IEP@BU Working Paper Series

Restructuring Costs and Innovation

A Pilot Firm-Level Survey

Pietro **Galeone**, Giorgio **Presidente**, Luca **Di Casola**

Università Bocconi
IEP@BU
Institute for European Policymaking

September 2026

Restructuring Costs and Innovation
A Pilot Firm-Level Survey

Pietro Galeone, Giorgio Presidente, Luca Di Casola*

Abstract

We present results from a pilot survey focusing on restructuring costs and innovation. Our estimates of restructuring costs in terms of monthly salary equivalents are an order of magnitude lower than comparable existing estimates. Less than 15% of respondent firms perceive restructuring costs as the dominant obstacle to innovation, but the share is three times larger for high-tech firms. Firms operating in strict-EPL regimes are not more likely than those in loose-EPL regimes to identify restructuring costs as their main barrier to innovation.

*We thank the Economics, Politics and Decision Sciences Knowledge Area (KA) at SDA Bocconi for generous financial support. We also thank Daniel Gros and Paloma Lopez-Garcia for the engaging conversations and helpful suggestions motivating this project.

1 Introduction

The relationship between the "cost of failure" and innovation has been receiving increasing attention in debates on competitiveness, technological dynamism, and Europe's stagnant productivity (e.g. European Commission, 2025).

Experimentation in technologically advanced sectors requires firms to frequently reorganize their workforce, terminate unsuccessful projects, and rapidly reallocate resources toward new activities. The argument underlying the cost-of-failure view is that European companies face heavy financial and legal penalties when they fail, increasing the cost of experimentation and thereby penalizing high-risk, high-reward projects.

A large academic literature has explored the relationship between market rigidities and innovation, productivity, and growth (e.g. Lazear, 1990; Hopenhayn and Rogerson, 1993; Autor et al., 2007; Bassanini et al., 2009; Cingano et al., 2010; Bartelsman et al., 2016; Samaniego, 2006; Saint-Paul, 2002). Yet it remains difficult to identify the specific sources of these rigidities and assess their relative importance. This is an important gap, because effective policy design requires knowing not only whether the cost of failure matters, but also which frictions drive it, how large they are, and which firms and activities they affect most.

The main difficulty is that most existing empirical studies rely on aggregate indicators. As a result, correlations between innovation outcomes and proxies of restructuring costs may reflect other factors that are correlated with both. For instance, a widely used proxy is country-level indices of employment protection legislation (EPL). A negative correlation between EPL and innovation might lead policymakers to conclude that relaxing dismissal regulation would boost innovation in Europe. Yet country-level EPL indices capture broad regulatory environments rather than the concrete constraints firms face when they restructure. Strict EPL may coexist with weaker business dynamism, more burdensome procedures for starting or scaling a firm, lower institutional quality, or broader differences in product, financial, and labor market regulation that are unrelated to dismissal rules.

Nor is there an *a priori* reason to assume that EPL is the only driver of restructuring costs or the key barrier to innovation. Instead, systematic evidence suggests that rule of law, corruption, government effectiveness, and the administrative burden placed on entrepreneurs when starting a business are at least as important for the development of high-tech sectors as dismissal regulation (Bothner et al., 2026). Moreover, parts of the

literature—notably studies relying on more granular measures of dismissal regulation or more refined identification strategies—do not support the view that relaxing EPL would necessarily boost innovation in Europe.[1] Taken together, this evidence suggests that examining the cost-of-failure hypothesis requires more granular measures of the drivers of the cost of failure, and of restructuring costs in particular.

This paper makes a first step toward addressing this issue by introducing direct firm-level evidence on restructuring costs and innovation barriers through a new pilot survey conducted across four countries representing different labor market regimes: the United States, Denmark, Germany, and Italy.

The survey collects information on firms' restructuring episodes, asking directly to quantify their economic value, decompose it into mandatory dismissal costs, voluntary employee-related expenditures, and non-employee restructuring expenses, as well as indicating the number of dismissed workers. Using the survey data, we express restructuring costs in monthly salary equivalents.

Compared with existing firm-level estimates (Coatanlem and Coste, 2025), we find labor dismissal costs that are lower by roughly an order of magnitude, especially in countries with stricter EPL. Monthly salary equivalents calculated from our survey become comparable to existing estimates only when we consider total restructuring costs, rather than employee-related costs alone, and also restrict the sample to restructuring plans in the top quartile of the restructuring cost distribution. This pattern suggests that the existing estimates may not capture the typical cost of labor dismissal. Rather, they are likely to be more representative of the cumulative cost of large publicly listed firms and of unusually costly restructuring plans.

We also ask firms to rank the main barriers slowing their innovation activities. On average, fewer than 15% of firms in the sample identify restructuring costs as the dominant obstacle to innovation. Economic uncertainty, capital availability, and regulatory barriers unrelated to restructuring costs appear at least as important.

Among high-tech firms, the share identifying restructuring costs as the main barrier to innovation is almost three times larger than among other firms in traditional sectors. Yet

[1], For example, Aghion et al. (2023) exploit a regulatory discontinuity and find a negative impact of labor regulation, but only on incremental innovation; Acharya et al. (2013, 2014) exploit the staggered adoption of wrongful discharge laws across US states and find that they spur innovation and new firm creation. The logic is that employment protection may foster innovation by mitigating a hold-up problem.

we find no systematic differences across countries with different EPL regimes. Thus, while our evidence is consistent with the intuitive view that restructuring costs are an obstacle to radical innovation because of its high probability of failure, it also casts doubt on both the magnitude of these costs and the extent to which they are mainly driven by EPL.

To be clear, we do not deny that a high cost of failure in Europe can be a constraint on innovation. At the same time, our findings suggest caution toward the view that simply loosening dismissal regulation can solve or majorly ease the EU innovation problem.

The findings presented here are based on a sample of only 200 observations. While the small sample size prevents meaningful statistical inference, the results of our survey suggest that the relationship between restructuring costs—employment dismissal regulation in particular—and innovation decisions is neither as clear-cut nor as quantitatively significant as some narratives imply. On the contrary, they underline the need for a larger representative survey to generate robust evidence on this important issue. Until such evidence is available, policymakers should proceed with caution and avoid pursuing labor-market reforms that impose clear costs on workers in exchange for uncertain innovation benefits.

2 Existing Measures of Restructuring Costs

2.1 Aggregate indicators

A widely used proxy of restructuring costs in the literature are country-level EPL indexes, such as those compiled by the OECD or the ILO.[2] While these measures can be informative about employee-related restructuring costs, they are also subject to several important limitations. The main issue is that dismissal regulation is only one of the potential drivers of restructuring costs. Other drivers such as the cost of setting up new business, the efficiency of judiciary, market entry barriers, might be correlated to dismissal regulation, and therefore the aggregate EPL indicator might pick up the effect of such drivers unrelated to dismissal regulation.

Even assuming that dismissal regulation was the only driver of restructuring costs, there are issues with whether EPL correctly measures it. First, EPL measures the formal strictness of employment protection rules rather than the actual economic costs firms face when projects fail and they shed employees.

[2]The OECD EPL index can be found here. The ILO indicator can be found here.

Second, EPL collapses multiple sources of dismissal rigidities in a single indicators without distinguishing among potentially important heterogeneities. This becomes apparent when comparing rankings based on the EPL index with the details of national legislations. For example, the Eurofound's European Restructuring Monitor shows that Italy, despite relatively strict formal EPL, does not impose mandatory severance pay in ordinary cases of lawful dismissal. Rigidities mainly come from unlawful or disputed dismissals, where compensation would depend on tenure. In technology sectors, where turnover is high and restructuring often occurs early, affected workers are less likely to have long tenure.

France and Spain also link compensation to seniority, limiting effective dismissal costs for shorter-tenure workers. In Spain, consultation procedures are capped at 15 days. Moreover, some countries with strict EPL provide exemptions or flexible hiring channels: Italy's 2012 Startup Act, for example, allowed innovative start-ups greater use of temporary contracts and flexible wage arrangements.[3]

Notice periods may also matter for high-tech firms engaged in rapid experimentation, but cross-country differences in notice periods are not always large enough to support simple rankings based on EPL indexes alone. In strict-EPL countries such as France and Germany, the statutory notice periods commonly range from one month to between two and seven months, similarly to Denmark, Sweden, and Norway, all at the bottom of EPL index-based rankings.

Therefore, assessing the effect of restructuring costs on innovation requires more granular estimates of the actual costs firms face across sectors, firm types, worker tenures, and restructuring procedures than EPL can possibly measure.

2.2 SEC Filings-Based Approaches

Recently, more firm-centered estimates of restructuring costs have been developed, based on SEC filings and annual reports of large publicly listed companies (Coatanlem and Coste, 2025, 2024).

Listed firms are required to report restructuring provisions and charges, allowing to approximate employee-related restructuring costs and express them in comparable units, such as months of employee compensation. A filings-based approach therefore links labor-market institutions to the financial calculus of firms and investors more directly than

[3] Decree Law 179/2012.

aggregate EPL indexes.

However, SEC filing-based approaches have their own limitations. SEC filings often report restructuring charges only at the global or consolidated level, without a country-level breakdown of either costs or redundancies. They also typically do not allow employee-related restructuring costs to be separated from non-employee costs, such as asset write-offs and facility closures. This makes it difficult to isolate the component of restructuring costs directly attributable to labor dismissal, or even to assign reported costs to a specific labor market.

Additionally, publicly listed firms are not necessarily representative of the broader set of firms engaged in innovation, and some category of firms such as utility companies, banks, and former state enterprises might also benefit from historically-derived protections, which would inflate estimates of restructuring costs.

3 Survey Description

The survey involves 200 respondent firms split equally across four countries spanning the main archetypes of labor market structures: the United States as a fully flexible benchmark, Denmark for the flexicurity model, and Germany and Italy—typically considered rigid labor market economies.[4]

Respondents start the survey by completing a series of screening questions in order to ensure that the information reported was accurate and reflected the experience of personnel directly involved in innovation and restructuring.[5] All respondents needed to hold an ownership or C-suite role (e.g., owner/founder, CEO, CFO, CIO, general manager), and be personally responsible for, or directly involved in, investment and innovation decisions.[6] Of all respondents 75.5% are sole decision-makers on investment and innovation, and a further 22.5% co-decide with others; fewer than 2% report a purely advisory role.

Then, respondents answered a series of questions about firm demographics, including the

[4] The survey was conducted online in collaboration with Dynata, a commercial survey company that has been extensively used in economics research (e.g. Sergeyev et al., 2025; Andre et al., 2022; Link et al., 2023). The survey consists of 21 questions and takes between five and ten minutes to fill. Dynata pays respondents a fee to complete the survey.

[5] Appendix C reports the questionnaire.

[6] The response rates vary across countries: 25% of the 198 accepted starts (i.e. respondents that started the survey but never completed it) in the United States; 8% in Denmark; 9% in Germany, and 16% in Italy.

2-digits ISIC rev.4 sector in which their firm operates, as well the size of the company in terms of revenue and employees using pre-defined size bands. Sector breakdown is reported in Appendix Table A. The most represented sectors are IT services (ISIC 62, 10%), construction (ISIC 41, 8%), financial services (ISIC 64, 6.5%), and food manufacturing (ISIC 10, 6%), with the remainder spread across primary industries, manufacturing, and professional services.

Table 1 presents the summary statistics of the sample. The 200 respondents are equally split across the four countries considered, half have more than 250 employees;[7] 18% operate in high-tech sectors[8]—defined following the OECD definition (Galindo-Rueda and Verger, 2016).[9] Of all firms surveyed, 62% say they have implemented restructuring plans in the last five years.

Table 1: Sample composition.

	Denmark	Germany	Italy	US	Total
Total firms	50	50	50	50	200
Large (≥250 employees)	29	24	24	23	100
Small (<250 employees)	21	26	26	27	100
High-tech firms	4	14	6	12	36
Mid-tech firms	46	36	44	38	164
Firms with restructuring plans	39	27	30	28	124

3.1 Innovation Barriers & Restructuring Modules

The core questionnaire consists in two modules. The first is an "innovation barriers" module, which asks whether the firm experienced barriers to innovation in the preceding three years and, if so, invites respondents to rank eight candidate barriers appearing in randomised order, to ensure no systematic bias in the responses. The candidate barriers are: Compliance with data protection and privacy regulation; Uncertainty about the economic/political outlook; Availability of capital; Restructuring costs; Compliance with

[7] 28% of respondents report 1,000 or more employees.

[8] The definition is based on the technological intensity of the sector sector (the ratio of R&D expenditure to value added) and the technology embodied in purchases of intermediate and capital goods. This is the definition used in Fuest et al. (2024). High-tech sectors are defined as 2-digit ISIC Rev. 4 divisions 21, 26, 60, 61, 63. Results are similar using alternative definitions.

[9] We should have targeted more explicitly firms in high-tech sectors according to our working definition, to have at least 50% of firms in this sector rather than 18%. We will implement this strategy in the main survey.

intellectual property regulation; Compliance with environmental regulation; Availability of talent; Compliance with product safety regulation.

The second is a "restructuring" module, which first asks whether the firm undertook any restructuring plans in the previous five years, and then collects the following information about the plans: year and country of restructuring; total cost in local currency with a built-in price-check screen; a three-way cost decomposition into mandatory dismissal costs (statutory severance and related procedures), non-mandatory employee costs (e.g. voluntary exit incentives), and non-employee costs (e.g. asset write-offs and consulting fees). Then firms are asked about the number of workers laid off, which allows us to calculate the average cost of the restructuring per laid-off worker.[10] A final consistency screen presents respondents with the implied per-worker costs and invites revision if needed.

Importantly, respondents cannot see the restructuring module before the innovation barriers module. Neither does the survey title or invitation email mention anything specific about labour or restructuring costs. This is done in order to avoid that they anticipate the focus of the survey, which might induce bias in the ordering of the barriers to innovation. For exposition purposes, we report the results of the second module first.

4 Monthly Salary Equivalents

We estimate the monthly-equivalent cost of dismissal based on on firms' responses. The raw variables are 1) total cost of restructuring plans, 2) shares of mandatory dismissal costs, voluntary contributions, and non-employee related costs, and 3) number of laid off workers.

We keep only firms having implemented a restructuring plan in the last five years. We also restrict the sample to companies implementing restructuring plans in countries deemed "strict/loose EPL" by ILO EPLex, if it goes in the same direction of the country where the restructuring country is hq-ed.[11]

[10] We also asked to report the average tenure of the dismissed workers. Unfortunately, several respondents misinterpreted the question and reported the average age of the dismissed workers. In the main survey we will elicit tenure at the firm more carefully, since this is an important piece of information.

[11] So, for instance if Italy has a row for restructuring plans in three countries, and all such countries are strict-EPL as Italy, then we keep it. If it has one loose-EPL country like the US, we drop it. We also experiment with keeping only firms that implemented plans within their country only, and the results are very similar.

Table 2 presents the monthly salary equivalents, obtained after imposing an average annual salary in each country.[12]

The table shows that mandatory dismissal costs tend to be substantially lower in loose EPL than in strict EPL countries. Specifically, for US and Denmark we find respectively 1.8 and 1 monthly salary equivalent, while for Germany and Italy 3.6 and 5.1. The survey-based monthly salary equivalent are thus much lower than estimates based on SEC filings (Coatanlem and Coste, 2024, 2025), especially for strict -EPL countries where they are approximately one order of magnitude lower.[13]

We also notice that in our survey mandatory costs are slightly larger than voluntary and non-employee costs, but are of comparable magnitude. This implies that voluntary contributions and non-employee related categories might account for the lion share of the cost of restructuring.

Appendix Table B1 shows estimates based on restructuring plans in the top 25% of the *total* costs distribution. With this sample we find estimates that are more in line with those based on SEC filings, but only if we consider total restructuring costs. Thus, to reconcile our estimates to those from SEC filings, we need not only to focus on the top of the total cost distribution, but also sum up mandatory with voluntary contributions and non-employee costs.

Table 2: Restructuring costs: monthly salary equivalents.

		Annual salary	Months of salary			
Country	(N)	(EUR thous.)	Mandatory	Voluntary	Non-employee	Total
US	(46)	76.638	1.77	1.60	1.42	4.78
Denmark	(33)	71.600	1.00	0.90	0.86	2.76
Germany	(54)	53.791	3.61	2.75	1.84	8.19
Italy	(45)	33.523	5.06	4.48	4.82	14.36

Notes: Sample restricted to restructuring events in which all affected countries share the EPL status of the firm's headquarters country. Average 2024 annual salaries are taken from Eurostat and OECD. For the US, values are converted to EUR using the 2024 average ECB USD/EUR exchange rate.

[12] For EU countries, the source is Eurostat's average full-time adjusted salary per employee (2024); for US, the source is OECD's average annual wages (2024), converted from USD to EUR using the 2024 average ECB USD/EUR exchange rate.

[13] Specifically, Coatanlem and Coste (2025) use a sample with a similar number of firms to ours. After excluding cases in which they could not distinguish employee-related from non-employee-related costs, they report 31 months for Germany and 48 months for Italy. Estimates are lower for the United States and Denmark, at 7 and 3.3 months, respectively.

5 Barriers to Innovation

Figure 1 shows the reported sample average incidence of firms reporting restructuring costs as the top obstacle to innovation among the eight barriers. The most frequent barrier is economic uncertainty (17%), followed by data privacy regulation, 15.5%. The third most cited barrier is IP regulation, 13.5%. Restructuring costs are ranked fourth, with 13.5% of respondents including it as the main obstacle to innovation. Capital and talent availability, together with environmental regulation follow with more than 10% of respondents, while product safety regulation is listed as top constraint by only 6% of respondents.

Next, we examine how many and what type of firms identify restructuring costs as the main barrier they face in undertaking innovation-related activities. This is shown in Figure 2. Panel (a) presents the results for the full sample, while panels (b)-(d) present a breakdown by different groups of firms.

As mentioned above, Panel (a) shows that among 200 respondents, 13.5% of firms say that restructuring costs are the top constraint.

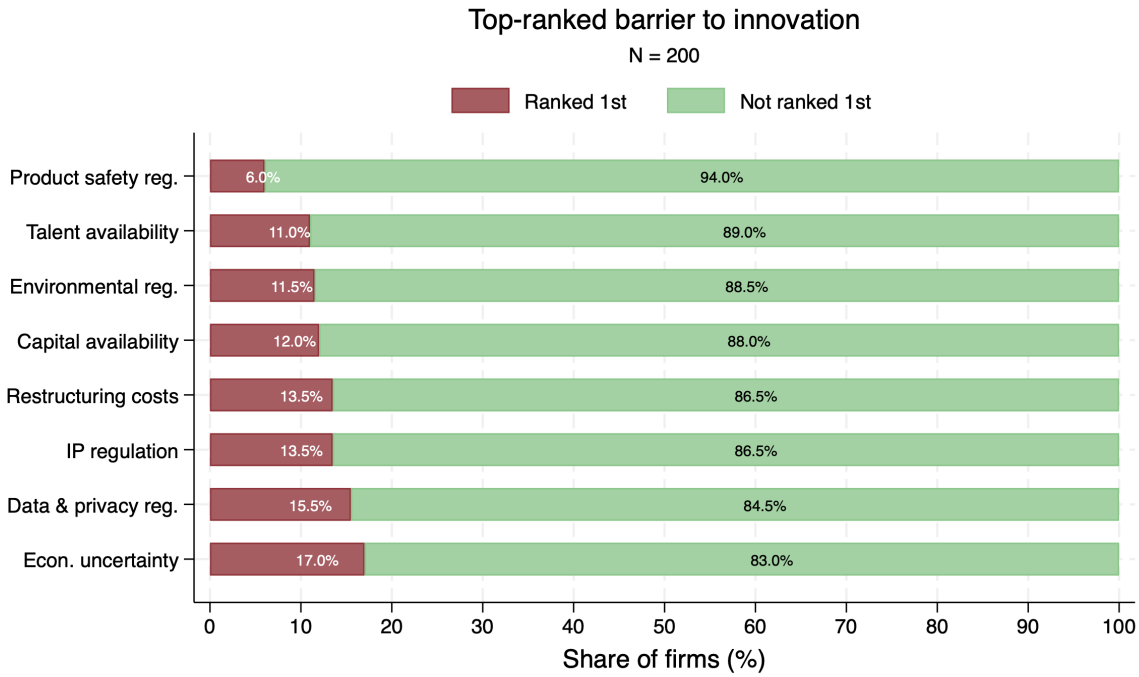
Panel (b) breaks down responses between countries with strict and loose EPL. Strict EPL countries are Italy and Germany, while Denmark and the United States represent loose EPL countries. Firms in strict EPL countries are not more likely than firms in loose EPL countries to indicate restructuring costs as the main barrier. On the contrary, the percentage of "yes" respondents is slightly lower in Germany and Italy (5.5%) than in Denmark and the US (8%).

Panel (c) splits the sample into small and large firms, where the latter are defined as those with more than 250 employees. The percentage of respondents saying that the restructuring costs are the main barrier to innovation is similar across the firm size distribution, with 6% among large firms and 7.5% among small firms.[14]

Finally, Panel (d) splits company into high-tech and traditional sectors. Here we do see differences. Specifically, although being under-represented in the sample, firms in high-tech industries are much more likely to say that restructuring costs are the key barrier

[14] We deliberately designed the survey to include 50% of firms with more than 250 employees in order to balance the significance of our estimates across small and large firms. However, firms with more than 250 employees are less than 10% of the overall population in most countries and therefore our survey is not intended to be representative.

Figure 1:

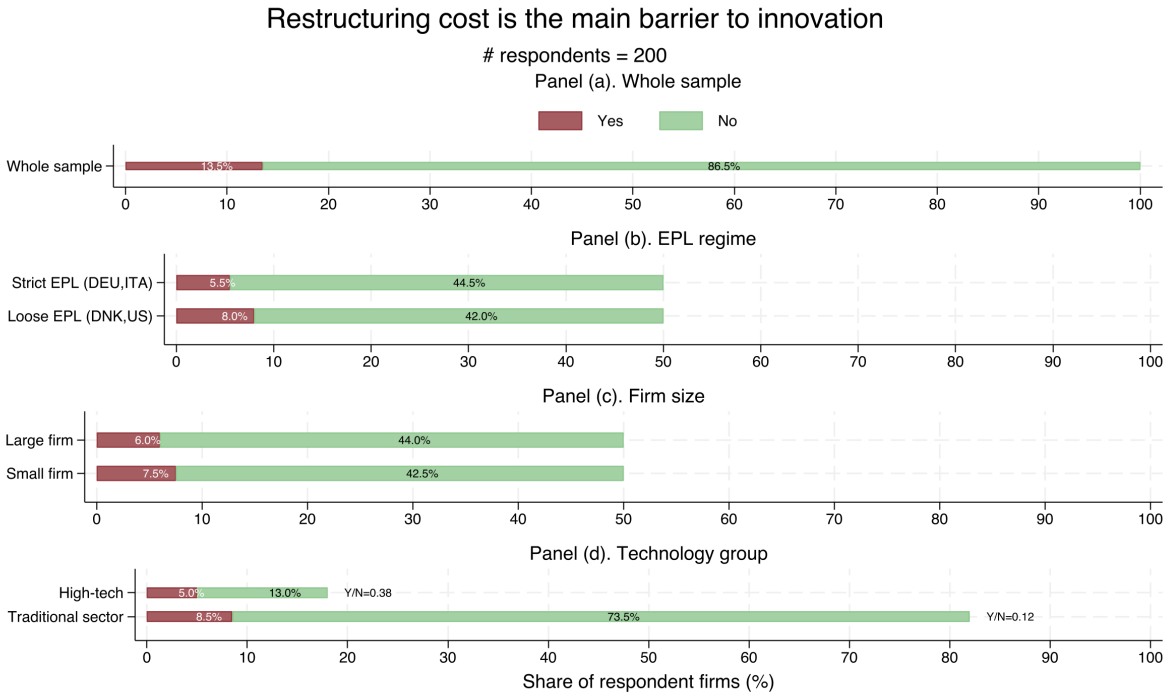


to innovation activities. Among high-tech firms, the share of "yes" in total responses is 28%, while in traditional sectors is 10%.

The findings in panels (b)-(c) are not driven by sample composition. Specifically, if high-tech firms are the most likely to report restructuring costs as the main barrier to innovation, under-representation of high-tech in strict EPL countries or among large firms might push down the share of respondents ranking restructuring costs as the main barrier. However, this is not the case. Appendix Figure B1 show that the share of high-tech firms in Germany (strict EPL) is the largest in the sample (Panel (a)), and that the share of high-tech firms is larger among large firms (Panel (b)).

Appendix Table B2 shows the distribution of firms by employment size bracket and subgroup. For each size bracket-subgroup cell we report the share of firms perceiving restructuring costs as the main barrier to innovation. The table show that even very small firms—typically benefiting from exemptions to dismissal regulation—can perceive restructuring costs as the key barrier to innovation. Moreover, micro enterprises in loose EPL countries are more likely than those in strict EPL countries to do so. This casts doubts on dismissal regulation being the main driver of restructuring costs.

Figure 2:



6 Discussion and Conclusions

Our findings, based on a pilot firm-level survey across four countries, suggest that current approaches to measuring firm-level restructuring costs may better reflect the total accounting cost of a restructuring plan rather than the mandatory cost of dismissing workers, and that they may capture upper-tail, exceptionally large plans that are more likely to be disclosed in company reports and SEC filings.

While in our sample restructuring costs are generally not perceived as the main barrier to innovation, they do constitute a key constraint for high-tech firms. At the same time, respondents in countries considered strict-EPL regimes by existing aggregate indicators do not seem more likely than those in loose-EPL regimes to identify restructuring costs as the main barrier to innovation.

Therefore, we draw two main conclusions. The first conclusion is that the cost of employment dismissal seems to be not as large as often suggested, and hence one should be cautious in considering it the main barrier to innovation in the EU and advocating for swift policy reform.

The second, related conclusion is that there might be a number of correlated factors that contribute to hamper innovation. These might be other drivers of restructuring costs, but also other regulations—like data privacy, intellectual property rules, administrative and regulatory burdens in setting up businesses, the quality of institutions, and economic uncertainty more broadly—that are at least as important as dismissal regulation.

Our results do not imply that Europe's high cost of failure is irrelevant for innovation. Rather, they suggest that reducing dismissal constraints, by itself, is unlikely to be sufficient to close the EU's innovation gap. And that policy changes affecting EPL must follow a careful and empirically precise cost-benefit analysis.

Clearly, the small size of our sample does not permit to conduct meaningful statistical inference. Nonetheless, we hope that our findings will stimulate further discussion on the topic and provide incentives to form collaborations to conduct a large-scale representative survey, which is the only way to run a systematic examination of the cost-of-failure hypothesis, restructuring costs, and dismissal regulation in particular. Until such evidence is available, and given the salience of labor legislation for quality employment, policymakers should proceed with caution.

References

Acharya, V. V., Baghai, R. P., and Subramanian, K. V. (2013). Labor Laws and Innovation. *The Journal of Law and Economics*, 56(4):997–1037.

Acharya, V. V., Baghai, R. P., and Subramanian, K. V. (2014). Wrongful Discharge Laws and Innovation. *The Review of Financial Studies*, 27(1):301–346.

Aghion, P., Bergeaud, A., and Van Reenen, J. (2023). The Impact of Regulation on Innovation. *American Economic Review*, 113(11):2894–2936.

Andre, P., Pizzinelli, C., Roth, C., and Wohlfart, J. (2022). Subjective models of the macroeconomy: Evidence from experts and representative samples. *The Review of Economic Studies*, 89(6):2958–2991.

Autor, D. H., Kerr, W. R., and Kugler, A. D. (2007). Does employment protection reduce productivity? evidence from us states. *The Economic Journal*, 117(521):F189–F217.

Bartelsman, E. J., Gautier, P. A., and De Wind, J. (2016). Employment Protection, Technology Choice, and Worker Allocation. *International Economic Review*, 57(3):787–825.

Bassanini, A., Nunziata, L., and Venn, D. (2009). Job protection legislation and productivity growth in OECD countries. *Economic Policy*, 24(58):349–402.

Bothner, J., Lopez-Garcia, P., Momferatou, D., and Setzer, R. (2026). *Why is Europe lagging behind in high tech sectors?* Working paper series. European Central Bank, DE.

Cingano, F., Leonardi, M., Messina, J., and Pica, G. (2010). The effects of employment protection legislation and financial market imperfections on investment: Evidence from a firm-level panel of EU countries. *Economic Policy*, 25(61):117–163.

Coatanlem, Y. and Coste, O. (2024). Cost of failure and competitiveness in disruptive innovation. *IEP@BU Working Paper Series.*

Coatanlem, Y. and Coste, O. (2025). Cost of Failure, Disruptive Innovation and Targeted Flexicurity: more evidence supporting targeted reforms. *IEP@BU Working Paper Series.*

European Commission (2025). A competitiveness compass for the EU. Communication from the Commission to the European Parliament, the European Council, the Council,

the European Economic and Social Committee and the Committee of the Regions COM(2025) 30 final, European Commission, Brussels.

Fuest, C., Gros, D., Mengel, P.-L., Presidente, G., and Tirole, J. (2024). EU Innovation Policy: How to Escape the Middle Technology Trap. *Technical Report*.

Galindo-Rueda, F. and Verger, F. (2016). OECD Taxonomy of Economic Activities Based on R&D Intensity. OECD Science, Technology and Industry Working Papers 2016/04, OECD Publishing, Paris.

Hopenhayn, H. and Rogerson, R. (1993). Job turnover and policy evaluation: A general equilibrium analysis. *Journal of Political Economy*, 101(5):915–938.

Lazear, E. P. (1990). Job security provisions and employment. *The Quarterly Journal of Economics*, 105(3):699–726.

Link, S., Peichl, A., Roth, C., and Wohlfart, J. (2023). Information frictions among firms and households. *Journal of Monetary Economics*, 135:99–115.

Saint-Paul, G. (2002). Employment protection, international specialization, and innovation. *European Economic Review*, 46(2):375–395.

Samaniego, R. M. (2006). Employment protection and high-tech aversion. *Review of Economic Dynamics*, 9(2):224–241.

Sergeyev, D., Lian, C., and Gorodnichenko, Y. (2025). The economics of financial stress. *Review of Economic Studies*, 92(5):3403–3437.

A Appendix

Table A1: Distribution of firms by sector (ISIC Rev. 4)

ISIC code	Sector	N	Percent
01	Crop and animal production, hunting and related service activities	8	4.0
02	Forestry and logging	1	0.5
03	Fishing and aquaculture	4	2.0
05	Mining of coal and lignite	5	2.5
06	Extraction of crude petroleum and natural gas	7	3.5
07	Mining of metal ores	3	1.5
08	Other mining and quarrying	4	2.0
09	Mining support service activities	3	1.5
10	Manufacture of food products	12	6.0
11	Manufacture of beverages	2	1.0
12	Manufacture of tobacco products	1	0.5
13	Manufacture of textiles	7	3.5
14	Manufacture of wearing apparel	1	0.5
15	Manufacture of leather and related products	3	1.5
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1	0.5
18	Printing and reproduction of recorded media	1	0.5
19	Manufacture of coke and refined petroleum products	1	0.5
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	3	1.5
22	Manufacture of rubber and plastic products	1	0.5
23	Manufacture of other non-metallic mineral products	1	0.5
24	Manufacture of basic metals	2	1.0
26	Manufacture of computer, electronic and optical products	5	2.5

Continued on next page

Table A1 – *continued from previous page*

ISIC code	Sector	*N*	Percent
27	Manufacture of electrical equipment	1	0.5
28	Manufacture of machinery and equipment n.e.c.	4	2.0
29	Manufacture of motor vehicles, trailers and semi-trailers	2	1.0
31	Manufacture of furniture	1	0.5
32	Other manufacturing	2	1.0
33	Repair and installation of machinery and equipment	1	0.5
37	Sewerage	1	0.5
41	Construction of buildings	16	8.0
42	Civil engineering	2	1.0
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	1	0.5
46	Wholesale trade, except of motor vehicles and motorcycles	2	1.0
47	Retail trade, except of motor vehicles and motorcycles	4	2.0
49	Land transport and transport via pipelines	1	0.5
52	Warehousing and support activities for transportation	1	0.5
55	Accommodation	1	0.5
56	Food and beverage service activities	1	0.5
58	Publishing activities	1	0.5
60	Programming and broadcasting activities	1	0.5
61	Telecommunications	1	0.5
62	Computer programming, consultancy and related activities	20	10.0
63	Information service activities	6	3.0
64	Financial service activities, except insurance and pension funding	13	6.5
65	Insurance, reinsurance and pension funding, except compulsory social security	4	2.0
68	Real estate activities	2	1.0

Continued on next page

Table A1 – *continued from previous page*

ISIC code	Sector	*N*	Percent
69	Legal and accounting activities	1	0.5
70	Activities of head offices; management consultancy activities	3	1.5
74	Other professional, scientific and technical activities	6	3.0
81	Services to buildings and landscape activities	1	0.5
82	Office administrative, office support and other business support activities	3	1.5
84	Public administration and defence; compulsory social security	1	0.5
85	Education	1	0.5
86	Human health activities	4	2.0
87	Residential care activities	2	1.0
88	Social work activities without accommodation	2	1.0
90	Creative, arts and entertainment activities	2	1.0
91	Libraries, archives, museums and other cultural activities	1	0.5
94	Activities of membership organizations	1	0.5
95	Repair of computers and personal and household goods	3	1.5
96	Other personal service activities	3	1.5
98	Undifferentiated goods- and services-producing activities of private households for own use	1	0.5
Total		200	100.0

Table B1: Restructuring plans in the top 25% of the distribution of average total restructuring costs.

		Annual salary	Months of salary			
Country	(N)	(EUR thous.)	Mandatory	Voluntary	Non-employee	Total
US	(9)	76.638	6.26	6.09	4.23	16.58
Denmark	(9)	71.600	2.51	2.52	2.75	7.77
Germany	(11)	53.791	14.91	11.48	8.14	34.53
Italy	(14)	33.523	10.28	10.39	10.17	30.84

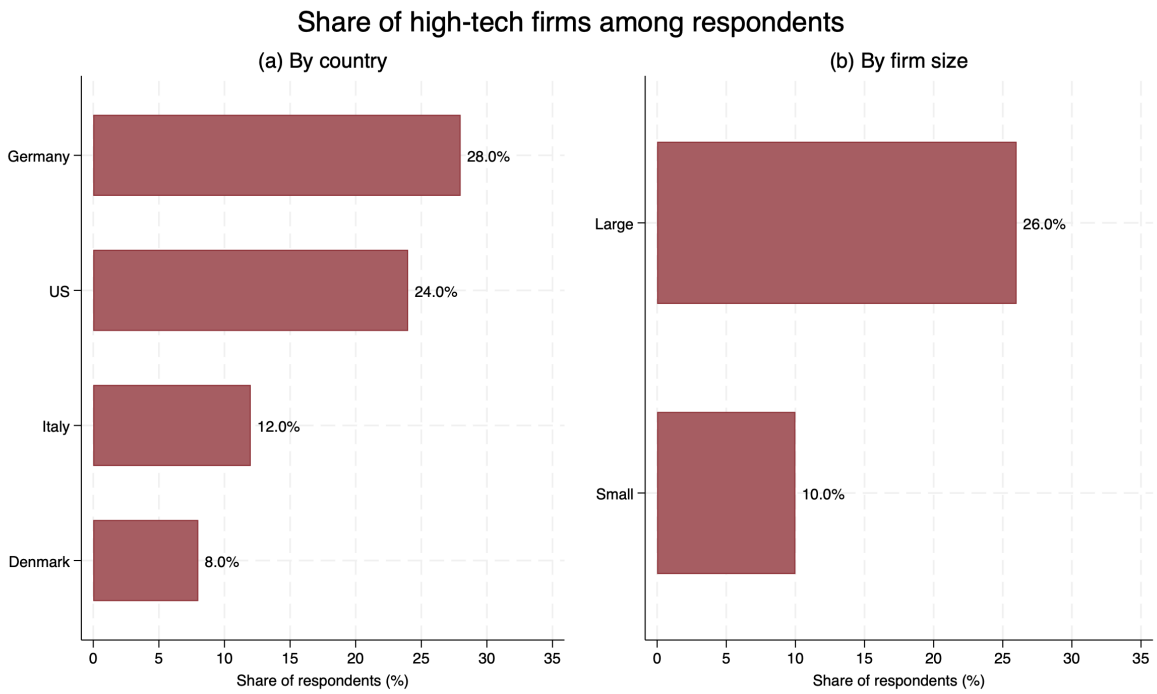
Notes: Sample restricted to restructuring events in which all affected countries share the EPL status of the firm's headquarters country. Average 2024 annual salaries are taken from Eurostat and OECD. For the US, values are converted to EUR using the 2024 average ECB USD/EUR exchange rate.

Table B2: Distribution of firms by employment size bracket and subgroup, and incidence of restructuring costs

	Firm size		EPL regime		Technology	
Employment size	Large	Small	Strict	Loose	High-tech	Traditional
1–9	0	48 (18.8%)	26 (11.5%)	22 (27.3%)	4 (50.0%)	44 (15.9%)
10–49	0	22 (9.1%)	9 (11.1%)	13 (7.7%)	1 (0.0%)	21 (9.5%)
50–249	0	29 (13.8%)	16 (6.2%)	13 (23.1%)	5 (40.0%)	24 (8.3%)
250–999	44 (15.9%)	0	22 (27.3%)	22 (4.5%)	14 (28.6%)	30 (10.0%)
1,000–4,999	41 (7.3%)	0	16 (0.0%)	25 (12.0%)	6 (0.0%)	35 (8.6%)
≥5,000	15 (13.3%)	0	10 (0.0%)	5 (40.0%)	6 (33.3%)	9 (0.0%)
Total (N)	100	100	100	100	36	164

Notes: One observation per firm. Cells show number of firms; parentheses give the share (%) of firms in that cell naming restructuring costs as the main barrier to innovation. Large firms: ≥250 employees. Strict EPL: Germany and Italy; Loose EPL: Denmark and United States. High-tech: NACE 2-digit codes 21, 26, 59–63, 72.

Figure B1:


Share of high-tech firms among respondents
(a) By country
Germany
US
Italy
Denmark
28.0%
24.0%
12.0%
8.0%
0
5
10
15
20
25
30
35
Share of respondents (%)
(b) By firm size
Large
Small
26.0%
10.0%
0
5
10
15
20
25
30
35
Share of respondents (%)

Survey Questionnaire

English Version

dCountry:

1. US
2. Germany
3. Italy
4. Denmark

SCREENING – All Respondents

[Single Choice]

S1. In your professional role, you are:

1. Owner / Manager
2. Self-employed **SCREEN OUT**
3. Employee **SCREEN OUT**
4. Student **SCREEN OUT**
5. Retired **SCREEN OUT**
6. Homemaker **SCREEN OUT**
7. Unemployed / Job seeker **SCREEN OUT**

99. Other **SCREEN OUT**

[Single Choice]

S2. Which area do you work in within the company?

- Chief AI Officer (CAIO)
- Chief Data Officer (CDO)
- Chief Digital Officer (CDO)

- Chairman / Board Member
- Chief Executive Officer
- Chief Financial Officer
- Chief HR Officer
- Chief Information Officer / Chief Technology Officer
- Chief Information Security Officer (CISO)
- Chief Manufacturing Officer
- Chief Marketing Officer
- Chief Operations Officer
- Chief Purchasing Officer
- Chief R&D Officer
- General Manager
- Company Owner / Founder
- Partner
- Senior Executive
- Senior Manager
- Middle Manager / Department Manager **SCREEN OUT**
- Junior Manager / Supervisor / Team Leader **SCREEN OUT**
- Professional Staff **SCREEN OUT**
- None of the above **SCREEN OUT**

[Single Choice]

S3. We will now talk about investments and innovation. How involved are you in decisions related to investments and innovation?

1. I am personally responsible and the sole decision-maker
2. I am personally responsible and decide together with others

3. I am not responsible but I am involved in decisions
4. I am not involved **SCREEN OUT**

[Single Choice]

S4. In which sector does your company mainly operate? Please indicate the ISIC code/sector.

[PN: Show as a dropdown menu]

Code	Title
01	Crop and animal production, hunting and related service activities
02	Forestry and logging
03	Fishing and aquaculture
05	Mining of coal and lignite
06	Extraction of crude petroleum and natural gas
07	Mining of metal ores
08	Other mining and quarrying
09	Mining support service activities
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
22	Manufacture of rubber and plastic products

Code	Title
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
31	Manufacture of furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment
35	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply
37	Sewerage
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
41	Construction of buildings
42	Civil engineering
43	Specialized construction activities
45	Wholesale and retail trade and repair of motor vehicles and motorcycles
46	Wholesale trade, except of motor vehicles and motorcycles
47	Retail trade, except of motor vehicles and motorcycles
49	Land transport and transport via pipelines
50	Water transport
51	Air transport
52	Warehousing and support activities for transportation
53	Postal and courier activities
55	Accommodation
56	Food and beverage service activities

Code	Title
58	Publishing activities
59	Motion picture, video and television programme production, sound recording and music publishing activities
60	Programming and broadcasting activities
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
64	Financial service activities, except insurance and pension funding
65	Insurance, reinsurance and pension funding, except compulsory social security
66	Activities auxiliary to financial services and insurance activities
68	Real estate activities
69	Legal and accounting activities
70	Activities of head offices; management consultancy activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and market research
74	Other professional, scientific and technical activities
75	Veterinary activities
77	Rental and leasing activities
78	Employment activities
79	Travel agency, tour operator, reservation service and related activities
80	Security and investigation activities
81	Services to buildings and landscape activities
82	Office administrative, office support and other business support activities
84	Public administration and defence; compulsory social security
85	Education
86	Human health activities
87	Residential care activities

Code	Title
88	Social work activities without accommodation
90	Creative, arts and entertainment activities
91	Libraries, archives, museums and other cultural activities
92	Gambling and betting activities
93	Sports activities and amusement and recreation activities
94	Activities of membership organizations
95	Repair of computers and personal and household goods
96	Other personal service activities
97	Activities of households as employers of domestic personnel
98	Undifferentiated goods- and services-producing activities of private households for own use
99	Activities of extraterritorial organizations and bodies

[Single Choice]

S5. How many employees does the company you work for have?

1. 1–9
2. 10–49
3. 50–249
4. 250–999
5. 1000–4999
6. 5000 or more

99. Don't know

[Single Choice]

S6. Please indicate the annual turnover of the company you work for:

[PN: IF dCountry=1 show: $; IF dCountry=2,3,4 show: €]

- Less than €50,000

- €50,000 to less than €100,000
- €100,000 to less than €250,000
- €250,000 to less than €500,000
- €500,000 to less than €750,000
- €750,000 to less than 1 million
- €1 million to less than €2 million
- €2 million to less than €5 million
- €5 million to less than €10 million
- €10 million to less than €25 million
- €25 million to less than €50 million
- €50 million to less than €100 million
- €100 million to less than €500 million
- Over €500 million
- Don't know

MAIN QUESTIONNAIRE

[Multiple Choice – Randomize items]

Q1. Which of the following aspects most slowed down innovation activities? Please rank them from most to least relevant (appeared in random order):

[PN: The respondent must rank all items, including code 98 if selected.]

1. Compliance with data protection and privacy regulation
2. Uncertainty about the economic/political outlook
3. Availability of capital
4. Restructuring costs
5. Compliance with intellectual property regulation

6. Compliance with environmental regulation
7. Availability of talent
8. Compliance with product safety regulation
98. Other (please specify): _____ *[NOT MANDATORY]*

[Single Choice]

Q2. In the last 5 years, has your company implemented restructuring plans?

1. Yes
2. No

[Single Choice – If Q2=1]

Q3. How many restructuring plans has your company implemented in the last 5 years?

1. One
2. Two
3. Three
4. Four
5. More than four

[PN: Show in loop]

Before each loop, show the following INTRO text:

- Before loop 1: *Now we will ask you to answer some questions on the first restructuring*
- Before loop 2: *Now we will ask you to answer some questions on the second restructuring*
- Before loop 3: *Now we will ask you to answer some questions on the third restructuring*
- Before loop 4: *Now we will ask you to answer some questions on the fourth restructuring*

- Before loop 5: *Now we will ask you to answer some questions on the fifth restructuring*

Q4. In what year did the restructuring take place?

[Single Choice – If Q2=1]

Q5. Which countries were involved in the restructuring?

Q6. Please indicate the exact cost of the _____ restructuring.

Q7. *PriceCheck.* Please review your answers for cost for restructuring. Please indicate the exact cost for the restructuring:

Is this correct?

1. Yes
2. No, let me revise my answers

Q8. Please enter the correct cost:

_____ *[Numerical response, range: min 1, max 999,999,999]*
[PN: IF dCountry=1 show: $; IF dCountry=2,3,4 show: €]

Q9. Please indicate the percentage breakdown between costs strictly attributable to mandatory procedures for employees' collective dismissal (e.g. severance pay), other non-mandatory employee-related costs (e.g. voluntary exit incentives), and other non-employee-related costs.

[PN: The sum of Q9a, Q9b, and Q9c must equal 100%.]

Q10. Costs attributable to mandatory procedures for collective dismissal (e.g. severance pay, mandatory training, etc.):

_____ % *[Quantitative, range 0–100]*

Q11. Non-mandatory costs related to employees' dismissals, such as optional training, early retirement incentives, voluntary exit bonuses, negotiation costs:

_____ % *[Quantitative, range 0–100]*

Q12. Non employee-related costs of restructuring, such as capital, machinery, equipment, building works, consulting and legal costs:

_____ % *[Quantitative, range 0–100]*

Q13. Please indicate the number of employees laid off:

_____ *[Quantitative, min 0, max 999,999]*

[Single Choice]

Q14. "Based on your answers, it follows that employee-related costs amount to about **[PIPE: X1]** per employee of mandatory costs and about **[PIPE: X2]** per employee of non-mandatory costs. Is this correct?"

- Yes
- No

This is a working paper, and hence it represents research in progress.
This paper represents the opinions of the authors, and is the product of professional research.
It is not meant to represent the position or opinions of the IEP@BU, nor the official position of any staff members.
Any errors are the fault of the authors.

Università Bocconi
IEP@BU
Institute for European Policymaking

www.iep.unibocconi.eu