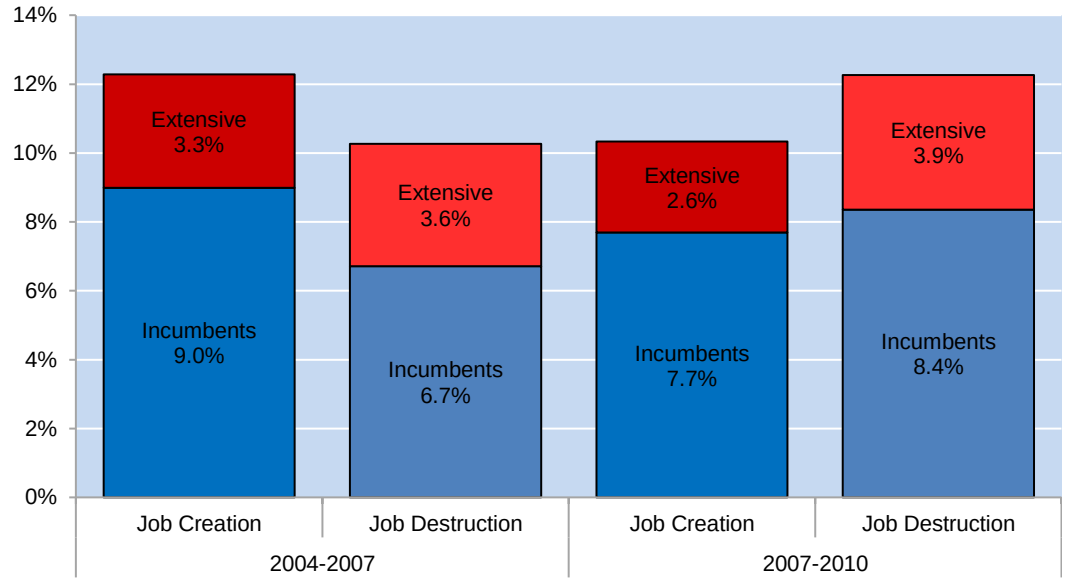
5. Of course, this process is likely to be more difficult when knowledge is tacit.

Figure 1. Cross-country evidence on firm exit and job churning

A: Employer enterprise death rate (%) in the total business sector; circa 2006 and circa 2013



B: Gross job flows broken down into the intensive (incumbent firms) and extensive (firm entry and exit) margins



Notes: Panel A – The employer enterprise death rate corresponds to the number of deaths of employer enterprises as a percentage of the population of active enterprises with at least one employee. An employer enterprise death occurs either at the death of an enterprise with at least one employee in the year of death or when an enterprise shrinks to below the threshold of one employee for at least two years. Deaths do not include exits from the population due to mergers, take-overs, break-ups, restructuring of a set of enterprises and exits from a sub-population resulting only from a change of activity. The early period estimates for Latvia, Norway and Slovenia refer to 2005. The final period estimates refer to 2011 for Brazil, New Zealand and the United States, and 2012 for Australia, Canada, France, Israel and Korea. Panel B – the contributions are calculated as gross job creation and destruction by the entrant/exitor and incumbent status over total average employment, averaged across 17 countries (Austria, Belgium, Brazil, France, Finland, Hungary, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom and United States) and three macro sectors (manufacturing, construction, and non-financial business services).

Source: Panel A – OECD (2015d); Panel B – Criscuolo, Gal and Menon (2014).

2.2 Public policy and the exit margin

9. This paper explores how public policies can shape the behaviour of distressed firms teetering on the brink of market exit – i.e. those firms unable to pay their debts as they mature or whose liabilities exceed their assets – and their implications for aggregate productivity growth. A variety of exit strategies are open to such firms, including immediate closure, the partial wind-down of operations or internal restructuring with a view to improve firm performance.[6] Of course, firm exit can occur due to voluntary reasons unrelated to financial distress – i.e. an entrepreneur winding down a business due to retirement or to pursue different interests – but we abstract from these instances since the scope for public policy to influence aggregate productivity through this channel is less clear.[7]

10. Insolvency proceedings, dealing with distressed firms, can result in procedures that aim to: *i*) recover money owed to secured creditors by repossessing collateral assets of debtors that fail to make repayment (i.e. foreclosure); *ii*) permanently wind up a firm, whereby its assets are sold separately (i.e. piecemeal liquidation) or as a whole (liquidation as a going concern), and the proceeds are distributed to creditors; and *iii*) restore the viability of a debtor's business and allow the business to continue to operate through debt forgiveness, debt rescheduling, debt for equity swaps and sale piecemeal or as a going concern (i.e. restructuring).

11. The prospect of firm exit may elicit a policy response: *i*) to address market imperfections which may prevent the orderly exit of failing firms (see below); or *ii*) because the political salience of job loss due to firm exit appears much higher than that related to average job churning, which may lead to the erection of barriers to firm exit. Indeed, the latter issue can be better understood in light of the millions of jobs that are created and destroyed each year and the fact that firm exit accounts for around one-third of annual gross job destruction (Figure 1, Panel B). Thus, while governments may intervene on the exit margin for a variety of reasons, a key challenge is to design such policies in a way that is least harmful to aggregate productivity growth, while also providing adequate insurance to workers displaced.

2.2.1 Analytical framework

12. Policy-induced distortions which interfere with market selection and the re-allocative capacity of the economy might entail significant costs to aggregate productivity. Figure 2 illustrates how policies *directly* shape aggregate productivity along the exit margin through their impact on two key channels: *i*) the strength of market selection, which increases in the economy's ability to dispose of non-viable firms and by facilitating the restructuring of viable firms, holds out the prospect for higher within-firm productivity growth in the future; and *ii*) the scope and speed at which scarce resources consumed by failing firms can be reallocated to more productive uses.

13. The framework is deliberately stylised and abstracts from the possibility that: *i*) some policies will affect aggregate productivity through other channels (e.g. the impact of product market regulations on R&D); and *ii*) firms will endogenously adjust to policies that raise exit costs in terms of their decision to enter, experiment with radical innovations and choice of capital structure (Box 1).

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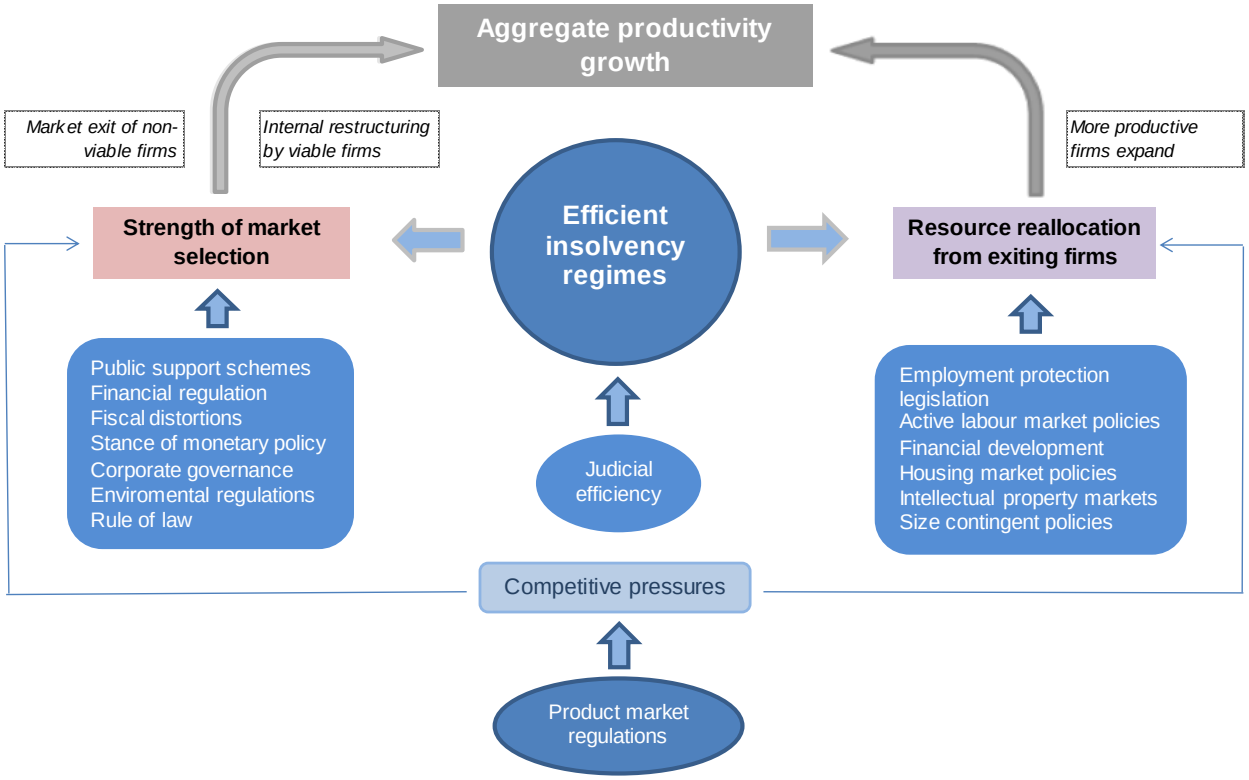
6. This process could also take place by mergers and acquisitions and offshoring, but these channels are beyond the scope of the paper.

7. Scattered evidence suggests that the reason for firm exit varies across countries. For example, almost 95% of firm exits in Australia are for reasons unrelated to a financial failure event (Australian PC, 2015). Evidence from Belgium, however, suggests that over 40% of firms exit the market through either court driven procedures (mainly bankruptcy) or voluntary liquidation, while 14% are acquired, merged or split (Balcaen et al., 2012).

Figure 2. A stylised depiction of how policies can shape productivity growth along the exit margin



Source: OECD calculations.

Box 1. Policy-induced exit costs, firm entry and experimentation

Research suggests that policies that excessively penalise business failure can reduce the supply of risk capital (Armour and Cumming, 2006) and firm entry rates (Peng et al., 2010). However, exit costs can also shape the willingness of new entrants to experiment with new products and processes, which is a defining feature of innovation at the firm level. Evidence from the United States suggests that every year, about 25% of consumer goods for sale are either new or will be discontinued the next year, at least 40% of new goods are sold only for a single year, and plants adopt only between half and a third of the technologies they try (Gabler and Poschke, 2011). Given that the innovation process is inherently uncertain, experimentation allows agents to assess and commercialise projects without investing the full amount and terminate projects quickly if they are not successful (Nanda and Rhodes-Kropf, 2012).

From this perspective, policies that raise the costs of business failure will, all else equal, reduce firms' incentives to experiment with new ideas. Indeed, theoretical models suggest that exit costs may matter even more than entry costs. This reflects the idea that while entry costs must be incurred by all firms regardless of their innovation strategy, high exit costs will disproportionately affect firms that choose to experiment with riskier business strategies, which entail a high probability of failure (Bartelsman et al., 2008). Policies that excessively penalise business failure may also bias firms' choice of capital structure towards tangible investments, which are easier to collateralise, at the expense of intangible investments (García-Posada and Mora-Sanguinetti, 2014). Of course, as discussed below, it is important to find an appropriate balance between leniency for failed entrepreneurs and protection to creditors in order to avoid adverse effects on the cost of capital.

2.2.2 Insolvency regimes

14. Insolvency regimes are crucial due to market imperfections – i.e. coordination problems, incomplete contracts and information asymmetries – which make it difficult in practice for the private market to facilitate the exit of failing firms in an orderly fashion (Box 2). When a debtor is suspected of

being insolvent, creditors have an incentive to engage in a "rush to the exit", rapidly enforcing their individual claims, even if it results in a reduction in the total value of recoverable assets. In practice, it is also difficult for debtors and creditors to write a complete private contract that ensures an optimal outcome ex ante due to the high number of contingencies and the fact that the debtor can acquire new assets and liabilities after the initial contract (Hart, 2000). For these reasons, insolvency regimes that contain provisions to deal in an orderly fashion with the financial distress of commercial entities (i.e. corporate insolvency regimes) and entrepreneurs who have either been trading as a sole proprietor or who are part of a closely-held private company (i.e. personal insolvency regimes) are required.

Box 2. The rationale for insolvency regimes: market imperfections on the exit margin

The existence of incomplete contracts and bargaining frictions in the case of firm distress give rise to a number of market imperfections, which private agents cannot address completely. For example:

- Asymmetric and incomplete information between debtors and creditors regarding the true value of the firm is an important impediment to efficient bargaining outcomes. Insolvency law can play a verification role by examining the assets and claims to address the problem of asymmetric information (Smith and Strömberg, 2005).
- When there are multiple creditors, the interests of individual creditors may conflict with those of the creditors as a collective (Marinc and Vlahu, 2012). Insolvency law can address coordination problems by preventing: *i)* creditor runs, leading to piecemeal liquidation even though collectively creditors would receive a higher payoff if the firm is preserved as a going concern; and *ii)* hold-out problems, when each creditor waits for the other creditors to write down their claim first.
- A firm will typically have third party stakeholders such as current and past employees (wages and pensions) and tax authorities, who are not directly involved in the bargaining process. Insolvency law can ensure that the rights of such stakeholders are protected by assigning a court-appointed official to be a part of the bargaining, by representing the rights of these parties or by government guarantees of employee and pension claims.
- Transaction costs associated with the bargaining process can lower the final value of the firm and cause inefficiencies (Hart, 2000). Insolvency laws can: *i*) directly reduce such costs (e.g. legal fees) by forcing parties to agree within a defined time period; and *ii*) indirectly reduce such costs by allowing firms to raise new financing to prevent underinvestment in viable new projects or by allowing incumbent management to stay in control to ensure that their expertise in running the firm can increase the value of the firm.
- Insolvency laws can also provide insurance to individual firms which are in distress due to an industry or macroeconomic shock that would result in fire sales (Hotchkiss et al., 2008), by postponing asset sales until liquidity conditions improve.

15. Insolvency regimes that address these market imperfections may also affect multi-factor productivity (MFP) growth through a variety of channels. First, to the extent that efficient insolvency regimes can distinguish ex-ante between non-viable and viable firms, they can strengthen market selection by facilitating the exit of the former and successful internal restructuring of the latter, which holds out the prospect of higher within-firm productivity growth in the future. Second, they can reduce the likelihood that scarce resources are trapped in inefficient firms and in turn improve the ease and speed at which such resources are reallocated to more productive uses. Third, efficient insolvency regimes – by reducing the cost of failure (Box 1) – can spur firm creation, draw more talented individuals into entrepreneurship and incentivise radical innovation over conservative business strategies. These reasons may explain the observed positive link between a lower cost to close a business and aggregate MFP growth via innovation at the global technological frontier, the broad diffusion of knowledge and efficient resource allocation (OECD, 2015a).

16. Insolvency regimes also may carry broader implications for labour productivity through their impact on capital deepening. In some European countries, inefficient insolvency regimes have recently been identified as a barrier to addressing the rise in non-performing loans (NPLs), which can tie up capital and burden banks' loan officers with restructuring tasks rather than making new loans that could finance investment, which is currently very weak (Bergthaler, et al., 2015; OECD, 2015b). Moreover, without suitable debt restructuring tools, over-extended firms could have little incentive to invest because any return is used to service their debt. From this perspective, insolvency regimes also carry important implications for the stability of the financial system.

17. Before proceeding, however, it is important to note in general equilibrium, the cost of credit and wages will reflect the risk put on various factor holders by the insolvency regime, which is likely to vary according to the characteristics of the firm. On the one hand, an insolvency regime that is less punishing of business failure may be desirable from the perspective of an entrepreneurial start-up firm experimenting with uncertain technologies. On the other hand, such a system may be less desirable for established firms which could likely borrow at a lower cost under an alternative regime, given that they have more tangible assets to pledge as collateral.[8] This suggests that the optimal insolvency regimes will likely vary according to the sector and firm type, and that insolvency regimes designed at the national level will necessarily be only "second best" and potentially entail distortions.

2.2.3 Other exit policies

18. While efficient insolvency regimes are crucial, the framework in Figure 2 suggests a need for coherence across a range of other policies, which can be summarised as four key insights.

19. First, an efficient judicial system is crucial for the effectiveness of – and in turn the incentives for stakeholders to utilise – formal insolvency procedures (Claessens and Klapper, 2005), partly reflecting the fact that the involvement of courts often accounts for the largest part of insolvency costs. Furthermore, courts' ability to verify information and enforce contracts is important for an efficient resolution of financial distress (Gennaioli, 2013; Gennaioli and Rossi, 2010). Indeed, it is likely that the ability of insolvency regimes to distinguish viable from non-viable firms will be reduced when courts are congested and judges lack the requisite expertise (Ayotte and Yun, 2009).

20. Second, product market reforms that raise competitive pressures will increase the efficiency of the exit margin by making it more difficult for weak firms to survive. In addition to strengthening market selection, such reforms will increase the likelihood that the resources released by exiting firms will be reallocated to more productive uses, given the positive association between pro-competitive reforms and allocative efficiency (Andrews and Cingano, 2014).

21. Third, even if product market regulations are well-designed, inefficient firms may still linger in the market due to policy features in other areas. For example:

- *Inappropriate public support schemes*: Subsidies to ailing firms or other forms of support for sunset industries will weaken market selection. One concern is the persistence of crisis-induced policy initiatives, such as government loan guarantees to SMEs, which are yet to be scaled back in some OECD countries.
- *Financial regulation failures*: Banks' lack of incentives to deal with NPLs and realise losses on their balance sheets, that may arise from corporate bankruptcies may lead to "evergreening",

8. For example, evidence from Italy suggests that the introduction of reorganization procedures facilitating loan renegotiation in 2005 increased interest rates and reduced investment, while a subsequent reform in 2006 which strengthened creditor rights in liquidation had an opposite effect (Rodano et al., 2015).

thwarting the natural exit of insolvent firms. For instance, in order to prevent the realization of losses on their balance sheets, Japanese financial institutions in the 1990s continued to provide credit to less productive firms, more so among banks that reported capital ratios close to the required minimum (Peek and Rosengren, 2005; Caballero et al., 2008). Loss recognition may also become less urgent during periods of very loose monetary policy.

- *Fiscal distortions*: If financially weak firms are over-leveraged, the inherent bias toward debt over equity in corporate financing, partly induced by tax systems, might prolong the existence of marginal firms and disproportionately penalise more innovative firms.[9] Corporate tax systems that have preferential rates for small firms, which tend to be less productive, may have similar effects. Finally, the removal of inheritance tax exemptions for family owned firms may strengthen market selection to the extent that they lead to the exit of poorly managed family owned firms (Bloom and Van Reenen, 2007).
- *Corporate governance issues*: The design of corporate law may complicate mergers and acquisitions and takeover procedures, while corporate governance procedures (e.g. accounting standards) may be unable to transparently reveal the true financial state of troubled firms.
- *Lax environmental regulation*: A reluctance to tighten environmental policies may weaken market selection to the extent that more stringent environmental regulations tend to penalise laggard firms, while being associated with an improvement in productivity outcomes for the technologically most advanced firms (Albrizio et al., 2014).
- *Weak rule of law*: Lax enforcement of regulations and tolerance for informality may prolong the survival of marginal firms.

22. Finally, the aggregate impacts of exit policies that strengthen market selection will be enhanced by reallocation-friendly policies. Policies that facilitate the growth of productive firms will over time make it increasingly difficult for weak firms to survive, thus indirectly strengthening market selection and help channel the released resources to more productive uses. Such policies include:

- *Facilitating job turnover*: Easing employment protection legislation (EPL) can facilitate the reallocation process (Andrews and Cingano, 2014). Collective dismissals (CD) rules are particularly relevant – i.e. additional delays, costs and notification procedures when an employer dismisses a large number of workers at a time – since firm exit cannot be realised without CD on some scale. Crucially, the design of CD legislation varies across countries and it generally became more restrictive across the OECD over 2008 to 2013 (OECD, 2013a). In some instances, however, information sharing and consultation between firms and worker representatives may improve prospects for restructuring to the extent that it facilitates access to training.
- *Facilitating labour mobility*: The productive re-deployment of labour from exiting firms can be facilitated by housing market policies – e.g. low transaction costs, less cumbersome building regulations and fewer rent controls – that promote residential mobility. The same is true for well-designed active labour market policies (ALMPs), which are particularly effective at boosting the re-employment probabilities of workers displaced by firm exit, compared to workers which lost their job due to other involuntary reasons (Andrews and Saia, 2016).

9. The impact of reducing corporate income tax rates on market selection is unclear given that marginal firms are unlikely to have profits and thus will not be directly exposed to the policy change. There may be indirect effects, however, if reductions in corporate tax rates disproportionately stimulate MFP growth for firms closer to the frontier (Andrews and Criscuolo, 2013), thus making it more difficult for marginal firms to survive. But the tendency for frontier firms that are part of a MNE group to shift profits to avoid corporate taxation further complicates the picture.

- *Facilitating capital reallocation*: Theoretical evidence shows that financial market development can support the productive reallocation of capital (Buera et al., 2011), while the growth potential of innovative firms tends to be stronger in countries with higher stock market capitalisation and more developed risk capital markets (Andrews et al., 2014).

- *Facilitating the reallocation of intangibles*: While there are many barriers to the efficient reallocation of intangible assets (Andrews and Criscuolo, 2013), intellectual property regimes that support the development of a secondary market for patents will likely foster the reallocation of codified knowledge from exiting firms to more productive uses.[10] Similarly, less binding non-compete covenants – which prevent workers from joining competitors or forming spin-offs (Marx et al., 2009) – may promote the productive re-deployment of tacit knowledge from exiting firms.

- *Limiting size contingent policies* – the costs of which fall more heavily on larger firms – thereby creating barriers to firm growth. For example, labour regulations in France – which become more stringent once a firm reaches a size of 50 employees – induce a bunching of firms just below the 50 employee threshold (Garicano et al., 2013). This carries adverse consequences for allocative efficiency since these firms are relatively more productive than larger firms on the other side of the threshold.

3. Corporate insolvency regimes

3.1 Goals and best practices

23. To be effective, insolvency regimes should be accessible to distressed firms[11] and facilitate exit in a predictable and expedient manner. More specifically, it should: *i*) incentivize the restructuring of viable firms and the liquidation of non-viable ones at low cost in order to maximise the total value of proceeds to be distributed between creditors, shareholders, employees and other stakeholders[12]; *ii*) balance the interests of the parties involved to ensure an equitable resolution without discouraging future risk-taking by investors and entrepreneurs; and *iii*) provide for a timely resolution of insolvency.

24. The objectives of insolvency regimes are well-established, but there is less consensus on their optimal design. Given the complementarities between insolvency regimes and other institutional settings, there is no "one size fits all". Nevertheless, there have been a number of studies that have outlined international best practices (IMF, 1999; INSOL, 2000; UNCITRAL, 2004; World Bank, 2015). These include, but are not restricted to:

- A clear trigger that induces either the creditor or the debtor to initiate insolvency proceedings. This should be designed to encourage debtors to take appropriate actions sufficiently early on in their financial difficulties, thereby increasing the chances of a successful restructuring.

10. Of course, the rise of patent aggregators (PAs) raises questions about the extent to which the secondary market is facilitating an efficient reallocation of patents in the IT sector. While PAs could facilitate the reallocation of intangibles by acquiring patents from bankrupt companies, organising patent auctions and by helping businesses to obtain the rights to use ideas through licensing arrangements (see Chien, 2009), substantial deadweight losses arise from litigations prompted by PAs (Bessen, et al., 2012).

11. Until recently, the poor design of the Spanish insolvency regime has meant that secured creditors typically foreclosed on loans and seized collateral, providing few opportunities for marginal firms to restructure through formal insolvency procedures (see García-Posada and Mora-Sanguinetti, 2014).

12. These include governments in the form of unpaid taxes and insolvency practitioners.

- The availability of an efficient liquidation option and a fair opportunity for rehabilitation, which helps to assess whether firm value is maximised by liquidation or restructuring. Specifically:
  - Supporting rehabilitation of viable firms: The regime should provide a mechanism that prevents a "hold-out" by a minority of creditors by enabling the overriding of their votes on a restructuring plan by a requisite majority of creditors. The interests of dissenting creditors should also be protected by ensuring that they are treated in the same way as similarly situated creditors.
  - Speedy liquidation of non-viable firms: The system should facilitate the sale of the business as a going concern, provide flexibility in the liquidation process, and incentivise the speedy exit of non-viable firms so as to maximize value for all parties.
- A design that discourages strategic behaviour by creditors and debtors. For example:
  - In the absence of well-designed voting rights for creditors, an individual creditor can threaten to force an inefficient result in the negotiations (Quinn, 1985).
  - In the absence of credible threats, debtors can also strategically default, i.e. declare insolvency to obtain debt relief.
  - Fraudulent entrepreneurs can strategically "tunnel" assets (i.e. transfer assets prior to insolvency) so it is important that the system can differentiate between honest and fraudulent entrepreneurs – a distinction that does not exist in many European countries in contrast to the United States.[13]
- An option for out-of-court settlements (see below for a discussion).
- Procedural rules on cross-border insolvency and an equal treatment of foreign and domestic creditors.
- Given that in some countries, corporate insolvency may lead to personal insolvency once the firm fails, even where the firm is a separate legal entity, the design of personal insolvency regimes also matter. For example, an efficient personal insolvency regime should take into account the debtors' prospects and incentives for future income generation, with a view to enabling a post-insolvency second chance for entrepreneurs.

3.2 Procedures

25. Figure 3 illustrates the three key stages of the insolvency process and how they relate to the time, cost and chance of success of the process. Procedures available to enable firms to address their financial difficulties can be considered in three broad categories:

- ***Out-of-court settlements***: Debtors and creditors can renegotiate their contract without formal intervention by the courts. This may result, for example, in the rescheduling of payments, reduction of interest rates, or total or partial write-off of the debt or of new loan facilities. Such out-of-court agreements cannot impose a restructuring plan on dissenting creditors.
- ***Hybrid preventive restructuring procedures***: These combine the benefits of judicial control in formal proceedings (automatic stay of assets, binding effects of a restructuring plan on a dissenting minority of creditors) with the advantages and low cost of out-of-court procedures (ease of negotiation, debtors remaining in control of their assets). They should be designed to

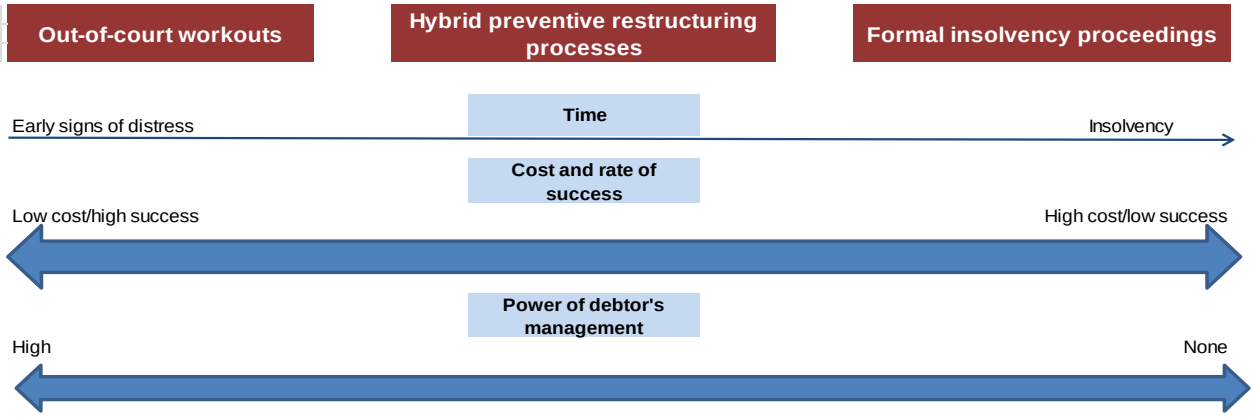
13. In the United States, a fraudulent entrepreneur may not be eligible for a debt write-off, will not be eligible for discharge from records and databases and may be held criminally liable.

balance the relative rights of different stakeholders. For example, while only requiring a majority of creditors for the approval of a rehabilitation plan contributes to the success of restructuring, a key issue is how to protect the interests of dissenting creditors.

- ***Formal insolvency or restructuring proceedings***: Debtors and creditors negotiate to reduce debt obligations and restructure or liquidate through the intervention and supervision of the court or an insolvency administrator, which can restrict their rights and actions. For example, the debtors can lose control of their assets and the restructuring plan can be binding on all creditors, even if they are dissenting.

26. The lack or non-widespread use of informal proceedings, particularly in Southern European countries (see Costantini, 2009), can push viable firms experiencing temporary financial distress into formal insolvency proceedings. Delays and higher costs associated with formal proceedings can erode the final value of the firm, prevent the quick reallocation of assets and resources of distressed firms to more productive uses and limit the opportunity of entrepreneurs to start a new business, lowering business dynamism. Restrictive insolvency regimes can also result in the relocation of dynamic and innovative companies to jurisdictions with less restrictive insolvency regimes. Furthermore, lack of informal proceedings can exacerbate the trade-offs in the design of insolvency regimes.

Figure 3. Key stages of the insolvency process



Source: Carcea et al. (2015).

3.3 Ex ante and ex post efficiency

27. The key trade-off in designing insolvency procedures concerns on the one hand, the incentives it provides investors to extend credit and to monitor firm performance, and on the other hand, the incentives it provides debtors to manage the firm efficiently and transparently. Insolvency regimes can promote efficient outcomes by providing these incentives: *i*) prior to insolvency when the firm is healthy (ex ante efficiency); and *ii*) once the firm is in distress and enters insolvency (ex post efficiency). The literature has tended to put more emphasis on ex post efficiency incentives, partly because it is easier to measure, but ex ante efficiency will also be important in order to discourage risky behaviour from creditors and managers (i.e. moral hazard). Moreover, as discussed below, ex ante and ex post efficiency incentives can conflict with each other, complicating the design of insolvency regimes.

28. When any inefficient firm enters bankruptcy, the best outcome is to liquidate assets, thereby releasing capital to higher value uses. In practice, however, filtering – i.e. correctly distinguishing between viable and non-viable firms – can be a problem. In this regard, some economically inefficient failing firms mistakenly may be categorised as efficient and allowed to restructure instead of liquidated (type-I errors).

Conversely, type-II errors occur when some economically efficient firms that encounter temporary financial stress are liquidated, either because no restructuring procedure exists or because the existing procedure mistakenly categorises them as inefficient.

29. To achieve ex ante efficiency, insolvency laws should act as a screening mechanism that: *i*) protects the rights of creditors adequately to give them incentives to supply credit at low cost, but not so much as to reduce their incentives to closely monitor the debtors' ability to pay; and *ii*) provides a sufficient threat to the debtor and the management to prevent them from taking imprudent loans, so as to ensure that they take repayment seriously and not conceal the true financial state of the firm (which can result in type-I errors).[14]

30. Once the firm enters insolvency, ex post efficiency aims at: *i*) maximizing the total value of assets to be divided between debtors, creditors and other stakeholders, including workers; *ii*) minimising the cost of insolvency, by preventing a "race to courts" by individual creditors and an inefficient piecemeal solution (which can result in type-II errors); and *iii*) reaching a welfare increasing asset reallocation.

31. Features of insolvency regimes can contribute to the ex ante and ex post efficiency aims in opposite ways. For example, retaining incumbent management might be good for ex post efficiency especially if they have specialised skills and expertise regarding the firm and also prevent them from high risk-taking once the firm enters distress (i.e. gambling for resurrection). However, managers who know that they will stay in charge, might have a weaker incentive to avoid insolvency, thus decreasing ex ante efficiency (Hart, 1995; Berkovitch et al., 1997).

32. In general, creditor-friendly laws (see below) contribute to achieving ex ante efficiency compared to debtor-friendly laws, but as the firm approaches insolvency, they can adversely affect ex post efficiency. Creditor-friendly insolvency regimes guarantee high payoffs to creditors in case of insolvency and provide a sufficient penalty to the debtor and management such that they do not take unnecessary risks or strategically default. Ex ante, this leads to improved credit conditions (Berkowitz and White, 2004; Djankov et al., 2008). However, once the firm enters distress, the debtors – in the knowledge that they will not be in a strong position – may attempt to postpone insolvency by hiding losses through the use of creative accounting or increasing cash flow by spending less on R&D and product quality. This problem may become more acute if incumbent management knows that they will be removed in case of insolvency (see Section 3.5). The creditors, on the other hand, will have an incentive to liquidate the firm rather than restructure, resulting in excessive liquidation and a higher likelihood of type-II errors. This could further reduce the incentives for new entrants to experiment with uncertain technologies and business practices.[15]

3.4 Key features of corporate insolvency regimes

33. With the three key stages of the restructuring process (Figure 3) and the trade-offs in mind, Figure 4 provides a broad overview of how the balance of power between creditors and debtors and the various options open to each party will influence the efficiency of the insolvency regime, assuming away for the sake of simplicity the possibility that the financial problems of the firms are a product of fraud. We

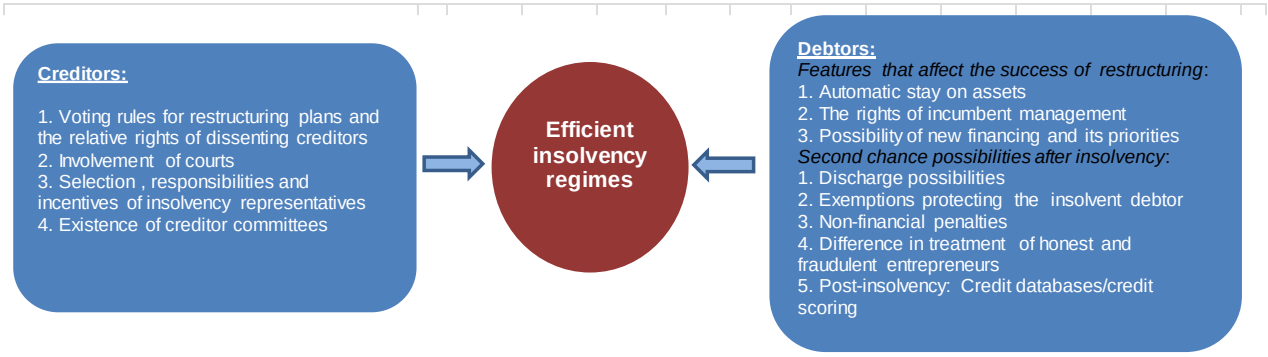
14. There is conflicting evidence regarding the success of Chapter 11 restructurings in the United States in minimising type-I errors. On the one hand, evidence suggests that the percentage of large companies successfully emerging from Chapter 11 has dropped during the 2000s compared to 1980s (Baird and Rasmussen, 2003). On the other hand, there is some evidence that Chapter 11 forces insolvent firms to scale down their leverage, and make organisational changes that help to boost firms' post-insolvency operating cash flow (Aivazian and Zhou, 2012).

15. Creditor-friendly regimes can also hinder innovation (Acharya and Subramanian, 2009) and allow creditors to appropriate rents and diminish investment into firm-specific human capital (Berkovitch et al., 1997).

also abstract from other stakeholders, such as the governments, which to the extent that they are owed taxes from exiting firms may have to finance these losses through adjustments elsewhere, such as higher corporate income tax rates, for instance. As discussed below, the design of many of these features can vary across countries with potential consequences for productivity.

34. A priori, having as many options as possible for the resolution of distress is important, without a bias either towards liquidation or restructuring as this would increase the likelihood of type I and II errors. It is important to have a well-functioning restructuring procedure because there is some evidence that on average, recovery rates are higher in restructuring and the restructuring process is not necessarily longer than liquidation (Bris et al., 2006). Furthermore, efficient preventive restructuring frameworks are associated with higher levels of entrepreneurship (Carcea, et al., 2015). A working assumption is that providing opportunities for restructuring is likely to be a desirable feature of insolvency regimes. Of course, one risk is that non-viable firms use restructuring strategically to seek protection from liquidation, lengthening the period of distress, reducing the final value of the firm and clogging up courts. Such Type-I errors clearly imply costs to productivity but our working assumption based on prior research is that these costs will be significantly less than those associated with insolvency regimes that excessively penalise failure and do not provide a second chance for failed entrepreneurs.

Figure 4. Key features of insolvency regimes



Source: OECD calculations.

3.5 Cross-country differences in corporate insolvency regimes relevant for productivity

35. The different objectives and the trade-off between ex ante and ex post efficiency are reflected in cross-country differences in the treatment of corporate insolvency. Insolvency and restructuring regimes tend to range from very debtor-friendly to creditor-friendly, with different outcomes. Specifically, in some countries, the most likely outcome of insolvency proceedings is liquidation (e.g. Sweden), while in others, there is a bias towards restructuring (e.g. France). The United States could be classified as a hybrid country, where well-defined laws and procedures exist for both liquidation (i.e. Chapter 7) and restructuring (i.e. Chapter 11).[16]

36. Typically, Chapter 11 of the United States insolvency code has been viewed as a successful restructuring system, and contains the following features: *i)* there is an automatic stay that stops all payment of interest and principal to creditors and prevents secured creditors from foreclosing on their collateral; *ii)* the management continues to run the operation; *iii)* the debtor may get debtor-in-possession financing via a line of credit or new financing; *iv)* to prevent hold-outs, only "impaired" creditors – i.e. those that would receive less than the value of their loan but greater than zero in liquidation – are allowed

16. In the United States, the firm can initiate both Chapter 7 and Chapter 11 and while creditors can initiate Chapter 7, incumbent management can potentially convert this action to Chapter 11.

to vote and only a majority of creditors in each class have to approve the plan; and *v)* the court has the power to "cram-down" a restructuring plan on dissenting creditors, if they are deemed to get a better return under the plan compared to that in liquidation.

37. There has been some convergence across countries towards the US-style restructuring system over time and the limited available evidence suggests that this has been associated with favourable outcomes.[17] However, the blanket adoption of Chapter 11-style provisions will not necessarily be desirable in other countries due to differences in complementary institutions.[18] For example:

- Creditor-friendly insolvency regimes might still be desirable in environments where enforcement quality and judicial efficiency are low, in order to reduce the incentive for individual creditors to "rush to the exit" and collect debt privately. As judicial efficiency improves, however, the scope for insolvency regimes to become more debtor-friendly increases; for example, by allowing honest but unlucky managers to remain in control and prevent unnecessary and inefficient liquidations (Ayotte and Yun, 2009). For example, following a Chapter 11-style reform to Brazil's insolvency regime in 2005, firms operating in districts with less congested courts experienced higher access to loans and larger increase in investment and productivity than firms operating in districts with more congested courts (Ponticelli, 2015).
- Restructuring proceedings might be less successful in bank-based financial systems to the extent that continuation seems more likely with an infusion of new equity – as opposed to debt – financing, since fully-secured creditors do not benefit from restructuring and would prefer liquidation (Brouwer, 2006).

38. Table 1 identifies eight specific features of insolvency regimes which vary across countries and are relevant for aggregate productivity outcomes. These specific features are linked to productivity growth through three key channels identified in Section 2:

- The selection effect – i.e. the productivity of exitors relative to continuing firms.
- The reallocation effect – i.e. opportunity cost from trapping scarce resources in marginal firms and the potential gains from rapidly re-deploying such resources to more productive uses.
- The within-firm effect – i.e. the scope for internal restructuring to deliver higher firm productivity in the future.

17. Evidence suggests that reforms in a number of European countries introducing some of the features conducive to successful restructuring have resulted in lower incidence of liquidations (the United Kingdom, Spain), shorter insolvency proceedings (Spain) and increased restructuring as a share of total insolvency related procedures and higher recovery rates (Italy). See European Commission (2014a) for details.

18. Indeed, Chapter 11 procedures have been criticised for becoming more inefficient – i.e. complex and costly – over time (Australian Productivity Commission, 2015), highlighting the importance of design.

Table 1. Specific features of insolvency regimes and productivity growth

	Extensive margin			***Intensive margin***
	Selection effect		*Reallocation effect*	*Future within firm productivity*
Specific features of insolvency regimes	*Restructuring of viable firms*	*Exit of non-viable firms*		
Creditors ability to initiate restructuring	+			+
Availability of a stay on assets	+			+
Possibility and priority of new financing over unsecured creditors	+		-	+
Retention of incumbent management during restructuring	"+/-"			+
Possibility to "cram-down" a restructuring plan on dissenting creditors	+			+
Limited involvement of courts		+	+	
Emphasis on employment preservation		-	-	-
Availability of a "fresh start"		+	+	+

Notes: The table shows the links between key features of insolvency regimes and productivity growth via three channels (market selection, resource reallocation and within-firm productivity). For example, having a stay on assets gives viable firms the opportunity to restructure successfully – increasing productivity via stronger market selection – which in turn creates scope for future productivity gains via the within-firm productivity channel.

Source: OECD calculations.

39. The first seven features are discussed in the next subsections, while the last feature is considered in Section 4. While each feature is important in its own right, as discussed below, complementarities may emerge between some of these features.

3.5.1 Creditors ability to initiate restructuring

40. The possibility of starting restructuring procedures early is a key element of an efficient insolvency regime as delays can increase costs and make it less likely that viable firms are successfully restructured (Section 3.1). Hence, it is important that both debtors and creditors have the opportunity and the right incentives to initiate such procedures. While debtors are allowed to initiate both liquidation and restructuring in all OECD economies, the ability of creditors to initiate restructuring varies somewhat across countries (Table A1 in the Appendix).[19]

41. The lack of creditors' ability to initiate restructuring may increase the chance that viable firms are liquidated (i.e. the probability of type-II errors). Giving the creditors an option to initiate restructuring not only prevents delays and minimises costs, but can also lead to future within-firm productivity gains by giving viable firms the opportunity to restructure and continue their operations successfully.

42. Complementarities also emerge between the initiation of restructuring and other features of the insolvency regime. For example, it is especially important that this option is available in countries where the system may provide low incentives for the debtor to file for restructuring, such as the removal of incumbent management from the running of the firm (see Section 3.5.4).

19. For example, in Australia, Austria, Belgium, Canada, Chile, Estonia, Greece, Hungary, Iceland, Latvia, Lithuania, Luxembourg, the Netherlands, Norway and Slovenia, creditors are only allowed to initiate liquidation, but not restructuring.

3.5.2 Availability of a stay on assets

43. Continuity of firm operations during the restructuring process increases the chances of a successful restructuring. In this regard, having a stay on assets provides room for parties to negotiate without the interruption of enforcement actions, while the absence of a stay on assets can lead to premature liquidations, even when the value of keeping the firm in operation is higher than its liquidation value (Wruck, 1990). This could not only result in a higher probability of viable firms being liquidated, but also discourage entrepreneurs from starting a new business and affect the innovation strategy adopted by entrants (Box 1). On the other hand, if creditors have limited ability to recuperate their loan, this can increase the cost of credit, which can adversely affect entrepreneurship (Armour and Cumming, 2008; Lee et al., 2011; Broadie et al., 2007). Hence, safeguards are necessary to ensure that the stay is time-limited and be used strictly to facilitate a restructuring plan.

44. Since 2000, there has been a convergence in the use of stay on assets across OECD countries, although whether it is granted automatically and the length of the stay varies (Figure A1 in the Appendix). There is no consensus on whether the stay should be automatic, for example, European Commission (2014a) recommends that a stay should be granted at the request of the debtor. Nevertheless, the role of a stay on assets in giving viable firms the opportunity to restructure and continue their operations is widely acknowledged. Even if the insolvency regime can select viable firms for restructuring, stronger market selection will not necessarily occur if creditors can disrupt firm operations by claiming productive assets as is the case when a stay is lacking (Table 1). In this regard, it also improves the chance that internal restructuring is successful, thus creating scope for future within-firm productivity gains.

3.5.3 Possibility and priority of new financing over unsecured creditors

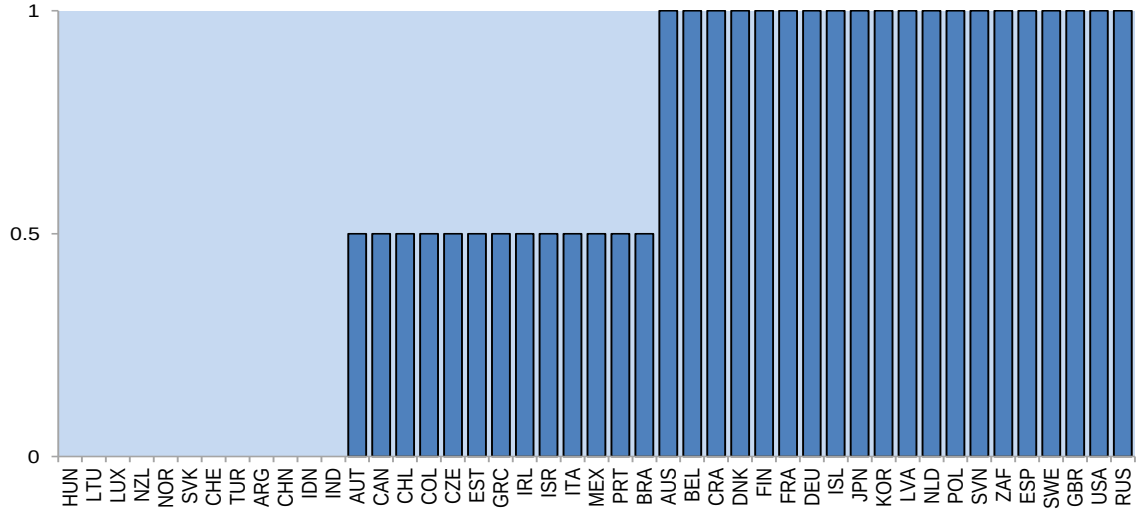
45. Priority rules refer to the order in which various stakeholders get paid in the event of liquidation. While these are specified ex ante in the debt contract in accordance with general insolvency laws, there might be ex post deviations from absolute priority rules. Typically, senior creditors are paid in full prior to any payment being made to junior creditors. In particular, securitised creditors have the highest priority, and all creditors have seniority to equity holders or shareholders, who tend to take on riskier investments. However, there can be other stakeholders – including employees, suppliers and tax authorities – whose priority rights vary across countries (Table A2 of the Appendix).

46. In general, retaining the (ex ante) priority order increases the efficiency of the system by making it more predictable and fair. At times, however, deviations from absolute priority may be warranted (e.g. priority for new financing), when it might lead to a successful restructuring and a higher final recovery value for all creditors (EC 2014a and 2014b; Bergthaler et al., 2015). However, the extent and the exact design of the priority is less clear cut. International best practice suggests that such new financing should be granted priority ahead of unsecured creditors. At the same time, it is important to ensure that existing creditors do not exploit the priority of new financing to move on to the top of the queue, by injecting new capital to the firm. Unless it is agreed by the secured creditors, post-commencement financing should normally not have priority over existing secured creditors since this would adversely affect the availability of credit and legal certainty.[20]

20. This applies to cases when all creditors still are more likely to recover their investment with a successful restructuring than in the alternative case of liquidation. Secured creditors refer to those lenders which hold a secured claim, i.e. secured by collateral taken as a guarantee to enforce a debt in case of the debtor's default. See Section 3.5.7 for a discussion of how priority rules with respect to secured creditors differ across countries.

47. There are significant cross-country differences both in terms of the availability and the priority of new financing to distressed or restructuring firms (Figure 5). Of the 45 OECD and Partner countries, there is no priority for new financing in 12 countries, new financing has priority over both secured and unsecured creditors in 13 countries[21], while the remaining 20 countries grant priority over unsecured creditors only, which the theoretical literature suggests is most desirable.

Figure 5. Possibility and priority of new financing



Notes: No priority=0; priority over all pre-commencement creditors, secured or unsecured=0.5; priority over only pre-commencement unsecured creditors=1.

Source: World Bank, Doing Business Database.

48. Without the possibility of new financing, restructuring might fail, especially for viable firms who are experiencing temporary problems. Hence, new financing would contribute to lowering type-II errors and boosting productivity via the market selection channel, which will also be followed by higher future productivity upon the success of the firm restructuring. Against this, some existing creditors might want to exploit the priority of new financing to move on to the top of the queue by reinvesting in the distressed firm, which could induce credit misallocation and undermine the growth of more productive firms.

3.5.4 Retention of incumbent management during restructuring

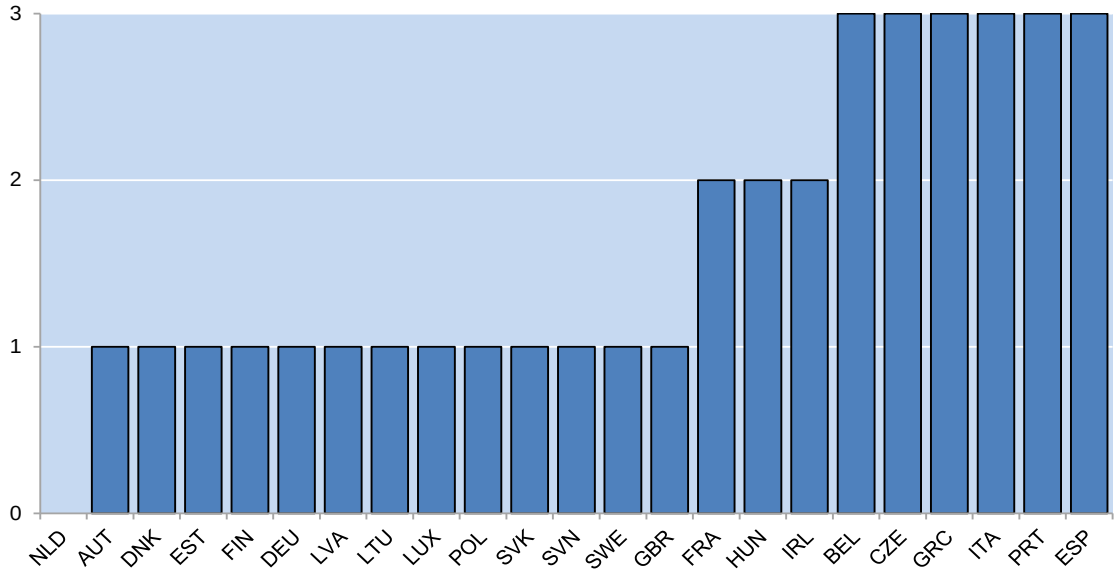
49. Allowing incumbent managers to stay in charge of the day-to-day operations of a firm in distress rather than forcing them out during restructuring proceedings can affect productivity in conflicting ways. Insolvency regimes that do not provide sufficient cover for incumbent management increase the private incentives of management to hide the true financial state of the firm and gamble on resurrection (Marinč and Vlahu, 2012). This would likely weaken market selection and, by delaying the process, reduce the chance that restructuring is successful in delivering higher future productivity gains. These channels will also operate if the retention of incumbent management increases the incentives for management to make firm-specific productivity-enhancing investments in the event that new financing is available (von Thadden

21. The former group includes Argentina, China, Hungary, India, Indonesia, Lithuania, Luxembourg, New Zealand, Norway, Slovak Republic, Switzerland and Turkey, while the latter group includes Austria, Brazil, Canada, Chile, Colombia, Czech Republic, Estonia Greece, Ireland, Israel, Italy, Mexico and Portugal.

et al., 2010; Ayotte, 2007).[22] Against this, retaining incumbent management could weaken market selection if it incentivises secured creditors to liquidate, rather than restructure, viable firms (Kaiser, 1996).[23]

50. Cross-country differences emerge regarding the fate of incumbent managers. As discussed above, Chapter 11 in the United States allows managers to retain control of the firm. Across European countries, however, incumbent management retains varying degrees of power in accordance with the responsibility delegated to the insolvency administrator. Figure 6 shows that even if the debtor is left in control of the daily operations, supervision by an insolvency practitioner or the courts may be obligatory or at least used, which can increase costs and the burden on the judicial system. It is also interesting to note that incumbent management tends to retain control in Southern European countries, where managerial quality is typically low (Bloom and Van Reenen, 2007; Adalet McGowan and Andrews, 2015).

Figure 6. The fate of incumbent management



Notes: Debtor may be divested of the day-to-day operation of business and an insolvency practitioner is appointed by court=0; An insolvency practitioner is appointed by court but he does not take over the administration of business or the court itself supervises the procedure=1; an insolvency practitioner can be appointed outside court (e.g. elected by the committee of creditors) =2; no obligation to appoint an insolvency practitioner=3.

Source: Carcea et al. (2015).

3.5.5 Possibility to "cram-down" a restructuring plan on dissenting creditors

51. Requiring a unanimous vote by all creditors on a restructuring plan can delay proceedings. Thus, allowing the approval of such a plan by only a requisite majority of creditors (the so-called "cram-down") can strengthen market selection by promoting the timely restructuring of viable firms that encounter temporary financial difficulties, and deliver higher future within-firm productivity gains. At the same time, in order to prevent the potential adverse effects on credit supply, it is important that the interests of

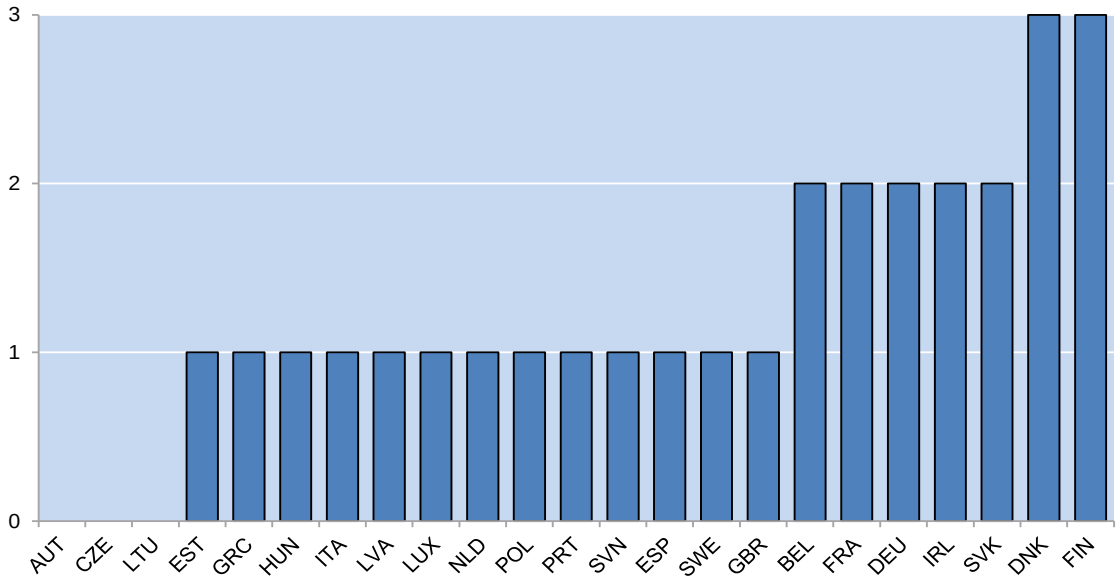
22. Of course, it is likely that the design of management compensation schemes will also affect incentives for firms to undertake costly productivity-enhancing investments, where the benefits might only be realised with a lag.

23. Furthermore, allowing management to stay on the job can be perceived by creditors as a block to secure repayment on their debt, thereby increasing the cost of credit and reducing firm entry rates, especially if creditors believe that managers can default strategically (Moulton and Thomas, 1993).

dissenting creditors are protected by ensuring that they are treated equally to other creditors within the same class and would receive under the plan at least as much as they would receive under liquidation.

52. There are significant cross-country differences in terms of the relative voting rights of creditors on a restructuring plan (Figure 7). For example, in Austria and Lithuania, there is no possibility of a majority decision, while in a number of countries (e.g. Greece, Italy and the United Kingdom), certain categories of creditors (e.g. employees, secured creditors) can be excluded from being bound by a "cram-down". There is some tentative evidence that allowing majority decision on plan approval can improve insolvency outcomes. Until 2014, the Spanish insolvency system did not have the possibility of a "cram-down", which increased the cost and time of insolvency proceedings.[24] Together with other reforms (e.g. the introduction of out-of-court settlements for SMEs and consumers and the introduction of the possibility of a "fresh start"), reforms allowing the "cram-down" of a restructuring plan on dissenting creditors has shortened the process and lowered the share of firms in liquidation.

Figure 7. Possibility to "cram-down" a restructuring plan on dissenting creditors



Notes: No possibility of majority decision or no possibility of affecting the rights of creditors=0; possibility of majority decision, but certain creditors excluded (tax authorities, employees, secured creditors, commercial creditors)=1; possibility of majority decision involving all types of creditors and all creditors, whether affected or not=2; and possibility of majority decision involving all types of creditors and possibility to involve only those who would be affected by the plan=3.

Source: Carcea et al. (2015).

3.5.6 Limited involvement of courts

53. Court involvement – directly or through court-appointed insolvency practitioners – is important in guaranteeing the rights of different parties involved and can increase ex post efficiency by acting as a coordination tool. However, court involvement can come at a cost – particularly for smaller firms that lack scale to cover the associated fixed costs (Bergthaler et al., 2015) – so it is essential to: *i*) limit court involvement to only those cases where it is absolutely necessary; *ii*) improve the expertise of the courts to deal with complex insolvency cases where their intervention is required; and *iii*) effectively design the compensation schemes for insolvency practitioners.

24. This tended to bias the capital structure of micro firms towards mortgage loans, which require collateral and tangible investment, and lowered firms' access to unsecured lending such as venture capital, the firm size distribution and aggregate productivity (García-Posada and Mora-Sanguinetti, 2014).

54. Although some stages of a restructuring process require court involvement, most procedural steps – in principle – can be dealt with out-of-court. Doing so could reduce the workload of the courts, enabling them to focus on a more timely resolution of those difficult cases where court involvement is necessary (Franks and Sussman, 2001; Betker, 1997).

55. When courts are involved in the process, there are cross-country differences regarding the extent of the discretionary power of the judge (Carcea et al., 2015). These differences typically relate to: *i*) how much the judge can affect the decisions about the initial candidates and the ultimate choice of the insolvency practitioner; and *ii*) the fate of the firm (i.e. liquidation or restructuring). Limiting the involvement of courts to where it is only necessary can raise aggregate productivity by facilitating the exit of non-viable firms (i.e. strengthening market selection) and to the extent this is achieved in a more timely manner, release scarce resources to be re-deployed to more productive uses (i.e. the reallocation channel).

56. The rationale behind giving discretionary power to the judge is often to prevent "socially inefficient" liquidations, such as in France where the main objective of insolvency law is to preserve jobs, which may hinder productivity-enhancing reallocation (see Section 3.5.7). If not well-designed, the allocation of control rights to an insolvency practitioner could also lead to inefficiencies. For example, the structure of the compensation schemes for insolvency practitioners in Hungary creates a bias to keep marginal firms alive despite large operating losses and low recovery rates (Franks and Loranth, 2014).[25]

57. Slow judicial processes have been identified as a barrier to addressing the rise in NPLs (OECD, 2015b and 2015c). Besides reforms to the insolvency law itself, the use of specialised courts and out-of-court debt workouts can be ways to address such inefficiencies. Historically, there has been a move towards out-of-court restructurings during crises as creditors try to avoid costly court-based insolvency proceedings (Laryea, 2010), including the so-called "London Rules".[26] While the need for a separate, specialised bankruptcy court depends on certain other institutional factors, cross-country evidence suggests that some kind of specialisation in expertise of judges and bankruptcy practitioners does pay off, leading to faster and cheaper procedures and, therefore, better recovery rates (OECD, 2013b; World Bank, 2005).

3.5.7 Emphasis on employment preservation

58. Table A2 shows that priority rules differ across countries, particularly with respect to the treatment of employee claims. Employees receive limited or no priority in Finland and Germany, while in other countries (e.g. Australia, Colombia, France, Greece and Mexico), the claims of employees receive priority over other parties in liquidation.

59. Indeed, the super priority placed on employment preservation in French insolvency law (Plantin et al., 2013) is reflected in: *i*) rules that give priority to the payment of unpaid wages before other creditors; and *ii*) the strong role of the courts which can choose a plan that maximises employment preservation without the approval of creditors, even if it results in a lower final value for stakeholders than otherwise

25. The remuneration scheme is based on a fixed percentage of both operating revenues accruing during bankruptcy and income from asset sales. When expected operating revenues are larger than the potential income from asset sales, the remuneration scheme creates incentives to operate the firm as a going concern. See Franks and Loranth (2014).

26. "London Rules" were developed in the 1970s as a solution to collective action problems which forced many firms into formal insolvency, when restructuring would have been preferable. A similar approach was used to coordinate workouts during the Asian crisis and more recently in Italy and France (Novarese, 2009; Lucheux and Pusch, 2009).

(Davydenko and Franks, 2008; Blazy et al., 2010).[27] This creates a bias toward restructuring, over liquidation, which can adversely affect productivity by: *i*) weakening market selection in the event that non-viable firms are kept on life support; *ii*) stifling productivity-enhancing reallocation across firms; and *iii*) choosing an internal restructuring strategy that is less likely to deliver future within-firm productivity gains. This raises the question of whether there are more efficient tools – such as well-designed ALMPs – to support workers displaced by firm exit (Andrews and Saia, 2016).

3.6 Measurement of corporate insolvency regimes

60. Existing policy indicators, generally based on surveys of local insolvency practitioners, a study of laws and regulations and publicly available information, capture some of the relevant features discussed above. The two main data sources are the World Bank and the European Commission.

61. Figure 8 shows the strength of insolvency framework from World Bank Doing Business (first introduced in 2015) where higher values imply that the regime is more efficient at rehabilitating viable firms and liquidating non-viable ones (Box A1 in the Appendix). The indicator is the sum of four components: *i*) access to insolvency (the type of proceedings that can be initiated by the debtor and the creditor and the trigger for initiation); *ii*) management of debtors' assets (the ability of the firm to continue operations and obtain new financing); *iii*) practices on the approval and content of the reorganisation plan (voting rights of creditors); and *iv*) relative rights of creditors in relation to other creditors, the debtor and insolvency practitioners.[28]

62. The World Bank indicator does not capture fully the availability and the length of the stay on assets, restrictions on dismissal of employees during insolvency proceedings, the relative power of courts and the fate of management, which as discussed above are also relevant. Moreover, it abstracts from the features of personal insolvency regimes, which as discussed below, also influence the efficiency of corporate insolvency regimes. To some extent, some of these gaps can be addressed using the data from the European Commission (Box A2 in the Appendix), including the role of courts and the fate of incumbent management. While these data only cover a smaller subset of OECD economies[29], they can be extended to capture the missing elements for non-European OECD countries as well as updated for the existing sample of countries, which have made extensive reforms to their insolvency regimes since the end of 2012, when the questionnaire was conducted. However, more work will be required to deliver a longer time series suitable for panel econometric analysis.

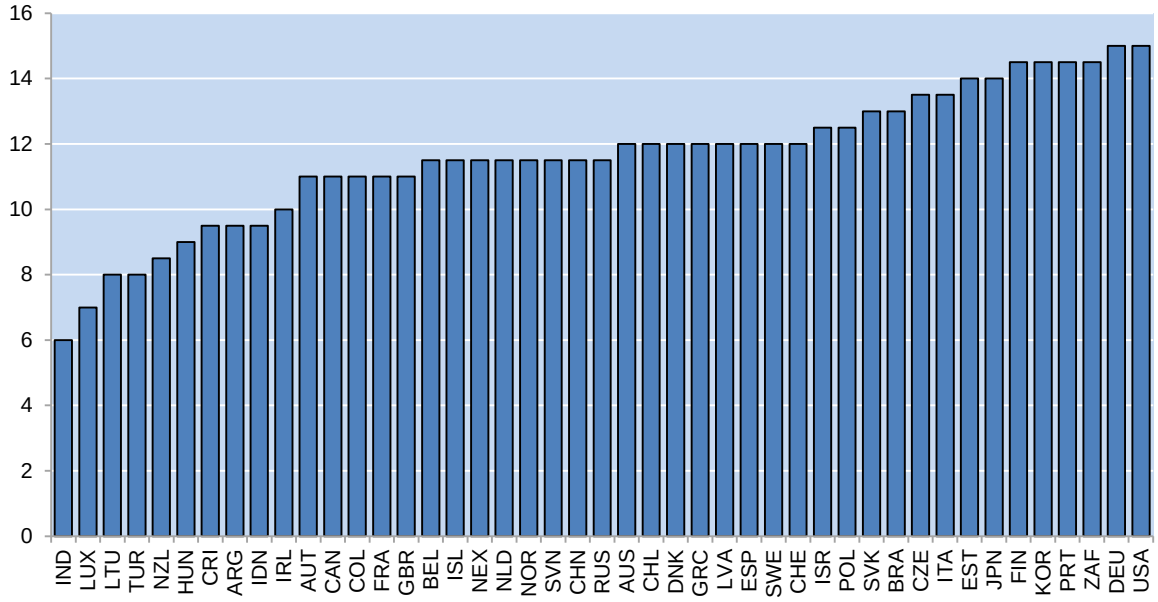
27. While the insolvency court acts as a referee between the different creditors and the debtor as they negotiate a restructuring plan in the United States, the court supervises and controls the insolvency process in France.

28. Economies that have reformed their insolvency laws in the past several years score substantially higher on the strength of insolvency framework index than economies with outdated insolvency provisions, and also tend to have more credit available to the private sector (World Bank, 2015).

29. These data cover 23 European countries (of which 21 are OECD members and Lithuania and Latvia).

Figure 8. The World Bank strength of insolvency framework indicator

Index ranging from 0 to 16, greater value indicates a stronger insolvency framework, 2015



Source: World Bank Doing Business.

63. Given that the strength of insolvency indicator in Figure 8 was only introduced in 2015, OECD research has typically used outcome-based measures from World Bank Doing Business to measure the stringency of corporate bankruptcy regimes, based on a case study introduced in Djankov et al. (2008). Respondents are asked to estimate the most likely outcome, time to complete the insolvency procedure (from default to the repayment of all or some of the money owed to the creditor) and the cost of the proceedings borne by all parties based on the case study outlined in Box A3 of the Appendix.[30] These variables are combined to calculate the recovery rate – i.e. cents in the dollar recouped by the secured creditors at the end of the proceedings (Figure A2 in the Appendix) – which proxies the present value of the debt recovered after the deduction of the costs and any value lost as a result of lengthy proceedings.

64. The simplicity of the case study is appealing and it has advantages over surveys asking what the average time of insolvency proceedings are, since insolvency procedures can be complex and survey respondents find it difficult to give an exact answer without details on the complexity of the case. However, it has limitations (see Box 3) which make the case study specific, reducing its ability to capture the links between the efficiency and the design features of insolvency regimes.

30. More specifically, the cost to close a business refers to court fees and government levies; fees of insolvency administrators, auctioneers, assessors and lawyers; and all other fees and costs as a proportion of the debtor's estate. Information is also available on the number of days it takes to close a business.

Box 3. Limitations of the case study approach underlying the World Bank outcome-based indicators

While the World Bank Resolving Insolvency outcome indicators are useful, the case study approach – based on a hotel with a particular set of characteristics – has a number of limitations that need to be kept in mind. These include:

- Only captures corporate insolvency: In many countries, corporate and personal insolvency laws differ and as discussed below, the design of personal insolvency regimes will shape the efficiency of corporate regimes, especially for new entrepreneurs.
- Trigger for the event: The firm is unable to meet its obligations due to a demand shock, i.e. worsened market conditions, so the firm might be viable in the long term.
- Focus on formal insolvency proceedings: The respondents are not offered the option of out-of court settlements and informal work-out options.
- Number and relative rights of creditors: There is only one senior secured creditor, which is a bank. Hence, there are no issues of priority, which is an important element of insolvency regimes. There are also unsecured creditors, but it is not clear what their agenda is and whether they have the power to block a foreclosure, which can differ across countries.
- Debtor/management perspective/incentives: The owner and management want to keep the firm operating, so the liquidation option from the debtor perspective is not considered.
- Information available to the creditors: The case study assumes that the creditor knows that preservation as a going concern is efficient for the firm, i.e. does not need a court or an independent representative to tell them this information. This is generally not the case and could increase the cost of proceedings.
- New financing: The firm does not require additional financing to continue to operate, which can be an important part of a successful restructuring.
- Non-complex financial structure: The case involves debt covered by collateral, i.e. the hotel, a tangible asset, while intangible assets are difficult to collateralise. In turn, this can accentuate financing difficulties, partly because the value of intangible assets is more prone to erosion during asset fire sales given the greater tendency of intangible assets to generate firm-specific value.
- Other factors not considered: *i*) the small firm size abstracts from the potential politicisation of bankruptcy; *ii*) tunneling of assets: the transfer of assets and profits out of firms for the benefit of those who control them, creating pressure for a quick piecemeal sale (not the efficient outcome); and *iii*) the firm operates only locally and the fact that debtors can go to other jurisdictions to declare bankruptcy is not captured.

4. Personal insolvency regimes

65. While the different features of corporate insolvency regimes also apply to personal insolvency regimes, personal insolvency regimes are often more relevant for entrepreneurs and small businesses. Indeed, the corporate *vs* non-corporate distinction in assets and liabilities is often blurred for small firms, either because lenders require personal guarantees or security – e.g. a second mortgage on the owner's home – or because prior to incorporating and obtaining limited liability protection, entrepreneurs typically use personal finances (Berkowitz and White, 2004; Cumming, 2012). Cross-country evidence suggests that entrepreneur-friendly insolvency laws – defined below – can increase self-employment rates, small business owners' use of insolvency proceedings (Armour and Cumming, 2008), firm entry rates (Lee, et al., 2007; Fan and White, 2003) and attract "better" entrepreneurs (Eberhart, 2014; Fossen, 2014).

66. Efficient personal insolvency systems share many of the same goals and features of an efficient corporate insolvency regime, such as the need for early warning mechanisms and informal work-outs, given the potentially high number of insolvency cases that may overburden the courts (Laeven and Laryae, 2009). The remainder of this section discusses a key aspect of a personal insolvency regime – namely its ability to enable an effective "fresh start" – and cross-country differences in the available indicators.

4.1 The importance of a fresh start

67. The extent to which personal insolvency regimes limit entrepreneurs' ability to start new businesses in the future can be driven by the availability of a "fresh start" – i.e. the exemption of future earnings from obligations to repay past debt due to liquidation bankruptcy. Indeed, the availability of a "fresh start" can reduce the costs and the stigma of failure associated with insolvency, which is one of the commonly cited barriers to entrepreneurship. In this regard, the availability of a "fresh start" can increase productivity via market selection – i.e. making it more likely that non-viable firms exit the market in a timely fashion – which in turn frees-up scarce resources to be recycled by more productive firms (Table 1).

68. The possibility of a "fresh start" can also foster productivity growth via better incentives for entrepreneurship and experimentation by: *i*) increasing firm entry (Cumming, 2012); *ii*) providing failed entrepreneurs with a second chance to apply their experience and lessons learnt to ensure their new businesses grow (Burchell and Hughes, 2006); *iii*) attracting better quality entrepreneurs – i.e. individuals with higher observed human capital (Eberhart, et al., 2014)

69. Evidence suggests that wealth has a positive effect on entry into entrepreneurship, reflecting the presence of credit constraints which are less binding for wealthy potential entrepreneurs (Evans and Jovanovic, 1989). While the availability of a "fresh start" can reduce personal risks of entrepreneurship, it may also adversely impact the availability and the cost of credit. Evidence from Germany shows that while both these effects are stronger for less wealthy individuals, the insurance effect of a more debtor-friendly personal insolvency regime exceeds the interest rate effect, encouraging less wealthy individuals to become entrepreneurs, which can contribute to inclusive growth (Fossen, 2014). Thus, the availability of a "fresh start" may not necessarily imply a trade-off between efficiency and equity.

4.2 Cross-country differences in personal insolvency regimes

70. The availability of cross-country comparable data on personal insolvency regimes is limited. One potential source is the Armour and Cumming (2008) database which contains for 15 countries over the period 1990 to 2005 (see Table A3 of the Appendix for details).[31] These data contain information on: *i*) the availability of and the time to discharge (i.e. the number of years a bankrupt must wait until they are discharged from pre-bankruptcy indebtedness); *ii*) the extent of exemptions of assets of the debtor that are not directly linked to the business (e.g. the family house or a spouse's assets); and *iii*) the restrictions imposed on civil and economic rights of the debtor.[32] The latter two features can affect productivity growth in a similar fashion to a "fresh start". For example, there is evidence that the generosity of exemptions can positively affect entrepreneurship by lowering the cost of failure and enabling more risk-averse individuals to start a business (Gropp et al., 1997), although they can also increase credit costs and collateral requirements (Berkowitz and White, 2004; Davydenko and Franks, 2008).

71. The European Commission has recently conducted a number of surveys to determine how friendly the insolvency regime is to entrepreneurs and how likely entrepreneurs are to start a new business after filing for insolvency (EC, 2014c; EC, 2011). These surveys provide valuable cross-country information for European countries, given that the stigma of failure associated with insolvency tends to be high in a number of them (Figure 9, Panel A).

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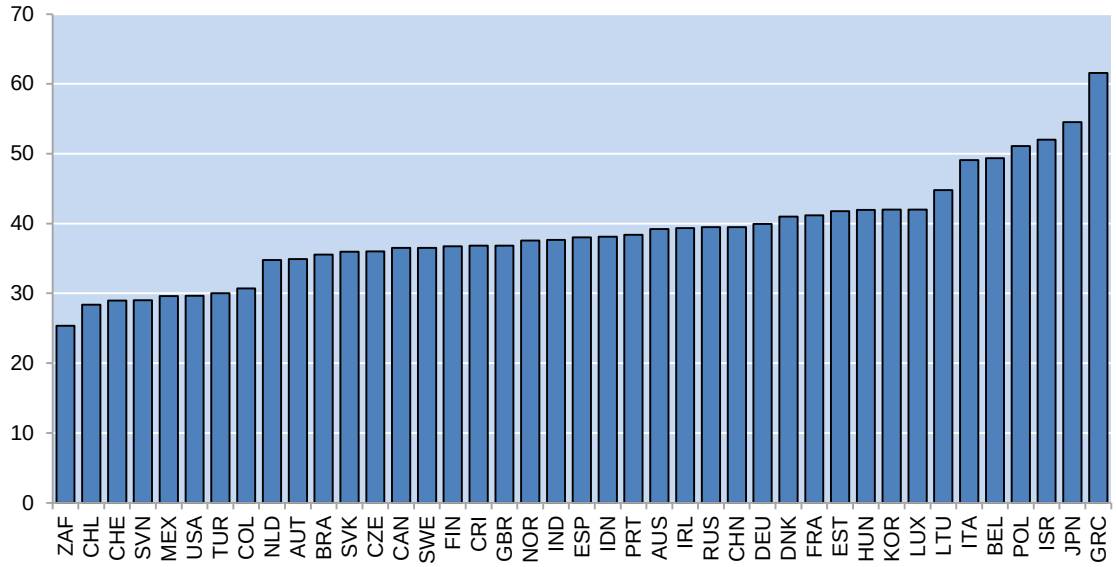
31. The countries included are Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Sweden, the United Kingdom and the United States.

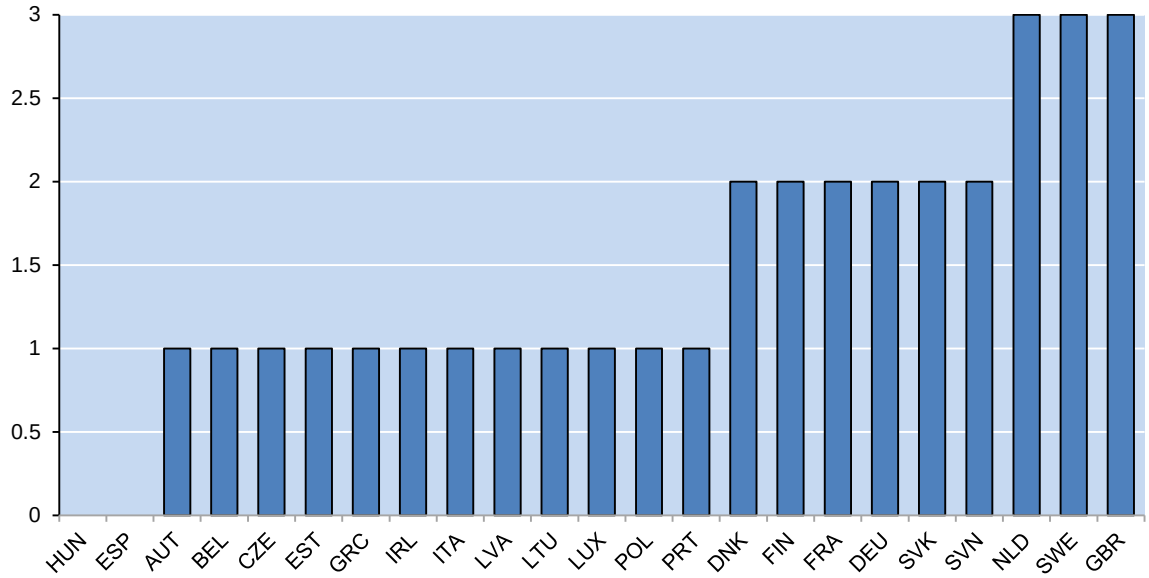
32. These include: i) the loss of power to deal with assets; loss of the right to vote or hold elected office; ii) restrictions on obtaining credit or on being involved in the management of a firm; and iii) restrictions on travel or interception of mail or being incarcerated for non-payment of debt.

Figure 9. The stigma of business failure and the availability of a "fresh start"

A: Per cent of 18-64 year olds citing the fear of failure as an obstacle to setting up a business, 2014



B: The availability and length of discharge possibilities for insolvent entrepreneurs, 2012-13



Notes: Panel B: No discharge =0; indefinite discharge period or discretion for the judge or discharge period for more than 3 years=1; discharge period of 3 years but conditional on certain factors such as the payment of a percentage of debt=2; discharge period of 3 years or less with a repayment threshold=3.

Source: Panel A: OECD (2015d), Entrepreneurship at a Glance, Paris. Panel B: Carcea, et al., 2015.

72. One of these surveys discussed in Box A2 in the Appendix shows that there are significant cross-country differences in discharge possibilities (Figure 9, Panel B). While discharge is unavailable or quite restrictive in a number of Southern European countries (e.g. Greece, Italy and Spain), discharge conditions are more conducive to entrepreneurship in the Netherlands, Sweden and the United Kingdom. While these data are informative, more detailed data on the time to discharge (in years) – rather than an indicator based on a grouping of countries according to whether their discharge period is greater or smaller than three years

– would be desirable. In response to the cross-country variation, the European Commission has recommended a harmonisation of discharge periods in Europe to a maximum of three years for honest entrepreneurs as well as removing their names from credit rating databases a short period of time after discharge. A harmonisation of procedures is also warranted given the tendency for financially-distressed individuals and firms to relocate to jurisdictions with more favourable discharge periods (EC, 2014a).

73. The European Commission has also created composite indices for the entrepreneur-friendliness of the insolvency law and the ease of second chance for 26 countries (EC, 2014c).

- Entrepreneur-friendliness of the insolvency law covers: *i)* whether courts favour debtors or creditors; *ii)* length of time of the debt repayment plan; *iii)* whether the repayment plan is part of the court procedures; *iv)* whether there is a separation of judicial and administrative roles; *v)* whether creditor committees exist; *vi)* the average time of insolvency procedures*; vii)* the exemptions protecting the insolvent entrepreneur (residential house; certain percentage of minimum income); and *viii)* non-financial consequences (e.g. disqualification from positions of public office or a role that requires financial oversight). According to this indicator, insolvency laws are entrepreneur-friendly in Austria, Germany and the United Kingdom, while they are restrictive in Ireland, Norway and Poland (Figure 10, Panel A).[33]
- Ease of second chance after insolvency features: *i)* the difference in the treatment of honest vs. fraudulent entrepreneurs*; ii)* the existence of special procedures for SMEs; *iii)* the possibility and time to discharge*; iv)* the possibility of an automatic discharge, i.e. with no court order*; v)* the duration that a negative credit score is maintained*;* and *vi)* the possibility of removal from a credit database after discharge. According to this indicator, chances to successfully restart a business are low in Denmark, Estonia, Norway and Poland, while honest entrepreneurs can get a second chance easily in Belgium, Portugal and Slovenia (Figure 10, Panel B).

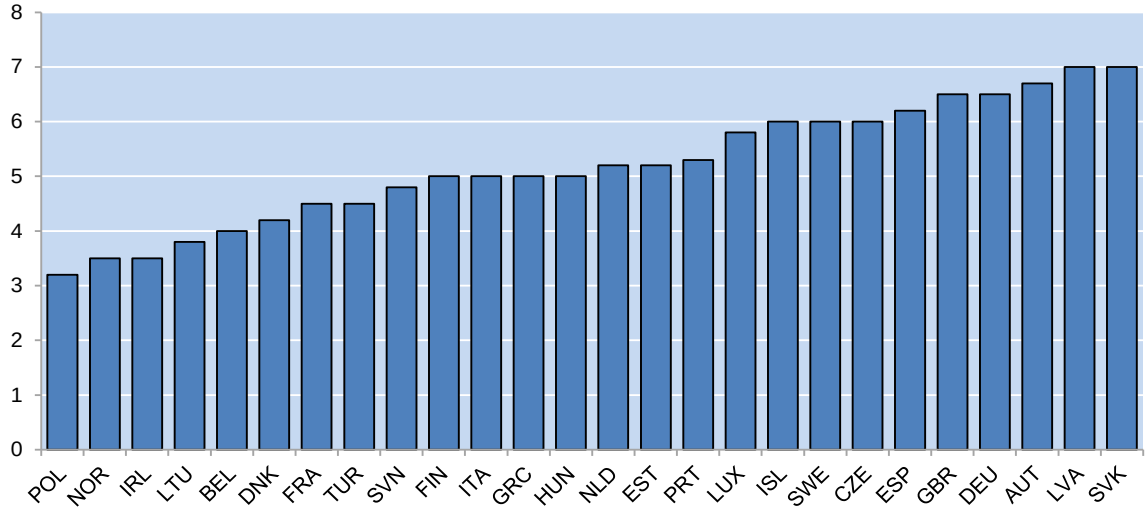
74. The available data sources suggest that using surveys and publicly available legal sources are useful in getting information on the relevant institutional characteristics. Hence, updating and extending the time and country coverage of the Armour and Cumming (2008) data is desirable, given the importance of personal insolvency regimes for entrepreneurship and productivity, and the fact that there have been changes to it in a number of OECD countries in recent years, including in Estonia, Greece, Hungary, Ireland, Italy, Latvia, Poland and Spain (IMF, 2015).[34]

33. While Norway has a relatively efficient corporate insolvency regime, highly complex legal procedures which only result in discharge after a long period make the personal insolvency regime less efficient (OECD, 2014).

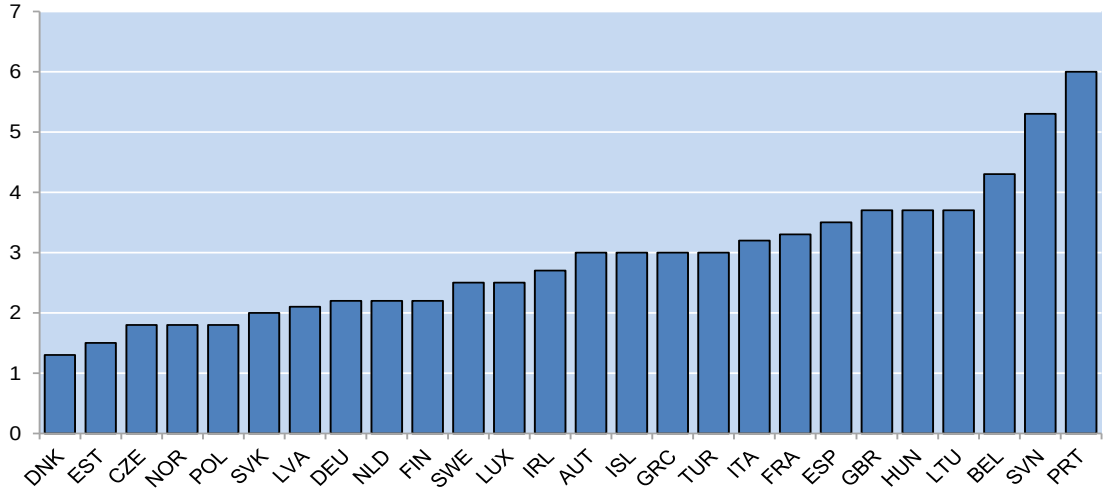
34. For example, a 2012 reform in Ireland decreased the time to discharge to 3 years, while in Spain, reforms to the personal insolvency regime in 2015 made “fresh start” easier.

Figure 10. Insolvency and entrepreneurship

A: Index of entrepreneur-friendliness of insolvency procedures



B: Ease of second chance



Notes: Panel A: This composite index can take values between 0 and 9, with a higher value indicating stronger entrepreneur-friendliness. Panel B: This composite index can take values between 0 and 7, with a higher value indicating an easier second chance.

Source: European Commission (2014c).

5. Discussion and next steps

75. The above analysis suggests that there is a potential for reforms to insolvency regimes and other policies to contribute to productivity growth via a number of channels. Assessing the size of this potential and more generally exploring such links empirically could provide avenues for enriching the policymaker's toolkit for fighting the productivity slowdown. Such analysis, however, requires indicators of insolvency regimes that effectively capture the key features that are relevant for productivity outcomes. Accordingly, to successfully proceed to the next stage of the *Exit Policies and Productivity Growth* project, the Secretariat has distributed a short questionnaire to member countries aimed at collecting data on insolvency rules in OECD countries with a view to enrich and extend the currently available indicators. In order to control costs, the breadth of the questionnaire would be limited to a few key issues outlined in more detail in Box 4. To improve the measurement of personal insolvency regimes, countries will be asked

to provide responses to a limited set of questions in order to leverage off and update the indicators available in the Armour and Cumming (2008) database. Regarding corporate insolvency regimes, the questionnaire will contain additional questions to fill the gaps not covered by the World Bank and European Commission indicators.

Box 4. Details on the proposed insolvency questionnaire

Countries would be asked to provide responses to questions on how forgiving personal insolvency regimes are, based on the features covered in Armour and Cumming (2008). For sake of simplicity and to minimise confusion, these questions will be framed such that countries can provide answers on a YES/NO basis or in terms of the number of years (see Table A2 for more details). More specifically, the Secretariat proposes that:

- The 15 OECD countries for which annual indicators are available from 1995 to 2005 provide information concerning developments since 2005, including the year in which any relevant reforms took place.[1]
- The remaining 19 OECD members and interested partner countries provide information for 2016 and any major reforms that have taken place in these areas since 1995.

Regarding corporate insolvency regimes, a dataset that combines and extends the best features of the World Bank Doing Business strength of insolvency framework indicators introduced in 2015, with the indicators collected by the European Commission in 2013 would be constructed. In this regard, the Secretariat proposes a questionnaire – where questions are framed in similar terms as above – whereby:

- Non-European OECD countries and interested partner countries provide responses questions on the features of insolvency regimes that are not fully captured by the World Bank data, including details on the stay on assets, restrictions on dismissal of employees upon the initiation of the insolvency proceedings, the relative power of courts, the ability to "cram down" a restructuring plan on dissenting creditors and the fate of incumbent management.
- The 23 European OECD (and partner) countries represented in the European Commission dataset would be asked to provide information concerning developments in the above areas since 2013.[2]
- To provide scope for panel econometric analysis, all countries would be asked to indicate the state of play with respect to the seven key features of corporate insolvency regimes (see Table 1) at five year intervals since 1995 (i.e.1995, 2000, 2005 and 2010). Countries would also have the option to provide brief and non-technical details on any major reforms in each area.

1. The 15 countries included are: Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Sweden, the United Kingdom and the United States.

2. These countries include: Austria, Belgium, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain and the United Kingdom.

76. Obtaining policy indicators that better capture cross-country differences in insolvency regimes will be crucial for quantification of structural reforms, the Going for Growth exercise and Country Surveys, especially given the extent of reform in this area over recent years. We plan to explore the relationship between these indicators of insolvency regimes and labour productivity growth (MFP and investment) at the aggregate, industry and firm level. The recent acquisition of updated firm level data will enable us to test the key propositions of the framework developed in Section 2, which links insolvency regimes and other exit policies to aggregate productivity growth via market selection, resource reallocation across firms and within-firm productivity improvements.

77. More specifically, the new insolvency indicators – and other complementary policies discussed above – will be linked to ongoing work on capital misallocation, which recent evidence suggests has increased over time in some countries (Gopinath et al., 2015). The Secretariat is currently investigating the prevalence, persistence and implications of financially-weak or "zombie" firms for aggregate productivity. To the extent that significant cross-country differences emerge, an analysis of the relationship between exit policies, including the proposed indicators of the efficiency of insolvency regimes, and the prevalence of zombie firms, will be conducted.

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APPENDIX: SURVEY OF POLICY INDICATORS

Table A1. Initiation of restructuring by creditors

Creditor may only file for liquidation	Creditor may file for both liquidation or restructuring	
Argentina	China	South Africa
Australia	Colombia	Spain
Austria	Costa Rica	Sweden
Belgium	Czech Republic	Switzerland
Brazil	Denmark	Turkey
Canada	Finland	United Kingdom
Chile	France	United States
Estonia	Germany	
Greece	Indonesia	
Hungary	Ireland	
Iceland	Israel	
India	Italy	
Latvia	Japan	
Lithuania	Korea	
Luxembourg	Mexico	
Netherlands	New Zealand	
Norway	Poland	
Russian Federation	Portugal	
Slovenia	Slovak Republic	

Source: World Bank, Doing Business Database.

Table A2. Priority rules

Australia	Employees, secured creditors, unsecured creditors (including taxes), costs associated with insolvency proceedings, shareholders
Austria	Secured creditors, employees (dealt separately through a public insolvency protection fund), unsecured creditors
Belgium	Secured creditors, statutory creditors (tax and social security), unsecured creditors
Canada	Priority claims (government), preferential claims (costs associated with insolvency proceedings), secured creditors, unsecured creditos
Chile	Secured creditors (ccosts associated with insolvency proceedings, employee claims and pensions, taxes), deposits and mortgages, unsecured creditors
Colombia	Employees, taxes, secured creditors (including ccosts associated with insolvency proceedings), suppliers, unsecured creditors
Czech Republic	Absolute priority of secured creditors
Denmark	Secured creditors, unsecured creditors
Finland	Costs associated with insolvency proceedings have priority; no general prioirty rules otherwise; no priority to taxes and employee claims
France	Secured creditors (including wages and taxes), unsecured creditors
Germany	Secured claims, preferential claims, unsecured claims; no prioirty to employee claims
Greece	Employees, new financing, secured creditors (including taxes), unsecured creditors
Hungary	Secured creditors (financial institutions, employees, government), unsecured creditors, new financing
Ireland	Secured debt (costs associated with insolvency proceedings, mortgage holders), preferential creditors (social insurance, taxes and employees), unsecured creditors
Israel	Costs associated with insolvency proceedings, certain taxes, new financing, secured creditors, employees and taxes, unsecured creditors
Italy	Priority claims (liens over moveable and immovable property and new financing), preferential claims, claims secured by mortgage or by pledge
Japan	Preferential claims (new financing and taxes), unsecured creditors
Mexico	Employees, taxes,c osts associated with insolvency proceedings, secured debt (legal costs, preferential labour debt), unsecured det
Netherlands	Secured creditors, tax and social security claims, unsecured creditors
New Zealand	Secured creditors (including new financing), administrative expenses, employees, preferential tax creditors, unsecured creditors
Norway	Pensions, salaries, taxes, costs associated with insolvency proceedings, unsecured creditors
Poland	Secured debt (new financing, costs associated with insolvency proceedings), preferential claims (tax, employmentt and social benefits), unsecured creditors
Portugal	Secured creditors, preferential debt (employees, social security and taxes), common debt, subordinated debt
Slovak Republic	Secured creditors, unsecured creditors
Spain	New financing, debt secured with mortgage, employees, taxes, unsecured creditors
Sweden	Secured creditors, employees, unsecured creditors
Switzerland	Secured creditors, preferential debt (employees, social security and taxes), unsecured creditors
Turkey	Debt secured by pledge, severance pay
United Kingdom	Secured creditors, costs associated with insolvency proceedings, pensions and wages, unsecured creditors
United States	Costs associated with insolvency proceedings, wages and benefits, taxes, secured creditors, unsecured creditors, shareholders

Source: Authors tabulations based on Euler Hermes (2014).

Table A3. Key features of personal insolvency regimes

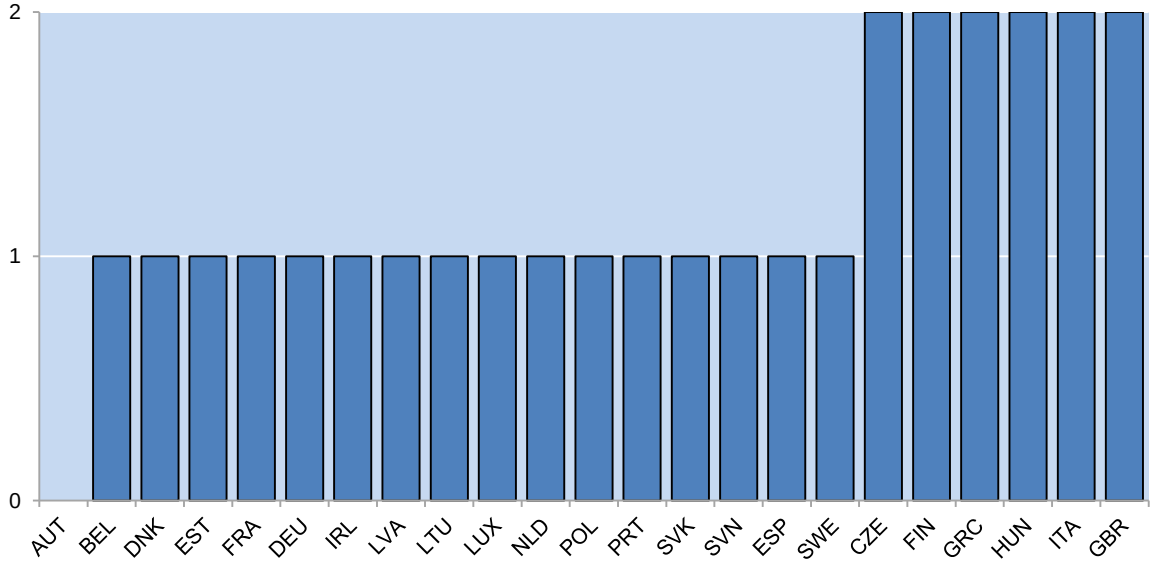
	Discharge availability[a]	Time to discharge	Exemptions[b]	Disabilities[c]
Austria	1990–1994: 1; 1995–2005: 0	1990–1994: 37; 1995–2005: 7	1990–2005: 2	1990–2005: 0
Belgium	1990–1997: 1; 1998–2005: 0	1990–1997: 37; 1998–2005: 0	1990–2005: 1	1990–2005: 3
Canada	1990–2005: 0	1990–1992: 1; 1993–2005: 0.75	1990–2005: 0	1990–2005: 2
Denmark	1990–2004:.5; 2005: 0	1990–2004: 5; 2005: 3	1990–2005: 1	1990–2005: 3
Finland	1990–1992: 1; 1993–2005: 0	1990–1992: 37; 1993–2005: 5	1990–2005: 1	1990–2005: 3
France	1990–1993: 0; 1994–2005:.5	1990–2005: 0	1990–2005: 2	1990–1994: 1; 1995–2005: 2
Germany	1990–1998: 1; 1999–2005: 0	1990–1998: 37; 1999–2000: 7; 2001–2005: 6	1990–2005: 0	1990–1998: 3; 1999–2005: 1
Greece	1990–2005: 1	1990–2005: 20	1990–2005: 1	1990–1997: 4; 1998–2005: 3
Ireland	1990–2005: 0	1990–2005: 12	1990–2005: 1	1990–2005: 2
Italy	1990–2005: 1	1990–2005: 38	1990–1992: 2; 1993–2005: 1	1990–2005: 3
Netherlands	1990–1998: 1; 1999–2005: 0	1990–1998: 38; 1999–2005: 3	1990–2005: 2	1990–2005: 0
Spain	1990–2005: 1	1990–2005: 15	1990–2005: 1	1990–2005: 3
Sweden	1990–2005: 1	1990–2005: 10	1990–2005: 1	1990–2005: 2
United Kingdom	1990–2005: 0	1990–2003: 3; 2004–2005: 1	1990–2005: 1	1990–2005: 2
United States	1990–2005: 0	1990–2005: 0	1990–2005: 0	1990–2005: 1

Notes: ***a.*** Discharge availability =0 if discharge is available and 1 otherwise. Discharge years take the value of the number of years until typical discharge; if discharge is unavailable, the value is life expectancy minus 40. ***b***. Exemptions relate to pre-bankruptcy assets that are exempted from the bankrupt estate and takes the value 1 if exemptions of assets from the bankruptcy estate cover only personal items, tools of trade, etc.; 0 if exemptions are more generous and 2 if exemptions are "negative," (i.e., spousal property can be pulled into the estate). ***c.*** Disabilities relate to restrictions on the debtor's civil and economic rights related to bankruptcy and takes the value 0 if no disabilities other than loss of power to deal with assets in bankrupt estate and is equal to 1 for civic disabilities (i.e., loss of right to vote, hold elected office, or membership of professional groups); 2 for economic disabilities (i.e., restrictions on obtaining credit or being involved in the management of a company); 3 for interference with mail and/or travel (i.e., prohibition on travel without consent or mail opened by trustee); and 4 if debtor may be incarcerated for non-payment of debts.

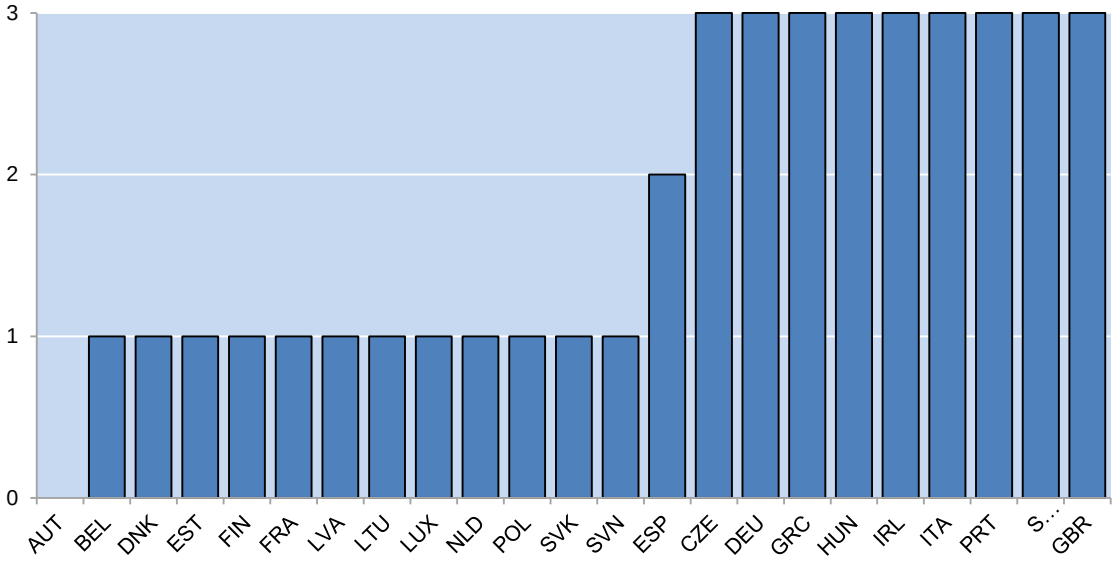
Source*:* Armour and Cumming (2008).

Figure A1. Stay on assets

Panel A: Availability of a stay on assets



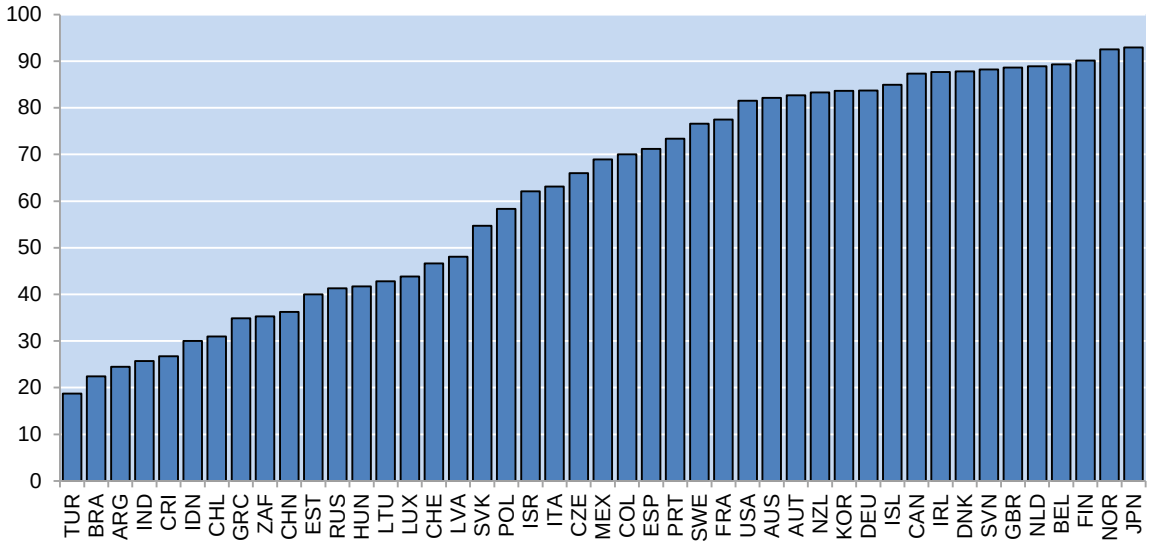
Panel B: Length of the stay on assets



Notes: Panel A: There is no stay=0; stay is general and automatic=1; stay is general but on request=2. Panel B: No stay=0, possibility of stay for longer than 4 months or for an indefinite period=1; possibility of stay for less than 2 months=2; possibility of stay between 2 and 4 months=3.

Source: Carcea et al. (2015).

Figure A2. Recovery rate of debt for secured creditors



Notes: The recovery rate is the cents in the dollar recouped by the secured creditors at the end of the proceedings.

Source: World Bank, Doing Business Database.

Box A1. The strength of insolvency framework index from World Bank Doing Business

The ***strength of insolvency framework index*** is based on the four sub-indices:

- Commencement of proceedings: This index ranges from 0 to 3, with higher values indicating greater access to insolvency and has three components*: i)* what type of proceedings (liquidation or reorganisation or both) can be initiated by debtors; *ii)* what type of proceedings (liquidation or reorganisation or both) can be initiated by creditors; and *iii)* what standard is used to declare a debt insolvent: liquidity (the debtor is unable to pay its debts as they mature) or balance sheet (the liabilities exceed the assets) test.

- Management of debtors' assets: This index ranges from 0 to 6, with higher values indicating more advantageous treatment of the debtors' assets from the perspective of the company's stakeholders and measures whether: *i)* a debtor can continue transactions essential to the survival of the business; *ii)* a debtor can terminate contracts that are overly burdensome (cost of performance is greater than the benefit received); *iii)* a debtor can avoid transactions executed before filing for bankruptcy such as those that preferential (which results in a creditor obtaining more than its pro rata share of the debtor's assets) and undervalued (which were made as a gift or in exchange for less than equivalent value); *iv*) the debtor can obtain new financing during insolvency proceedings to continue its operations; and *v)* such financing has priority over unsecured creditors during the distribution of assets.

- Reorganisation proceedings: This index ranges from 0 to 3, with higher values indicating greater compliance with internationally accepted practices on the approval and content of the reorganisation plan and measures whether: *i)* the plan is voted on only by the creditors whose rights are modified or affected by the plan; *ii)* the voting creditors are divided into classes and each class votes separately and the creditors within each class are treated equally; and *iii)* the amount creditors receive under reorganisation is equivalent to that under liquidation.

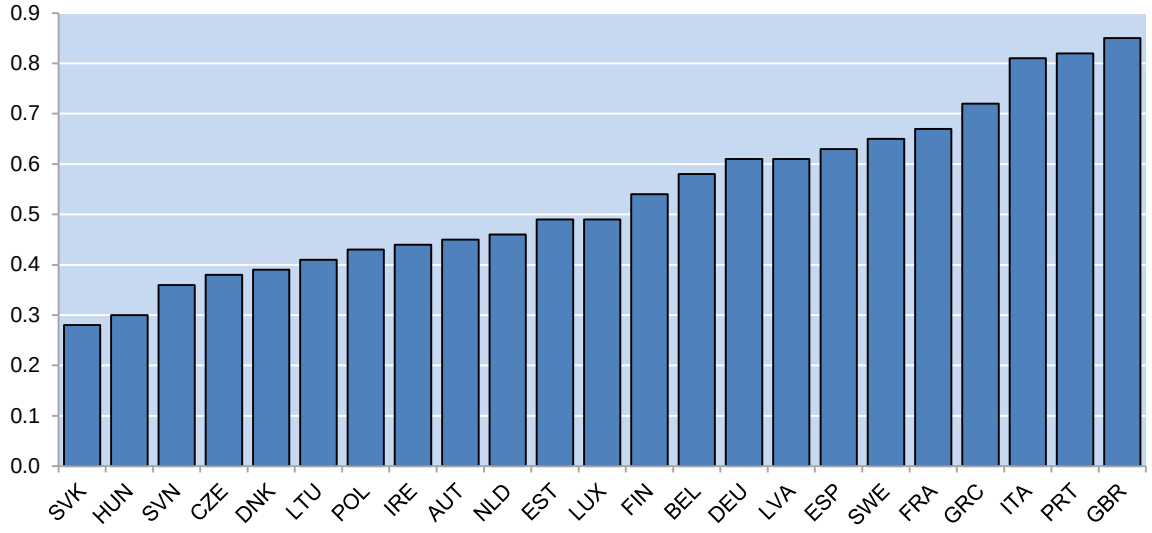
- Creditors' rights index: This index ranges from 0 to 4, with higher values indicating greater participation and rights of creditors and measures whether: *i)* creditors participate in the selection of an insolvency representative; *ii)* creditors are required to approve the sale of debtor's assets; *iii)* creditors have access to information about the debtor and the proceedings; and i*v)* creditors can object to decisions affecting their rights, such as approval of claims of other creditors.

Box A2. The features of insolvency regimes: European Commission data

One source of cross-country data on the different features of insolvency frameworks for members of the European Union is based on a survey conducted by INSOL Europe, the European association of insolvency professionals in 2013. The data from the survey has been used to construct an index of the ***efficiency of insolvency regimes*** (Figure A3; Carcea et al., 2015), based on twelve dimensions: *i)* existence of early restructuring possibilities; *ii)* conditions for initiating the early restructuring process; *iii)* existence of alternative preventive procedures; *iv)* debtor remaining in possession of its assets in preventive procedures; *v)* possibility of a moratorium (i.e. stay of individual enforcement actions by the creditors against the debtor); *vi)* length of the moratorium; *vii)* majority-decision on plan approval as opposed to the requirement of full consensus among creditors (also called cram-down); *viii)* possibility to obtain new financing in preventive procedures; *ix)* limited court involvement; *x)* confidentiality of the agreement; *xi)* existence of early-warning procedures of insolvency (particularly useful for SMEs); and *xii)* debt discharge possibilities following an entrepreneur's bankruptcy.

Figure A3. Efficiency of insolvency regimes

2012-13



Source: Carcea, et al. (2015).

Box A3. The basis of the World Bank outcome-based indicator: the case study

The "resolving insolvency" indicator (i.e. cost and time to close a business) from World Bank Doing Business is based on a questionnaire whereby respondents are asked to estimate the most likely outcome, time to complete the insolvency procedure and the cost of the proceedings borne by all parties in light of the following case study:

- Mirage is a local limited-liability company that runs a hotel in the economy's largest city; its only asset and source of income is the hotel property. The value of the hotel is 100 times GNI per capita or USD 200,000 in local currency, whichever is greater. On January 1, 2009, Mirage signed a 10-year loan agreement with BizBank, a local bank. The loan was secured by the hotel property and/or by a universal business charge (an enterprise charge) in those economies where this type of collateral is allowed. BizBank's outstanding credit is equal to the market value of the hotel and represents 74% of Mirage's total outstanding debt. The outstanding amount owed to BizBank is exactly equal to the market value of the hotel business.

- Unsecured creditors (e.g. suppliers, tax authorities and employees) hold the remaining 26% of Mirage's debt. Among unsecured creditors, the largest group is Mirage's suppliers (50 in total), all of which are owed payment for their last deliveries.

- Mirage's founder owns 51% of the company and is the chairman of its board of directors (or equivalent supervisory body). No other shareholder holds more than 5% of the voting power. The company has a professional general manager and 201 employees. All parties in this scenario are local entities or citizens. The founder and Mirage's management both want to keep the firm operating.

- Today is January 1, 2015. Since the execution of the loan agreement with BizBank, Mirage has met all conditions of its loan and made all payments on time. However, at the end of 2014, Mirage experienced an unexpected operating loss due to worsened market conditions. As a result, Mirage will default on its next loan payment to BizBank, which is due tomorrow, January 2, 2015. Mirage can neither obtain a new loan from another financial institution nor renegotiate its current loan with BizBank.

- The company expects to have negative net worth and operating losses in both 2015 and 2016. The company's expected 2015 cash flow will cover all operating expenses, including supplier payments, salaries, maintenance costs and taxes. It will not cover principal or interest payments to BizBank.

- If Mirage is sold as a going concern (i.e. as a business that has the resources needed in order to continue to operate in the foreseeable future), it would fetch 100% of its current market value. But if Mirage's assets are sold piecemeal, they would fetch only 70% of Mirage's current market value.

Source*:* World Bank Doing Business.