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A New Database of Employment Protection Legislation

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Abstract

Reforms decreasing the level of employment protection are often indicated as growth-friendly since they are thought to increase the firms' hiring incentives. However, still too little is known about the potentially different effects of different types of reforms. We contribute to the literature by building a comprehensive database of employment termination legislation. Our database covers an unbalanced sample of 96 countries high-, middle- and low-income countries. We consider large as well as small firms, junior as well as senior workers and blue as well as white collar workers. We focus on procedural burdens, monetary costs, as well as redress measures following an unfair dismissal. We find that, while higher employment protection is negatively correlated with labor force participation and the employment rate only in advanced economies, countries offering higher protection against unfair dismissals tend to have a lower level of inequality.

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1. Introduction

Several countries have been grappling with stagnant economic activity and high unemployment since the Great Recession. As a consequence, some governments have recently pushed through structural reforms aiming at increasing competition in the labor market. The rationale is to reduce the bargaining power of workers, as well as the firing costs faced by firms (Blanchard and Giavazzi (2003)). This, in turn, would increase the firms' hiring incentives, revive employment, and thereby growth. However, the benefits of such reforms may take some time to materialize. Indeed, novel contributions have underlined that their short-term effects may be negative (Cacciatore and Fiori (2016)), and even exacerbated in times of crisis (Eggertsson et al. (2014)). Moreover, some researchers have also cautioned about potentially adverse consequences for income distribution (Freeman (2009) and Deakin et al. (2014)).

In this context, the empirical literature has been lagging behind. Seminal work by Botero et al. (2004) contributed to form a consensus identifying in the origin of the legal system a major determinant of the cross-country variation in the level of labor market regulation. However, a rigorous cross-country analysis of the effects of changes in labor market regulation has been hampered by the limited availability of comparable time-series data.[1] This paper contributes to the literature by developing a new database of employment protection legislation (henceforth EPL) in the area of employment termination. Particularly, besides a synthetic indicator of EPL, we provide three distinct regulation indexes: (i) procedural burdens, and (ii) monetary costs faced by the firms when discharging workers, as well as (iii) protection given to workers in cases of unfair dismissal.

Our database expands and improves on existing ones in several respects. First, our time and country coverage is considerably larger than that of most other databases. We focus on an unbalanced sample of 96 low-, middle-, and high-income countries. For about 25 emerging markets and advanced economies we document the evolution of EPL from its origins in the first decades of the nineteenth century. Second, we consider several areas of within-country heterogeneity in EPL. These include

[1] The indicators of employment protection legislation (henceforth EPL) elaborated by the Organization for Economic Cooperation and Development (henceforth OECD) provide information about (i) the stringency of the definition of valid grounds for dismissals, (ii) the monetary costs for redundancy dismissals (both individual and collective), and (iii) the redress measures following unfair dismissals. Although they cover a sample of 73 countries, the data are only available from 1985 to 2013 and from late 2000s to 2013 for, respectively, OECD and non-OECD countries. In the context of its Ease of Doing Business project, the World Bank provides survey-based data about redundancy dismissal costs for a panel of 181 countries. But the data are available only for over the 2004-2015 period. Aleksynska and Schindler (2011) construct a balanced dataset for 91 countries over the 1980-2005 period, but they only collect information about monetary costs of redundancy dismissals. Campos and Nugent (2012) extend the work of Botero et al. (2004) to 140 countries over the 1950-2005 period. However, they only provide a composite index of EPL in the areas of employment termination, the usage of alternative employment contracts and the cost of increasing hours worked. Moreover, the composite index is at the 5-year frequency. Finally the International Labour Organization recently started publishing its EPL database, also called EPLex. This provides a wide range of information regarding (i) substantive requirements for dismissals, (ii) procedural burdens for individual as well as collective dismissals, (iii) monetary costs, and (iv) remedies following wrongful dismissals. The EPLex covers 95 countries, but only for the 2009-2013 period.

the size of firms, the types of workers (e.g. white and blue collars), and the workers' tenure. Third, we consider EPL applying to different dismissal situations: (i) objective reason (both individual and economic), (ii) professional incapacity, (iii) gross misconduct, and (iv) no reason dismissals.

We find that on average the level of EPL has almost always increased over time. Tightening reforms EPL are more frequent and larger than easing ones. We also show that the period of most intense global regulating activity was from 1960 to 1979. However, liberalizing reforms have been increasing throughout the sample. Emerging markets and low-income countries on average reform less than advanced economies. But when they do, they carry out larger reform episodes.

Partially in opposition to what suggested by theory, only in advanced economies EPL is correlated with lower participation and employment rates. On the other hand, EPL is negatively correlated to income inequality. This should not come as surprise, since higher EPL is supposed to increase the bargaining power of workers relative to employers. Finally, we show that some novel aspects of our database could be used to improve our understanding of the effects of labor market reforms. In particular, redress measures seem to be the most important are of EPL for what concerns the relationship with both labor markets and inequality outcomes.

Our new database of EPL is suited for numerous empirical applications. On the one hand, its large country, time and regulation-type coverage makes it useful to carry out cross-country empirical analyses of both the political economy determinants and the macroeconomic effects of different types of EPL reforms. On the other hand, the novel aspects of our database concerning the within-country heterogeneity of EPL can also allow to conduct more granular studies on some aspects of EPL reforms that, so far, may have been overlooked. Overall, we believe that our indicators may ultimately contribute to improve the understanding of EPL reforms.

2. The database

Our country coverage currently extends to 96 countries , all three low-, middle-, and high-income. Regarding the time coverage, we strive to get the longest time series. For some countries we are able to document the evolution of EPL from its origins in the first decades of the nineteenth century. However, ultimately, the time coverage is constrained by the availability of older laws. For this reason, the time coverage varies greatly. On average we cover each country for 50 years, hence for the period 1966-2015. If feasible, for countries that became independent only in recent times we try to collect information also for the period before independence. We do so since often the laws in colonized territories differ from those of the colonizing countries. Table 1 summarizes the number of countries covered at different points in time. Table A1 in Appendix A provides a complete list of the countries covered, as well as

the time covered for each country. We plan to extend the country coverage as well as the number of years covered per country in future work.

Table 1: Number of countries covered at different points in time

	1910	1930	1950	1970	1990	2010
Adavanced economies	1	6	8	15	22	28
Emerging markets	2	7	15	20	33	45
Low income countries	0	0	2	8	14	23
All	3	13	25	43	69	96

The methodology we use to collect relevant information can be summarized as follows. With some exceptions, our indicators are generally based on official laws. We do not consider case law. But we do consider those general collective agreements whose applicability encompasses all sectors. Hence, our database can be seen as de-jure. To reconstruct the history of EPL in a given country, we start from its current laws and trace the evolution backwards. To identify current legislation we rely on the EPLex database. When this is not available or not up to date we use the NATLEX database.[2] The way in which we backtrack older legislation is thought to ensure that we do not miss any relevant change in the law. For each country, we follow three distinct approaches to backtrack older legislation. First, we check whether the current laws specify in detail which older laws they repeal upon their entry into force. If this is the case, we can identify older legislation by looking at these references. Second, we check the coverage of older legislation provided by NATLEX. Third, we rely on country-specific databases and other sources, such as for instance the collection of government gazette and scholarly articles. Finally, we cross-check the information gathered in these different ways to reconstruct the evolution of EPL.

The types of provisions we consider can be divided in three broad categories: (i) probationary period and procedural requirements before a dismissal, (ii) monetary costs of a dismissal, and (iii) grounds for dismissal and redress measures following a wrongful dismissal. We discuss the variables belonging in each of these categories respectively in Subsections 2.1-2.5 below.

In compiling the database, we take into account various aspects of heterogeneity in EPL. These relate to (a) the dismissal situation, (b) the firm's size, (c) the worker's type, and (d) the worker's

[2]EPLex is a database providing information on all the key topics that are regularly examined in studies on employment termination legislation, and it is available for 95 countries for the most recent years. NATLEX is a database of national labor, social security and related human rights legislation compiled by the International Labour Organization. Importantly, it contains references to both current and repealed legislation in employment termination, and it covers 196 countries.

length of service. Concerning the different dismissal situations, we focus on termination related to the firm's operations (henceforth objective reasons), termination related to the worker (henceforth subjective reasons) and no reason dismissals. Further, among objective reasons, we distinguish between individual and collective dismissals. We also record the minimum number of workers to involved in a collective dismissal for it to be defined as such.

Among subjective reasons, we distinguish between dismissals for professional incapacity and gross misconduct. As far as the firm size is concerned, we take into account (i) if different regulations apply to firms of different sizes, and (ii) the maximum number of workers that a small firm can have for it to be defined as such (we refer to this as the small firm upper limit). As a rule, we collect information about EPL applying to (i) firms with 200 workers and (ii) firms falling in the most restrictive definition of small firms. Concerning the worker's type, we distinguish among blue and white collars, where we define a (white) blue collar worker as one performing mostly (non) manual tasks. Finally, we consider the worker's tenure and collect information about EPL applying to workers with length of service equaling 6, and 9 months, 2, 4, 5, 10 and 20 years. However, since heterogeneity in EPL depending on the worker's tenure is mostly limited to valid grounds, monetary costs and compensation following unfair dismissal, the only variables differing by worker tenure are those belonging to such categories.

Combining all the different provisions with the various aspects of EPL heterogeneity we focus on, our database comprises a total of 706 different variables. This is not to say that for each country in a given year those 706 variables all take different values. In fact, for most countries EPL is not heterogeneous among all the different dimensions we take into account. However, we do allow for potentially up to 706 different variables.

Before describing all the variables we construct in detail, it is worth making a few general considerations. First, except for probationary period, higher values indicate higher worker protection. Second, for all the provisions that have to do with time, such as for instance the probationary period and the period of notice, we use the month as unit of measure. If the law refers to days or weeks, we consider a week to have 7 days and we transform the number of days in months by dividing them by 30.[3] In some countries the legislation is silent about the precise amounts of some payments of length of certain periods. In these cases, we code the relevant variables as not available (NA). For the aggregation, we use default values that we discuss in section . Let us now introduce the variables we construct.

[3]We consider a month as having 30 rather than 30.42 days for simplicity, since in many countries the legislation expresses periods of notice in the amount of 30 days or multiples.

2.1. Valid grounds

Perhaps one of the most politically sensitive issues in the field of EPL lies in the protection of the workers against unfair dismissal. However, as we will show later, this is a relatively young form of EPL. Before the industrial confrontations of the 1960s and 1970s in relatively few countries the employer was required to have a reason for dismissal. Nowadays, all countries we analyze prohibit at least some grounds of so-called discriminatory dismissals. These can be seen as instances of termination of employment for reasons related to the worker's person but that do not have to do with the her conduct or capacity. Among others, such instances may be related to the worker's political beliefs, race, religion, sexual orientation, and trade union activities. Since we are interested in regulation that create some kind of burden to the employer in the normal operation of her business, we do not consider EPL regarding discriminatory dismissals.

Having distinguished between discriminatory and non-discriminatory dismissals, there is still a great dispersion in what kinds of non-discriminatory dismissals are allowed among the countries in our sample. In some countries, the employer does not need to justify a dismissal. This is the case of the so-called dismissal at will (or no reason dismissal). Of course, the notion of dismissal at will shall not be seen as a total freedom in carrying out dismissals. It is intended in light of prohibited grounds (or discriminatory dismissals).

Whereas we count 24 countries in our sample in which the so-called dismissal at will was still allowed as of 2015, in some others, employment termination at the initiative of the employer is only allowed in case of gross misconduct. For instance this is the case in Venezuela, where this policy is referred to as *inamovibilidad en el empleo*, or immobility in employment. In between the cases of dismissal at will and immobility in employment, a large number of other policies defining the boundaries of a fair dismissal have been developed during the years. Some countries allow dismissal for any fair reason (this is typical especially among common law countries). Others list a series of reasons where dismissal is not allowed. In some others, termination is permitted only for certain specific reasons. For instance, Chile in 2001 ceased to list professional incapacity as a reason justifying dismissal (see art. 5 of *Ley 19759* (Ministerio del Trabajo y Prevision Social, 2001)). Table A2 in Appendix A lists the countries in our sample according to what kinds of dismissals are allowed as of 2015.

Ranking countries according to their definition of a fair dismissal is not straightforward. In countries where termination for any fair reason is allowed, the labor court (or its equivalent) retains a large autonomy in setting the limit of what is considered to be a fair reason. In countries where dismissal is only allowed in specific circumstances, the legislation often times differ in setting the contours of what is accepted and what is not. This is also the case for the same kind of dismissal category. For instance, in Spain the definition of objective reason dismissals is very specific. It refers to economic losses

and decrease in revenues or sales (economic reasons), changes in production tools (technical reasons), changes in the way to organize the production (organizational reasons), and changes in the demand of the goods produced by the firm (reasons of production), (see art. 51 of *Real Decreto Legislativo 2/2015* (Ministerio de Empleo y Seguridad Social, 2015)). Instead in many countries, a dismissal for objective reasons is rather generally referred to as termination based on operational requirements (see for instance sec. 5 of *Employment (Amendment) Act, No. 15 of 2015* (Government of Zambia, 2015)).

To capture the variation in the definition of a fair reason we adopt a simple approach. For a given dismissal reason x that we analyze we distinguish between the following 4 cases: (a) no reason is needed for dismissal (dismissal at will is allowed), (b) a valid reason is needed for dismissal and a valid reason is any fair reason, (c) a valid reason is needed for dismissal and the legislation specifies the valid reasons: x is a valid reason (d) a valid reason is needed for dismissal: x is not a valid reason. We then construct a variable, which we call the valid grounds variable. This takes values 0, 0.25, 0.5 or 1 if, respectively, (a), (b), (c) or (d) applies. The rationale behind these values is that we take the legislation to be the more restrictive the more it is specific.

At this point, it is worth making a few considerations. First, if no reason is needed for dismissal, the valid grounds variable takes the same value (0) for all kinds of dismissal situations. For no reason dismissal, the valid grounds variable take value either 0 or 1. If a reason is needed and a valid reason is any fair reason, then the valid grounds variable take value (0.25) for all kinds of dismissal situations except no reason dismissal. Finally, if the valid grounds variable takes value 1 dismissal x is not allowed and that has consequences for all other variables in the aggregation. We explain that more in detail below.

Employment protection against unfair dismissal can be granted to workers only after they have matured a certain service period. For example, in the UK the notion of dismissal at will only applies to workers with more than 24 months of service (see sec. 2 of *The Unfair Dismissal and Statement of Reasons for Dismissal (Variation of Qualifying Period) Order 2012* (of State for Universities et al. (2012))). We take this into account by constructing one valid grounds variable for each worker's tenure we consider.

The fact that in some countries protection against unfair dismissal is only granted after a certain length of service does not mean that the employer does not face any burden when she dismisses a worker who has not matured such tenure. Even in the cases in which dismissal at will is allowed, the employer is generally still required to abide to some (procedural) requirements, give the worker a period of notice, or pay her an indemnity. Hence, also in those cases we take into account all procedural requirements or monetary costs that can constitute a burden to the employer when terminating a contract.

The highest degree of freedom for the employer when dismissing a worker is normally found during

the probationary period. Then, the employer is normally allowed to dismiss the worker without going through a specific procedure. Below, we explain how we code the probationary period, as well as procedural requirements and monetary costs in detail.

2.2. Probationary period

At the beginning of an employment contract the employer and the employee normally agree on a probationary period. During this, the employer assesses the capacity of the employee and can terminate the contract if she is not satisfied. The presence of a probationary period does not necessarily mean that once it is over the employer needs a valid reason to the terminate the contract. Rather, what characterizes a probationary period is the relative ease with which the employer can normally put an end to the employment relationship (without the need to follow specific procedures, give a period of notice or pay the employee a severance payment).[4] We code the statutory maximum length of a probationary period.

2.3. Procedural requirements

To explain the procedural requirements we focus on, we need to distinguish between the different dismissal situations. We start with objective reason dismissals (we code the same provisions for individual and collective). We take into account the following requirements: (i) third party notification, (ii) third party approval, (iii) consultation with workers' representatives (henceforth WR), (iv) consideration of alternatives to dismissal, (v) priority for re-employment, (vi) length of priority for re-employment, (vii) lay-off rules. Each variable takes value 0 if the legislation does not prescribe any requirement. Variable (i) takes value 0.5 (1) if the employer needs to notify either (both) the WR or (and) any body of the public administration (henceforth PA). The rule is valid also in the case the requirement for notification is implicit. This happens, for instance, if the employer is required to consult the WR or seek prior authorization for a dismissal. (ii) is equal to 0.5 (1) if an authorization by either (both) the PA or (and) the WR is needed prior to dismissal. (iii) takes value 0.5 if there exists a general requirement (that is, without detailed procedures) to consult with WR about the dismissal, whereas it is equal to 1 if there are detailed procedures (e.g. minimum periods, documents to be submitted to WR, etc.). (iv) takes value 0.5 if the legislation prescribes a general requirement to consider alternatives to dismissal (such as transfer and retraining) or measures to mitigate its consequences; (iv) takes value 1 if there is an obligation to retrain the worker before proceeding to terminate the contract. (v) takes value 0.5 (1) if the employer may be (is) required to offer priority for re-employment

[4] In some cases, the employer still needs to give a period of notice or the opportunity to a fair hearing to the employee if she wants to terminate the contract during the probationary period. However, these are rather isolated cases. Hence, we do not consider them.

to a dismissed worker if a similar position opens up within the firm. Variable (vi) measures the length of the priority for re-employment (in months). Finally, (vii) takes value either 0.5 (1) if the employer needs to set out (follow predefined) rules to select the workers to be dismissed.

The number of requirements we take into account for subjective reason dismissals, is lower than for objective reason dismissals. For professional incapacity, we construct the following variables: (i) third party notification, (ii) third party approval, (iii) right to a fair hearing/consultation WR, (iv) consideration of alternatives to dismissal. (i) and (ii) are coded in the same way as for objective reason dismissals. Instead, (iii) takes value 0.5 if the employee has right to a fair hearing before being dismissed and value 1 if the WR are to be involved in the procedure. (iv) takes value 1 if the employer needs to try retraining the worker before proceeding to the dismissal. For gross misconduct dismissals we only consider (i) third party notification, (ii) third party approval, and (iii) right to a fair hearing/consultation WR. All the three variables take the same values as for professional incapacity dismissals. Finally, for no reason dismissals we only create variables for (i) third party notification and (ii) third party approval, and we code them in the same way as explained before.[5] The procedural variables we construct are summarized in Tables **??-??** in Appendix B

2.4. Monetary costs

As we will show below, notice periods before contract termination constitute the oldest form of employment protection. This kind of provision emerged in statute law well before the twentieth century. However, originally notice periods were intended to safeguard both parties in the working relation, as employment termination at the initiative of either party was subject to the same period of notice. This was amended only later. Nowadays notice periods tend to be (i) longer if termination is at the initiative of the employer, and (ii) the longer the more senior is the worker.

In most countries, the legislation allows the employer to terminate the contract before the actual expiration of the period of notice by paying the employee a sum equal to the wage she would have earned during the period of notice. For this reason, we consider the notice period to the extent of a monetary cost. Normally, we code periods of notice according to the minimum length set by law. If instead the law sets a maximum, we code the maximum divided by 2. Since a notice period is normally not granted in the case of termination due to gross misconduct, we do not construct notice period variables for this type of dismissal.

[5] We exclude layoff rules and priority for re-employment from subjective and no reason dismissals since they only exist for objective reason dismissals. Moreover, whereas an employer may be find a way to avoid the dismissal of a worker who is not anymore able to perform her job by way of retraining, this is not the case when the employer wants to dismiss the worker due to gross misconduct. Finally, by definition, in the case of no reason dismissals (that is when the employer does not need to justify termination) there is not such a thing as right to a fair hearing. But it still, it can be possible that the employer needs to notify the PA (or WR) or seek authorization.

In some cases, the law grants workers a severance (or redundancy) payment upon termination. This payment, which normally increase in the worker's tenure, can take various forms. For instance, in some countries the employer is required to deposit every year (or month) a sum equal to fraction of the wage she pays to the worker in a special fund that will be used to pay for the worker's severance payment at termination.[6] The worker normally receives this payment regardless of the cause originating the termination of the employment relationship (hence also upon retirement, resignation and dismissal for gross misconduct). In other countries, a similar encompassing form of severance indemnity is provided for. But rather than depositing a certain amount of money in a special fund every month or year, the employer is required to pay the all sum at once upon termination. This normally happens not only when the employer decides to terminate the contract at her own initiative but also in other situations.[7] In other countries, instead, the employer is required to pay the worker an indemnity only in certain cases of termination. The most frequent case of termination requiring a severance payment is dismissal for economic reasons.[8] In some cases, an indemnity is due in several cases of termination at the initiative of the employer (or at the initiative of the employee due to serious fault from the employer). Dismissal due to gross misconduct is generally excluded.[9]

In general, we are interested in any provision that creates an additional burden to the employer relative to the standard cases of termination due to old age or worker's retirement. Hence, we only code as severance payment those indemnities that the employer needs to pay when she decides to terminate the contract at her own initiative. The reasoning justifying this choice lies in the fact that if a payment is due in all cases of termination, then we may assume that the employer saves up at regular interval to pay the indemnity that she knows will be due in any case. Then this would be factored in a lower *ex-ante* salary for the worker, and it would not constitute a burden for the employer. This is a major methodological difference relative to other EPL datasets that instead code all instances of payment at termination as a severance payment, except for the cases in which the employer needs to contribute to a special fund at regular intervals. As in the case of the notice period, we code the minimum amount of severance payment set by law. If the law sets a maximum, then we divide it by 2. For the same reason that we do not consider the notice period for gross misconduct dismissal, we also do not consider severance payments for that type of dismissal. Table B5 describes the monetary cost variables we construct.

[6]For instance, this is the case in Italy (*Trattamento di fine rapporto*) and Austria (*Mitarbeitervorsorgekasse*).

[7]For instance, this is the case in India for workers with more than 5-year tenure (see the *Payment of Gratuity Act, 39/1979*) and in Colombia (*Auxilio de cesantia*).

[8]Observers normally refer to payments due only in case of economic dismissals as redundancy payment. Among others, this is the case in Czech Republic (*odstupného*) and Germany (*abfindungsanspruch bei betriebsbedingter kündigung*).

[9]For instance, this is the case in Ecuador (*indemnización por despido intempestivo*) where the employer is allowed to dismiss a worker without need to have a reason by paying her a compensation.

2.5. Redress measures

A worker can appeal against a dismissal mainly for two reasons. If she believes (i) that the employer did not have a valid reason (unfair dismissal), or (ii) that the employer did not follow the right procedure, i.e. the notice period, right to a fair hearing etc. (breach of procedural requirements). In constructing the database we only focus on redress measures against an unfair dismissal. We do so since redress measures for unfair dismissal and for breach of procedural requirements tend to offer similar degree of safeguards within the same country. Moreover, unfair dismissals are arguably a more contentious issue than breaches of procedural requirements. We construct redress variables for all dismissal situations except no reason dismissal, since a dismissal at will by definition cannot be unfair.

The most common redress measures in case of an unfair dismissal are (i) the award of a monetary compensation, (ii) the reinstatement in employment, and (iii) the payment of the wages that worker would have earned from the moment when she was dismissed to the decision by the labor court (or the moment of the reinstatement). We define the latter as backwages. In some countries, mostly common law ones, it is up to the labor court (or any other competent authority) to decide which redress measure shall be awarded.

In order to take into account that in some countries a wide range of redress measures are possible we take a flexible approach in constructing our redress indicators. We create the following variables: (a) compensation only, (b) reinstatement or compensation, (c) mandatory reinstatement, (d) backwages awarded, (e) maximum amount of backwages. Variable (a) takes value 0.5 if the only redress measure is the payment of a compensation and its maximum amount is set in legislation. Instead, it takes value 1 if the amount of compensation is freely determined by the labor court. (b) takes value 0.5 (0.67) if reinstatement is an alternative measure to compensation and the maximum amount of compensation is set by legislation (amount freely determined). (b) takes value 0.83 (1) if reinstatement and compensation may be both awarded and the maximum amount of compensation is set in legislation (amount freely determined). (c) takes value 0.5 if reinstatement is the only remedy against unfair dismissal. Instead, (c) takes value 0.625 (0.75) if reinstatement is the primary remedy but compensation may also be awarded and its maximum amount is set by law (amount freely determined). Finally, (c) takes value 0.875 (1) if reinstatement and compensation are both mandatory and the maximum amount of compensation is set by law (amount freely determined). (d) takes value 0.5 if the award of backwages may be ordered and value 1 if backwages are mandatory. The variable (e) is equal to the maximum length for which backwages are awarded (sometimes the legislation sets a limit). We also construct another variable to take into account how much time the worker has since the moment he was dismissed to fill a unfair dismissal claim.

Let us now make a few considerations. In ranking the cases in which the amount of the compensation

is freely set by the labor court as causing a higher burden to the employer, we assume that employers dislike uncertainty. In the situations in which the law gives the possibility to the worker to choose between compensation and reinstatement we assume that the worker prefers reinstatement and we code our variables accordingly. Conversely, if it is up to the employer to decide between reinstating the worker and paying a compensation we code as if she chooses to pay a compensation. We take this approach because we believe that reinstatement constitutes a higher burden for the employer (and higher protection for the worker).

To take into account that the amount of compensation may differ among countries, we construct a separate variable. If the amount is set by law, the variable takes value equal to that amount (expressed in months of wage equivalent). If the law sets a minimum (maximum), we multiply (divide) that by 2. If the law does not provide any guidelines, the variable takes value NA. In the instances in which the law states that reinstatement is the primary redress measure, the worker has the possibility to ask for a compensation instead of the reinstatement. In those cases, we code the amount of compensation that the worker could seek if she preferred compensation to reinstatement. Since the compensation amount normally varies with the worker's tenure, we create one variable for each tenure we consider.

Table B6 summarizes the redress variables we construct. Since in the aggregation we construct a sub-index capturing both valid grounds and redress measures, Table B6 also describes the valid grounds variable. Table C1 in Appendix C shows countries in our sample categorized by their score in the compensation, reinstatement or compensation and reinstatement variables as of 2015 (countries where dismissal at will is allowed are excluded). The Table shows a great degree of variation in the redress measures, with reinstatement only and compensation only (maximum amount set by law) being the two most frequent measures.

3. Aggregation

Our ultimate aim is to provide a synthetic index of EPL. Hence, we aggregate all the variables we construct in a single indicator, which we define the Employment Termination Index (henceforth ETI). In doing so, however, we proceed in steps and construct a series of sub-indexes of EPL. Precisely, we create indicators for the different (i) regulation types (procedural requirements, monetary costs and redress measures), (ii) dismissal types (objective, subjective and no reason), (iii) firm sizes (small and large firms), (iv) worker types (blue and white collars), and (v) worker tenures (junior, intermediate and senior workers). In the subsections that follow we describe how we construct the ETI and its sub-indexes.

3.1. Default and maximum values

The first step in carrying out the aggregation is to transform NA entries into numerical values. NAs appear when the legislation does not set specific provisions regarding certain issues of EPL. Hence, we use some default values. Next, we convert variables expressed in months (or months of wage equivalent), such as the period of notice, the severance payment and others, into a continuous variable ranging from 0 to 1. To do so, we divide the raw variable by a parameter, which we call the maximum value. If the raw variable has value higher than the corresponding maximum value parameter, the continuous variable simply takes value 1. Rather than setting the maximum value parameters equal to the observations with the largest values, we set them in such a way as to avoid having a few large outliers that push down the rest of the sample, while at the same time preserving variability. Table D1 in Appendix D reports the default and maximum values that we use.

Before proceeding, we combine the two variables priority for re-employment and length of priority into a single encompassing priority variable by multiplying them together (after having transformed the length of priority into a continuous 0-1 variable). We do the same with backwages awarded and maximum amount backwages variables and create a single variable defined as backwages. Further, we set two rules. The first one states that if the variable valid grounds for dismissal situation x takes value 1 (dismissal not allowed) then all the other variables take maximum value. The rationale is that not allowing a dismissal amounts to having the highest degree of employment protection. The second rule states that if third party approval is needed then the reinstatement variable takes value 0.5 (reinstatement is the primary remedy against unfair dismissal), and the variables time to fill a claim and backwages both take maximum value. The reason for this choice is simple: if prior authorization by either the PA or WR is needed, a dismissal is unlikely to ever be unfair. In fact some countries in which prior authorization is needed do not even provide for redress measures. However, the employer has an ex-ante burden: proving that the dismissal is indeed fair. Hence, our rule ensures a relatively high score for redress measure when approval is needed.

3.2. Variable weights

To aggregate different variables together we need to decide on their relative weights. A simple approach would entail setting equal weights to all variables. Arguably, however, some provisions are more burdening for firms than others (and they also offer higher employment protection to workers). Hence, we assign larger weights to the provisions we believe are more important.

Among procedural requirements, we assign the smallest and largest weight to third party notification and approval respectively. As far as monetary costs are concerned, we give a slightly higher weight to severance payments relative to notice periods since, while the financial implications of the

two are similar, during the notice period the employer can keep the employee at work. Among redress measures, we assume that in general the obligation to reinstate the worker in employment is more burdening than paying a monetary compensation and we give the reinstatement variable the highest weight.

Table D2 in Appendix D reports the weights we use to aggregate the variables falling into the three regulation types (procedural requirements, monetary costs and redress measures), for each dismissal situation (individual and collective objective reasons, professional incapacity, gross misconduct and no reason). For the moment, let us focus on objective reason dismissals only. For this kind of dismissal, the maximum score that a country can achieve under procedural requirements, monetary costs and redress measures is equal to 7.[10] This implies that when we aggregate the three regulation types together to form the sub-index of EPL for objective reason dismissal, they all have the same weight. We do so as we do not have a particular prior on what kind of regulation is more burdening for the employer. Since our sub-indexes (as we all as the ETI) range from 0 to 1, when we aggregate the variables we normalize their weighted sum accordingly.

Let us now turn to professional incapacity, gross misconduct and no reason dismissals. As we explained above, some variables, which are instead relevant for objective reason dismissals, do not exist. This implies that procedural requirements, monetary costs and redress measures do not have the same weights. For professional incapacity, monetary costs and redress measures have a higher relative weight than procedural requirements. This makes sense if we consider that the employer faces less procedural burdens relative to the case of objective reason dismissals. A similar argument can be made for gross misconduct (no reason dismissals): redress measures (monetary costs) have the highest relative weight.

At this point, it is worth explaining how we use the probationary period variable. During the probationary period the employer can terminate the employment relationship without having to abide to any requirement. Hence, we create the following rule: if the length of the probationary period is equal or longer to the tenure of the worker that we consider then all variables, for all regulation types, take value 0 for that worker (no protection against dismissal). Otherwise, they maintain their original value. Since the probationary period is meant to allow the employer to assess the capacity and conduct of the worker this rule only applies to professional incapacity and gross misconduct dismissals.

[10] Among the valid grounds and redress measure variables, only one between compensation, reinstatement or compensation, and reinstatement can take positive value. Hence, the maximum raw score that can be achieved under valid grounds and redress measures is 7.

3.3. Aggregation

We are now ready to aggregate together the different dismissal situations. To assign the relative weights of professional incapacity, gross misconduct and no reason dismissals we use the following formula:

$$W_{d,r} = \frac{Z_d T_{d,r}}{Z_i T_{i,r} + Z_{ii,r} T_{ii,r} + Z_{iii} T_{iii,r} + Z_{iv} T_{iv,r} + Z_{v,r} T_{v,r}} \tag{1}$$

where $W_{d,r}$ is the relative weight taken by the dismissal situation d in the the sub-index of regulation type r, (for $d = iii, iv, v$). Z_d is a discount factor taking value 1 for $d = i, ii$ and 0.5 for $d = iii, iv, v$. Further, $T_{d,r}$ refers to the sum of weights of regulation type r for dismissal d, as reported in Table D2. Finally, i, ii, iii, iv and v stand respectively for individual objective reason, collective objective reason, professional incapacity, gross misconduct and no reason dismissal. $r = p, m, g, t$ refers respectively to procedural requirements, monetary costs, redress measures or the ensemble of all regulation types. The rationale behind choosing different discount factors consists in assuming that objective reasons dismissals are more frequent than subjective and no reason dismissals. Further, we interact the discount factors of each dismissal type with their respective (regulation type) sum of weights to take into account that given the same number of dismissals, some are more burdening than others.

To assign relative weights to individual and collective objective reason dismissals we take into account the country and time variation in the definition of collective dismissals (see Table E1 in Appendix E to get a glance of the degree of cross-country variation for the year 2015).[11] Hence, we construct time-varying weights. We give a higher weight to individual dismissals the higher is the number of workers to be involved in a collective dismissals for it to be legally classified as such, which we refer to as the qualifying threshold. The formula we use is as follows:

$$W_{i,r}^{x,c} = L + \frac{R_{ii} - 2}{S_{ii}^{x,c}} \left(\frac{Z_i T_{i,r} + Z_{ii} T_{ii,r}}{Z_i T_{i,r} + Z_{ii} T_{ii,r} + Z_{iii} T_{iii,r} + Z_{iv} T_{iv,r} + Z_v T_{v,r}} - 2L \right) \tag{2}$$

where W_i^x, r is the relative weight assigned to individual dismissals for the regulation type sub-index r, firm size x and worker's collar c. L is a lower bound taking value 0.068, R_{ii} is the qualifying threshold. Finally, $S_{ii}^{x,c}$ is equal to either 200, for the case of large firm ($x = l$), or to the small firm upper limit for the case of small firms. The rest is as in Equation (1). If the legislation defines the qualifying threshold

[11] A termination for objective reasons is defined as collective if it involves a certain number of workers (expressed either as an absolute number or as a percentage of the firm's workforce).

as a percentage of the firm's workforce we first convert it into an integer number using information about the firm's size. If the legislation does not define the qualifying threshold of the small firm upper limit, we use respectively 2 and 50. Having constructed the relative weights of individual dismissals, the formula for the collective dismissals weights is simply:

$$W_{ii,r}^{x,c} = \frac{Z_i T_{i,r} + Z_{ii} T_{ii,r}}{Z_i T_{i,r} + Z_{ii} T_{ii,r} + Z_{iii} T_{iii,r} + Z_{iv} T_{iv,r} + Z_v T_{v,r}} - W_{i,r}^{x,c} \tag{3}$$

where all variables are as in Equations (1) and (2).

To proceed with the construction of the overall ETI index, we still need to aggregate together firms of different sizes. As for the case of collective dismissals, the small firm upper limit varies both across country and across time. Moreover, it can also vary among the different kinds of dismissal types. Table E2 in Appendix E shows the countries applying different EPL to workers in small and large firms in the case of individual objective reason dismissals as well as the small firms' upper limit for the year 2015. To take into account such variation we again rely on time-varying weights.

To aggregate small and large firms over each dismissal situation we construct some simple weights, according to the formula below:

$$X_d^{s,c} = \begin{cases} \frac{U_d^c}{200}, & \text{if } U_d^c < 200 \\ 1, & \text{otherwise} \end{cases} \qquad X^{l,c} = 1 - X_d^{s,c} \tag{4}$$

where $X_d^{s,c}$ and $X_d^{l,c}$ represent, respectively, the small and large firm weights for dismissal type d and worker's collar c, and U_d^c is the small firm upper limit (that is the maximum number of workers defining a small firm).

The weights described above can also be used to aggregate small and large firms over professional incapacity, gross misconduct and no reason dismissals. However, to aggregate over individual and collective reason dismissals we need to calculate the two extra weights, using the following formula:

$$X_d^{t,c} = X_d^{s,c} W_{i,r}^{s,c} + X_d^{l,c} W_{i,r}^{l,c} \tag{5}$$

where $X_d^{t,c}$ refers to the weight taken by dismissal type $d = i, ii$ for both small and large firms and worker's collar c. The other variables are as above.

In aggregating EPL applying to blue and white collar workers we use equal weights. Finally, in aggregating EPL applying to workers of different tenures, we give weight 0.5 to both 6- and 9-month

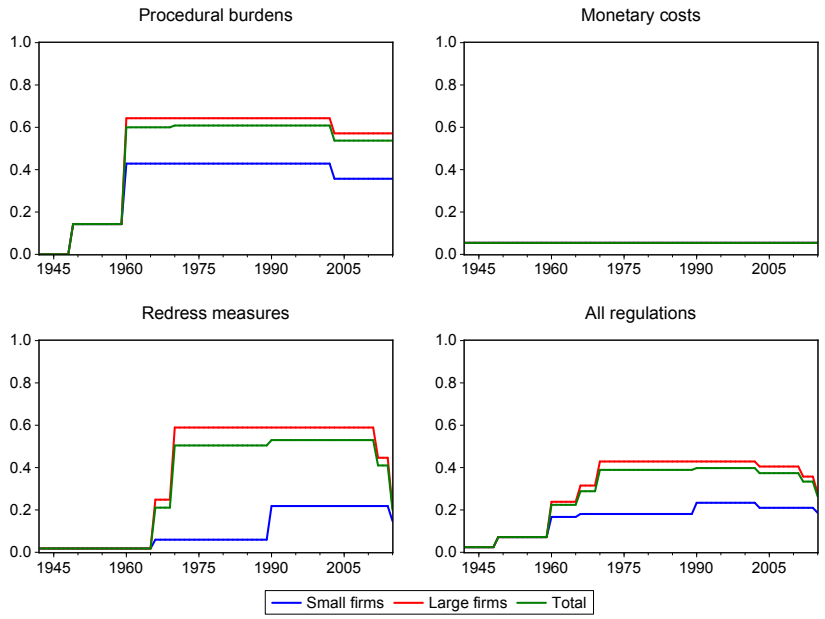
collar workers and weight 1 to all the workers with other tenures (2-, 4-, 5-, 10-, and 20-year). We code EPL for workers of both 6- and 9-month tenure because the regulation often differs among the two. But we give them a weight lower than to the workers with longer tenures to keep a balance between the relative weight of junior, intermediate and senior workers in the index.

4. The index

4.1. Country examples

We now illustrate the features of our index through some examples. Figure 1 below shows our EPL index for individual objective reason dismissal in Italy, for small and large firms.

Figure 1: Italy, objective reason dismissal (invididual), 1942-2015



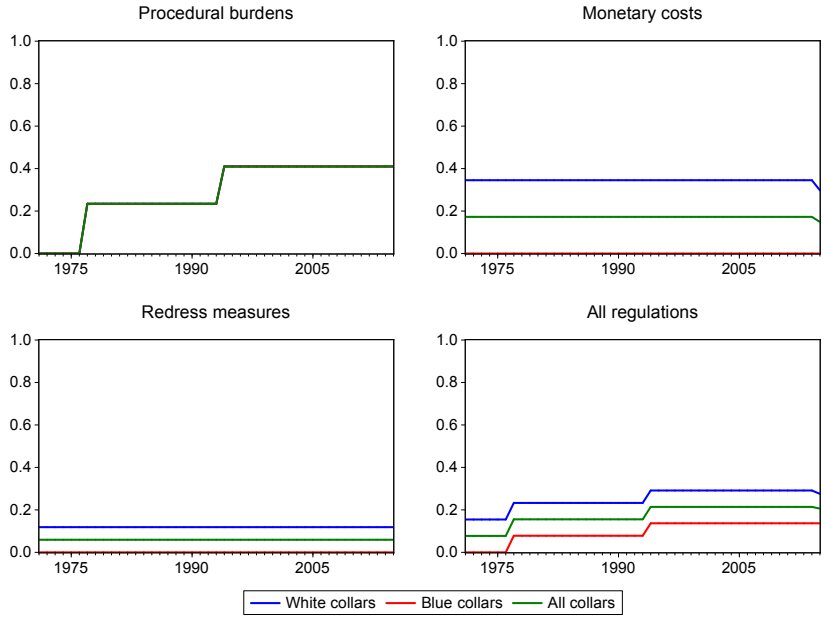
Notes: average of blue and white collar workers, weighted average of workers of different tenures (6 and 9-month, 2, 4, 5, 10, and 20-year)

Looking at procedural burdens, we notice an initial increase in 1949. This captures the introduction of a 12-month priority for re-employment for dismissed workers. In the year 1960, the index increases sharply. This is due to the introduction of consultation procedures with WR and notification to the PA (both small and large firms), and also layoff rules and the requirement to consider alternatives to dismissal (only large firms). The slight decrease in 2002 is instead due to the shortening of the length of priority for re-employment from 12 to 6 months. Monetary costs do not display any variation. The level is also relatively low. This results from the fact that statutory law mandates relatively short

periods of notice. Moreover, there is no obligation for the employer to pay to the worker a severance indemnity out of his own pocket upon termination.

The evolution of our redress measures index is more interesting. This increases sharply in 1966 and again in 1970. In 1966 the Italian parliament passed a law giving the labor court the power to order the reinstatement of the worker or the payment of a compensation following an unfair dismissal. In 1970 the regulation was tightened as a new law was passed making mandatory both the reinstatement of the worker plus the payment of a compensation of at least 5 months (the provision is the so-called *Articolo 18*). Importantly, however, the provisions of the 1966 (1970) law were only valid for firms with more than 25 (15) workers. Redress measures in case of unfair dismissals were then later introduced also for small firms in the form of either reinstatement or compensation (1990). Finally, the Italian Parliament passed a major liberalizing reform in 2015. This scrapped the reinstatement following an economic dismissal that is judged to be unfair and it replaced it with the payment of a compensation, equal to a maximum of 24 months-worth of salary. When measured by our index, the higher burden for large firms between 1970 and 1990 is accounted by an ETI score 2.4 times higher than that of small firms.

Figure 2: Denmark, objective reason dismissal (collective), 1971-2015



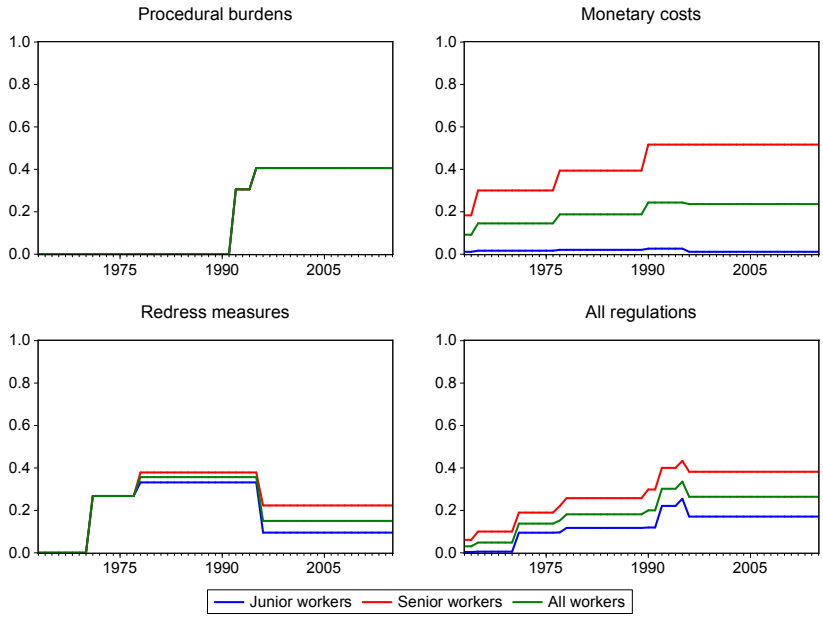
Notes: weighted average of small and large firms and of workers of different tenures (6 and 9-month, 2, 4, 5, 10, and 20-year)

We now turn to illustrate the case of Denmark, shown in Figure 2 below. This is a great example to illustrate how our index captures within-country heterogeneity for what concerns EPL for blue and white collar workers. We focus on collective dismissals. Whereas procedural burdens are the same for

blue and white collar workers, this is not the case for neither monetary costs nor redress measures. In fact, statutory law does not provide minimum standards in terms of notice periods or severance payments to blue collar workers. Instead, white collars enjoy relatively long notice periods and in some cases generous severance payments (only for long tenures). The same difference is found also in the domain of employment protection against unfair dismissals. There is not such protection for blue collar workers. On the other hand, if the termination of a white collar cannot be considered reasonably justified the employer needs to pay a monetary compensation.

Next, we present the weighted average of our index for individual and collective dismissals for the United Kingdom. This time, we distinguish between junior and senior workers. Again, we notice some degree of within-country heterogeneity for what concerns monetary costs and redress measures. That is so since in the UK both notice periods and severance payments increase in the worker's tenure. Moreover, since 1996 compensation is the only redress measure in case of unfair dismissals; and its amount is also calculated based on the worker's tenure. All these factors translate in a much higher degree of protection for senior relative to junior workers. The ETI index for the former is more than double that for the latter.

Figure 3: United Kingdom, objective reason dismissal, 1963-2015



Notes: junior workers are defined as 6 and 9-month and 2-year workers (simple average). Senior workers are those with 10 and 20-year tenure (simple average). The index is the weighted average of small and large firms, average of blue and white collars.

In conclusion, contrary to other existing indexes, the one we construct is well placed to capture several aspects of EPL. Not only we provide different indexes for different aspects of regulation. We

also document heterogeneity for what concerns EPL applying in firms of different sizes as well as to workers of different collars and different tenures.

In the examples we have showed so far the ETI never reached its maximum value (equal to 1). That is because we only let the index to be at its maximum when dismissals are not allowed. An example of when this is the case is shown in Figure F1 in Appendix F. The Figure shows the index for both Bolivia and Tunisia. In Bolivia a series of sudden changes of governments in the 1960s and 1970s is such that individual economic, professional incapacity and no reason dismissals are frequently outlawed and then allowed again. This results in sudden swings in the ETI for that period. The political situation stabilizes in the mid 1980s and a relatively permissive regime of employment termination is established. This lasts until 2006, when the then government of Evo Morales passed a series of decrees putting workers at the center of industrial relations. The new legislation gives employees the possibility to refuse a dismissal, *de-facto* creating a regime of immobility in employment (see *Decreto Supremo 28699 de 1 de Mayo de 2006* (Morales (2006)). In Algeria, EPL increased sharply during the war of independence and the subsequent military regime.

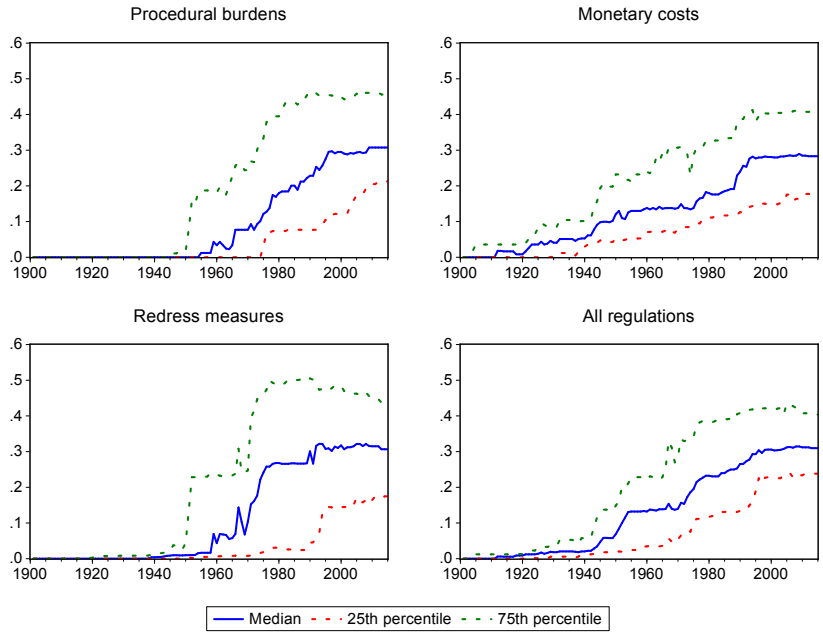
4.2. Employment protection legislation across the world

Figure 4 below shows the evolution of EPL in the countries of our sample from 1900 to 2015. Precisely, we show the median as well as the 25th and 75th percentiles of the ETI index for all dismissal situations. As before, we distinguish between procedural burdens, monetary costs, redress measures and the (weighted) average of all regulations.

Because our sample is unbalanced, variations in the ETI index as shown in Figure 4 may also reflect changes in composition. However, we observe a clear increasing trend in EPL, which lasts until the late 1990s. A closer look at the aggregate index suggests the presence of three waves of EPL. During first one, which lasted from 1942 to 1954, the median ETI increases by more than 6 times, from 0.02 to 0.13. The second and third periods of large growth are from 1970 to 1978 and from 1983 to 1996, when the ETI increases from 0.14 to 0.23 and from 0.23 to 0.30 respectively. The increase of the ETI during these three waves of EPL, which together span over just 36 years, account for 87% of the current value of the ETI index (0.31). On the other hand, we only observe few episodes of global EPL liberalization. These however do not seem to be persistent. Perhaps some evidence of sustained liberalization comes from highly regulated countries during the period 2005 to 2015. In this period, the 75th percentile decreases from 0.43 to 0.40.

Looking at the specific regulation types, we can make some more observations. Monetary costs are the oldest form of EPL and also the one showing the lowest degree of cross-country dispersion. On the other hand, redress measures and especially procedural burdens are relatively younger. The latter have

Figure 4: Employment Termination Index, all sample, 1900-2015



Notes: (Weighted) average of small and large firms, blue and white collars, and workers of different tenures. For a list of countries included in the sample refer to Table A1.

been increasing steadily since the late 1950s, and now they feature the highest score among the different regulation type indexes. Instead, the median ETI index for redress measures increases sharply, from 0.07 to 0.26, in the period from 1969 to 1976. This same period is also characterized by the opening of a large gap between highly regulated and liberal countries. The difference between the 75th and 25th percentiles of the ETI for redress measures almost doubles, from 0.23 to 0.45. Interestingly, however, this trend is reversed in the last three decades. This is the effect of both a liberalization in highly regulated countries and an increase in regulation in less regulated ones.

Figures F2-F4 in Appendix F show the ETI for advanced economies, emerging markets and low-income countries respectively. Broadly, the evolution of EPL follows the same trends in all the three groups of countries. However, in advanced economies increases in EPL seem to have been more gradual than in emerging markets and low-income countries. Moreover, among advanced economies there is evidence of liberalization among highly regulated countries (proxied by the 75th percentile) during the last two decades. This is only partially the case for emerging markets and certainly not the case for low-income countries. Quite the opposite, among the latter, the median ETI displays a sharp increase, from 0.13 to 0.32, between 1988 and 2008.

4.3. Descriptive statistics

We now discuss some descriptive statistics about the ETI index. In Table 2 below we show (i) the median and standard deviation of the ETI (in level), (ii) the number of positive and negative changes in the ETI per country (defined as tightening and liberalizing reforms respectively), and (iii) the median value of such changes. The Table distinguishes between different groups of countries (all sample, advanced economies, emerging markets and low-income countries) and several sub-samples (each spanning over two decades, except the last one that goes from 2000 to 2015). As noted before, the median value of the ETI follows a similar development among advanced economies and emerging markets. On the other hand, low-income countries lag behind during the 1960s-1990s and only catch up in the last two decades.

Turning to reform episodes, we note that tightening ones happen more frequently and are larger in size than liberalizing ones. In advanced economies (emerging markets), positive changes in the ETI are 2.31 (2.15) times more frequent, and 2.26 (2.81) times larger, than negative changes. Although less evident, a similar situation is found in low-income countries. Comparing the different country groups, it is interesting to notice how the average number of tightening and liberalizing reforms per country throughout the sample is respectively 45% (80%) and 35% (31%) higher in advanced economies relative to emerging markets (low-income countries). On the other hand, the median reform size is much larger in emerging markets than in advanced economies (50% and 20% for tightening and liberalizing reforms respectively). A similar observation can be made about low-income countries (the median liberalizing reform is 88% higher than in advanced economies, whereas the size of tightening reforms is very similar). Hence, in emerging markets (and low-income countries) reforms tend to be less frequent, but larger in size, that in advanced economies. This is consistent with political economy theories suggesting that large reforms are the more difficult to implement the higher is the degree of accountability of the executive power.

Looking at the different sub-samples, the 1960-1979 period emerges as the most important for all country groups, although for different reasons. For advanced economies and low-income countries, it coincides with the peak in regulating activity. Instead, for emerging market it is the one in which reforms, both tightening and liberalizing ones, are the largest in terms of size. For both advanced economies and emerging markets, the frequency of liberalizing reforms gathers pace throughout the sample and catches up with that of tightening episodes in 2000-2015. However, whereas the median size of such reforms increases throughout in advanced economies, it decreases in emerging markets both in the 1980-1999 and 2000-2015 sub-samples. The same decreasing trend in the median size of reforms is also observed throughout the all sub-samples for tightening episodes. These facts lead us to speculate that emerging markets may be on track to become aligned to advanced economies, at least as far as the size of reforms is concerned.

Table 2: Descriptive statistics for the ETI index, all regulations, all dismissal types

	1900-19	1920-39	1940-59	1960-79	1980-99	2000-15	All
				ALL SAMPLE			
Median	0.00	0.02	0.08	0.17	0.27	0.31	0.24
Standard deviation	0.01	0.06	0.11	0.16	0.19	0.15	0.18
# tightening reforms	0.00	0.60	0.90	1.46	1.14	0.72	6.04
# liberalizing reforms	0.00	0.15	0.16	0.29	0.47	0.66	2.82
Median tightening reform	NA	0.07	0.05	0.05	0.03	0.02	0.04
Median liberalizing reform	NA	-0.06	-0.01	-0.01	-0.03	-0.02	-0.02
				ADVANCED ECONOMIES			
Median	0.00	0.02	0.06	0.20	0.27	0.28	0.23
Standard deviation	0.01	0.04	0.10	0.15	0.18	0.14	0.17
# tightening reforms	0.00	0.55	0.70	2.22	1.53	0.89	7.88
# liberalizing reforms	0.00	0.00	0.12	0.25	0.65	0.89	3.41
Median tightening reform	NA	0.05	0.04	0.04	0.02	0.02	0.03
Median liberalizing reform	NA	NA	-0.01	-0.01	-0.01	-0.02	-0.01
				EMERGING MARKETS			
Median	0.01	0.01	0.08	0.19	0.30	0.32	0.24
Standard deviation	0.01	0.07	0.12	0.16	0.20	0.15	0.19
# tightening reforms	0.00	0.63	1.06	1.03	1.13	0.65	5.44
# liberalizing reforms	0.00	0.25	0.20	0.18	0.38	0.67	2.53
Median tightening reform	NA	0.08	0.07	0.07	0.05	0.04	0.05
Median liberalizing reform	NA	-0.06	-0.01	-0.07	-0.05	-0.01	-0.02
				LOW-INCOME COUNTRIES			
Median	NA	NA	0.12	0.14	0.19	0.31	0.26
Standard deviation	NA	NA	0.03	0.15	0.15	0.16	0.16
# tightening reforms	NA	NA	0.53	1.10	0.59	0.62	4.38
# liberalizing reforms	NA	NA	0.00	0.68	0.39	0.36	2.60
Median tightening reform	NA	NA	0.03	0.05	0.03	0.02	0.03
Median liberalizing reform	NA	NA	NA	-0.01	-0.03	-0.03	-0.03

Notes: # tightening (liberalizing) reforms refers to the average number of tightening (liberalizing) implemented by one country in the specific period. For a country split among advanced economies, emerging markets and low-income countries see A1.

We now examine how the different sub-indexes we construct compare among each other. Table G1 and G2 in Appendix G show the correlation between the different regulation and dismissal type sub-indexes respectively. Procedural burdens and redress measures on the one hand, and individual and collective objective reason on the other hand, have the highest correlation among each other. However, the correlation of monetary costs with both procedural burdens and redress measures, at more than 0.50, is still relatively high. Except for one case (professional incapacity and no reason dismissals), the correlation between the different dismissal indexes is always higher than 0.50.

4.4. Comparison with other EPL indicators

Let us now briefly comment on how our ETI index compares with other EPL indexes. In particular, we consider (i) the protection against individual dismissal indicator provided by the OECD, (ii) the EPLex quantitative indicator constructed by the ILO, (iii) the costs of firing workers and the dismissal procedures indexes of Botero et al. (2004) (henceforth BDPLS 1 and BDPLS 2 respectively), and (iv) the LAMRIG indicator of (Campos and Nugent, 2012). In Table 3 below we present a correlation matrix of our indexes and the other EPL indicators. Since the indexes all have different coverages, which in some cases do not overlap, we present pairwise correlations.

Table 3: Pairwise correlations between several EPL indexes

	ETI	**OECD**	**EPLex**	**BDPLS 1**	**BDPLS 2**	**LAMRIG**
ETI	1.00	0.66	0.56	0.22	0.49	0.45
OECD		1.00	0.76	0.65	0.55	0.75
EPLex			1.00	NA	NA	NA
BDPLS 1				1.00	0.41	0.55
BDPLS 2					1.00	0.55
LAMRIG						1.00

Notes: OECD indicates to the version 1 of the indicator of strictness of employment protection against individual dismissal developed by the OECD for an unbalanced sample of 73 countries over the 1985-2013 period. EPLex refers to the quantitative indicator developed by the International Labour Organization from the EPLex database for an unbalanced sample of 36 countries over the 2008-2013 period. BDPLS 1 and BDPLS 2 indicate to the Cost of Firing Workers and the Dismissal Procedures indexes by Botero et al. (2004) and for a cross-section of 85 countries. LAMRIG refers to the index developed by Campos and Nugent (2012) for an unbalanced panel of 140 countries over the 1950-2004 period.

As expected, the ETI correlates positively with all other EPL indicators. The tightest correlation (0.66) is with the OECD index, while the loosest (0.22) is with the BDPLS 1. However, the higher correlation with the OECD indicator does not necessarily mean that our methodology is more similar to the OECD's one than to those used in the other indexes: the OECD index covers mostly high-income countries (middle- and low-income countries are only covered for the last years of the index),

whereas the other indexes cover all group of countries in a similar way. Therefore, measurement errors, coming from either side, in relation with coding EPL in low- and middle-income countries may well cause the lower correlation of the ETI with the LAMRIG and the BDPLS indexes. When we constrain the sample to the availability of the OECD index, the ETI has a higher correlation both with the BDPLS 2 and the LAMRIG indicators (respectively at 0.83 and 0.69) than with the OECD's.

Table G3 in Appendix G reports pairwise correlations of the ETI sub-indexes with the other EPL indicators. Among the regulation type sub-indexes, the OECD, BDPLS 1, BDPLS 2 and the LAMRIG indicators all correlate the most with the ETI procedural burden. This may be explained by the fact the OECD, Botero et al. (2004) and Campos and Nugent (2012) do not code redress measures at all. Moreover, we code severance payments in a different way than they do. That is, we do not consider severance payments if they are due by the employer also in case of the retirement of the worker. The EPLex index, instead, correlates the most with the ETI redress measures. Among the dismissal type sub-indexes, the OECD, BDLPLS 1, BDLPLS 2 and LAMRIG all correlate the most with either the ETI individual or collective objective reason sub-indexes. This is not surprising since we are the only ones considering professional incapacity and gross misconduct dismissals. Finally, we note that the EPLex index moves closer to the ETI gross misconduct indicator. This might be because gross misconduct dismissals have the highest relative weight for redress measures.

5. Stylized facts

5.1. Does the legal origin theory still hold?

In this Section, we present some stylized facts about EPL as measured by our index. We start by re-visiting the legal origin theory of EPL put forward by Botero et al. (2004). In Table 4 below we perform simple cross-country regressions with the average ETI index and the 4 dummies indicating, respectively, French, German, Scandinavian and Socialist legal origin, plus a constant. We do so over 3 different time periods, the 1960-1979, the 1980-1999 and the 2000-2015.[12]

The main insight of Botero et al. (2004), that employment is more regulated in civil law, Scandinavian and socialist legal origin countries holds throughout the 3 sub-samples we consider.[13] However, it is interesting to notice that the coefficient of the socialist legal origin dummy decreases by 32% in the 2000-2015 relative to the 1980-1999 regression. We interpret this as a direct consequence of the deregulating activity observed in some former socialist countries following the end of the Cold War. Shall this deregulating trend continue, the legal origin theory may have to be revisited.

[12] To divide countries by legal origin we follow the classification of (La Porta et al., 1999).

[13] The Scandinavian legal origin dummy is significant when only the ETI procedural burdens is used. Results for the different sub-indexes are available upon request.

Table 4: The ETI and the legal origin theory

constant	French	German	Scandinavian	Socialist	$\overline{R}^2$	Obs.
			1960-1979			
0.14***	0.11***	-0.01	0.10	0.20***	0.15	61
(0.03)	(0.04)	(0.07)	(0.09)	(0.05)		
			1980-1999			
0.22***	0.10**	-0.02	0.12	0.21***	0.17	93
(0.02)	(0.04)	(0.05)	(0.08)	(0.03)		
			2000-2015			
0.25***	0.10***	0.01	0.10	0.14***	0.12	96
(0.02)	(0.03)	(0.03)	(0.07)	(0.03)		

Notes: *, **, *** indicate statistical significance at the 10%, 5% and 1% confidence level respectively.

5.2. Employment protection, labor market outcomes and inequality

Next, we examine how the ETI relates to standard macroeconomic and labor market variables. We download (i) gross domestic output data from the IMF World Economic Outlook of 2016, and (ii) labor force participation, unemployment and employment rate data from ILOStat. The employment rate is calculated as the ratio of employed people over the working age population.

According to theory, high EPL discourages firms from hiring. In the longer-run this should discourage workers from searching for a job. Hence, higher EPL is normally thought to be associated with lower participation rates (see, for instance, Botero et al. (2004)). We now analyze whether this relation holds using our index. Table 5 below reports results from simple OLS regressions in which the ETI (sub-)index(es) feature as explanatory variable(s) and GDP, participation, employment and the unemployment rate are dependent variables. The regressions also include a constant term and country-fixed effects.

As expected, we find a strong positive association between the ETI and GDP. This is strongest among advanced economies. However, we do not find a negative relationship between our index and neither the participation nor the employment rate. If fixed effects are excluded, the ETI index displays a statistically significant negative coefficient in both the regressions with the employment and the participation rate as dependent variables (the results are available upon request). The fact that the negative relationship does not survive when fixed effects are added may suggest that there could exist other, time-invariant, factors, which confound the relationship between the ETI and labor

Table 5: The ETI and economic outcomes

	GDP	Participation	Employment	Unemployment
			TOTAL	
Coefficient	87.23***	-0.02	-0.01	-0.04***
Std. error	(15.09)	(0.02)	(0.02)	(0.01)
R$\hat{2}$	0.72	0.75	0.81	0.70
			PROCEDURAL BURDENS	
Coefficient	108.41***	-0.01	0.01	-0.03***
Std. error	(13.41)	(0.02)	(0.02)	(0.01)
R$\hat{2}$	0.72	0.75	0.81	0.70
			MONETARY COSTS	
Coefficient	55.61***	-0.02	0.00	-0.06***
Std. error	(14.70)	(0.02)	(0.02)	(0.01)
R$\hat{2}$	0.72	0.75	0.81	0.71
			REDRESS MEASURES	
Coefficient	11.91	-0.01	-0.03*	-0.010
Std. error	(12.43)	(0.02)	(0.02)	(0.01)
R$\hat{2}$	0.72	0.75	0.81	0.70
Obs.	2876	1726	1647	2000

Notes: The Table reports results of simple OLS regressions featuring either GDP, the participation, employment or the unemployment rate as dependent variable and the ETI index plus a constant and country fixed effects as regressors. $\overline{R}^2$ refers to the adjusted-R^2 statistics. Obs. indicates the number of observations. To make the results easier to interpret, the ETI is multiplied by 100. *, **, *** indicate statistical significance at the 10%, 5% and 1% confidence level respectively.

market outcomes. On the other hand, in the sub-sample of advanced economies only we do find the statistically negative association predicted by theory even when fixed effects are included. Interestingly, redress measures seem to be driving this result (the results for country sub-samples are available upon request).

We next relate the ETI to 4 different inequality measures. The Gini indexes, calculated on the basis of market as well as disposable incomes, are taken from (Solt, 2016). We also use data on the shares of income of the top 1% and 10% richest individual. These data are taken by the World Wealth and Income Database. Unfortunately, however, availability is limited to 27 countries in our sample. The idea is that, by increasing the bargaining position of workers relative to employers, employment protection should be decrease income inequality. However, it can also be argued that the causality can go the other way. That is, in very unequal societies the political class in charge may pass laws favoring the elite (in our case the employers) at the expense of the working poor. According to both hypotheses, we would expect a negative association between EPL and inequality. Table 6 below shows results from OLS regressions using the ETI and the inequality measures respectively as the explanatory and the dependent variables. The regressions also include a constant and country-fixed effects.

The overall ETI index is negatively associated with all the four inequality measures. But the relationship is only significant for the top 1% and 10% income shares. More precisely, a .10 increase in the ETI is associated with a .5 and .3 percentage point lower share of income of the top 10% and 1% individuals. When we look at the different ETI sub-indexes, we observe that both procedural burdens and redress measures are significantly negatively correlated with all the inequality measures we adopt. Particularly the redress measures ETI sub-index is the most negatively associated with income inequality. A .10 higher score in the redress measures ETI is associated with a .4 (.3) point decrease in the market (disposable) income Gini coefficient (measured on a 0 to 100 scale). This might not seem much, but given the relatively low time series variation in the Gini index, it is economically meaningful. Looking at the different country sub-sample we notice that the negative relationship between the ETI and measures of income inequality is the tightest among emerging markets. We also look at different sub-periods of our sample and find that the negative correlation gets stronger over time and is especially large during the 2000-2015 period (these additional results are available upon request).

At last, we show how other aspects of our database can be used to analyze some labor market dynamics with more granularity. In constructing the aggregate index, we have used information about EPL applying to workers with different levels of seniority in the firm. Let us now construct the average ETI for workers with 6-, 9-month and 2-year tenure on one side and another one for those with 10- and 20-year tenure on the other side. We shall call these, the junior and the senior worker ETI indexes.

Table 6: The ETI and inequality measures

	Gini Market	Gini Net	Top 10% share	Top 1% share
		TOTAL		
Coefficient	-0.02	-0.02	-0.05***	-0.03***
Std. error	(0.01)	(0.01)	(0.02)	(0.01)
$\overline{R}^2$	0.70	0.87	0.63	0.65
		PROCEDURAL BURDENS		
Coefficient	-0.02*	-0.02***	-0.03***	-0.01**
Std. error	(0.01)	(0.01)	(0.01)	(0.01)
$\overline{R}^2$	0.70	0.87	0.63	0.64
		MONETARY COSTS		
Coefficient	0.03**	0.02	-0.01	0.00
Std. error	(0.01)	(0.01)	(0.02)	(0.01)
$\overline{R}^2$	0.70	0.87	0.63	0.64
		REDRESS MEASURES		
Coefficient	-0.04***	-0.03***	-0.07***	-0.05***
Std. error	(0.01)	(0.01)	(0.01)	(0.01)
$\overline{R}^2$	0.70	0.87	0.64	0.66
Obs.	2780	2783	742	845

Notes: The Table reports results of simple OLS regressions featuring either the disposable (market) income Gini index or the share of income belonging to the riches 10% (1%) of the population as dependent variable and the ETI index plus a constant and country fixed effects as regressors. $\overline{R}^2$ refers to the adjusted-R^2 statistics. Obs. indicates the number of observations. To make the results easier to interpret, the ETI is multiplied by 100. The Gini index is expressed on a 0-100 scale. The top income shares are in percentages. *, **, *** indicate statistical significance at the 10%, 5% and 1% confidence level respectively.

We then take the difference between the two. The global evolution of such measure over the sample is presented in Figure F5 in Appendix F. The Figure shows that the divergence between EPL applying to junior and senior workers increases throughout the all sample considered. We now try to speculate how this increasing divergence in EPL translate in youth labor market outcomes (we take youth workers as those belonging to the 15-24 age group).

Table 7: ETI and youth labor market outcomes

	Youth participation	**Youth employment**	**Youth unemployment**
		ETI	
Coefficient	-0.16***	-0.020	-0.08**
Std. error	(0.04)	(0.05)	(0.03)
$\overline{R}^2$	0.79	0.86	0.73
		DIFFERENCE BETWEEN SENIOR AND JUNIOR ETI	
Coefficient	-0.51***	-0.50***	-0.050
Std. error	(0.08)	(0.09)	(0.09)
$\overline{R}^2$	0.79	0.87	0.73
Obs.	1502	1144	1426

Notes: The difference between senior and junior ETI stands for the difference between the ETI of workers with 10 and 20-year tenures and the ETI of workers with 6, 9-month, and 2-year tenure. Youth are defined as the part of population between 15 and 24 years of age. *, **, *** indicate statistical significance at the 10%, 5% and 1% confidence level respectively.

Table 7 shows that the difference between the senior and the junior worker ETI indexes is much associated with low participation and employment rates for the youth. A difference between the ETI of senior and junior workers equal to .10 between is associated with a drop in the participation rate of the youngest equal to 5 percentage points. We also show that this result would not be obtained by using the ETI index alone. The overall ETI is still negative correlated with youth participation, but the coefficient is only equal to 0.16.

6. Conclusion

We build a new database of employment termination legislation. Our database covers an unbalanced sample of 96 high-, middle- and low-income countries. For some we go as far back as the early decades of the 1900s. In collecting and assembling information we pay special attention to some aspects of EPL that have been often neglected in the literature. We consider large as well as small firms, junior as well as senior workers and blue as well as white collar workers. We also focus on more aspects of

regulation than previously done: procedural burdens, monetary costs, as well as valid grounds and redress measures following an unfair dismissal. We do not only consider economic dismissal, as it is standard in the literature, but we also cover professional incapacity, gross misconduct and at will dismissals.

We find that on average reforms tightening EPL are more frequent and larger in size than easing ones. We also show that the period of most intense global regulating activity was from 1960 to 1979. On the other hand, liberalizing reforms have been increasing throughout the sample and have almost caught up with tightening reforms in the last decade. Emerging markets and low-income countries on average reform less than advanced economies. But when they do, they carry out larger reform episodes.

We show that EPL is generally positively associated with the level of economic activity. This relationship is strongest among advanced economies. Partially in opposition to what suggested by theory, however, only in advanced economies EPL is negatively correlated with the labor force participation and employment rates. On the other hand, EPL is negatively correlated to income inequality. This should not come as surprise, since higher EPL is supposed to increase the bargaining power of workers relative to employers. Finally, we show that some novel aspects of our database could be used to improve our understanding of the effects of labor market reforms. In particular, redress measures seem to be the most important are of EPL for what concerns the relationship with both labor markets and inequality outcomes. In future work, we aim at expanding the database along both the time and the cross-country dimensions

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Appendix

A. Lists of countries

Table A1: Coverage of the database by economic development (IMF classification)

Advanced economies		Emerging markets		Low income countries	
Australia	1994-2015	Albania	1995-2015	Bangladesh	1966-2015
Austria	1921-2015	Algeria	1975-2015	Bolivia	1942-2015
Belgium	1978-2015	Argentina	1974-2015	Burkina Faso	1974-2015
Canada	1986-2015	Azerbaijan	1997-2015	Cameroon	1992-2015
Czech Republic	1922-2015	Belarus	1993-2015	Côte d'Ivoire	1977-2015
Denmark	1971-2015	Botswana	1966-2015	Ethiopia	1993-2015
Estonia	1992-2015	Brazil	1943-2015	Ghana	1967-2015
Finland	1971-2015	Bulgaria	1992-2015	Kenya	1965-2015
France	1958-2015	Chile	1925-2015	Kyrgyz Republic	1988-2015
Germany	1951-2015	China	1986-2015	Lesotho	1992-2015
Greece	1920-2015	Colombia	1934-2015	Madagascar	1952-2015
Hong Kong SAR	1971-2015	Costa Rica	1943-2015	Malawi	2000-2015
Ireland	1968-2015	Dominican Republic	1944-2015	Mozambique	2007-2015
Israel	1959-2015	Ecuador	2005-2015	Nepal	1992-2015
Italy	1942-2015	Egypt	1981-2015	Nicaragua	1945-2015
Japan	1998-2015	El Salvador	1904-2015	Nigeria	1971-2015
Korea	1997-2015	Georgia	1973-2015	Senegal	1994-2015
Latvia	1992-2015	Guatemala	1961-2015	Tanzania	1964-2015
Netherlands	1954-2015	Hungary	1992-2015	Uganda	1977-2015
New Zealand	1971-2015	India	1947-2015	Uzbekistan	1993-2015
Norway	1995-2015	Indonesia	1940-2015	Vietnam	1964-2015
Portugal	1937-2015	Jamaica	1975-2015	Zambia	1997-2015
Singapore	1968-2015	Jordan	1996-2015	Zimbabwe	1985-2015
Spain	1926-2015	Kazakhstan	1991-2015		
Sweden	1974-2015	Lithuania	1973-2015		
Switzerland	1911-2015	Malaysia	1980-2015		
United Kingdom	1963-2015	Mexico	1917-2015		
United States	1900-2015	Morocco	1913-2015		
		Namibia	1992-2015		
		Pakistan	1973-2015		
		Paraguay	1962-2015		
		Peru	1902-2015		
		Philippines	1989-2015		
		Poland	1975-2015		
		Romania	1929-2015		
		Russia	1972-2015		
		South Africa	1996-2015		
		Sri Lanka	1951-2015		
		Swaziland	1981-2015		
		Thailand	1927-2015		
		Tunisia	1960-2015		
		Turkey	1936-2015		
		Ukraine	1995-2015		
		Uruguay	1944-2015		
		Venezuela	1997-2015		

Table A2: List of countries by dismissal permissibility, blue collar worker with 4-year tenure in large firm, as of 2015

Dismissal at will allowed				
Bangladesh	Dominican Republic	Guatemala	Nigeria	Thailand
Brazil	Ecuador	Israel	Paraguay	United States
Costa Rica	El Salvador	Jordan	Philippines	Uruguay
Denmark	Greece	Nicaragua	Singapore	
Dismissal at will not allowed, all others allowed				
Albania	Colombia	Indonesia	Malaysia	Spain
Algeria	Côte d'Ivoire	Ireland	Morocco	Sri Lanka
Argentina	Czech Republic	Italy	Mozambique	Swaziland
Australia	Egypt	Jamaica	Namibia	Sweden
Austria	Estonia	Japan	Netherlands	Switzerland
Azerbaijan	Ethiopia	Kazakhstan	New Zealand	Tanzania
Belarus	Finland	Kenya	Norway	Tunisia
Belgium	France	Korea	Pakistan	Turkey
Botswana	Georgia	Kyrgyz Republic	Poland	Uganda
Bulgaria	Germany	Latvia	Portugal	Ukraine
Burkina Faso	Ghana	Lesotho	Romania	United Kingdom
Cameroon	Hong Kong SAR	Lithuania	Russia	Uzbekistan
Canada	Hungary	Madagascar	Senegal	Zambia
China	India	Malawi	South Africa	Zimbabwe
Dismissal at will and individual obj. reason dismissal not allowed, all others allowed				
	Peru		Vietnam	
Dismissal at will and professional incapacity dismissal not allowed, all others allowed				
	Chile	Nepal	Mexico	
Immobility in employment (only gross misconduct dismissal allowed)				
	Bolivia		Venezuela	

B. Variables

Table B1: Procedural requirement variables, objective reason dismissals, individual and collective

Variable	Requirement/provision	Value
Notification	(Implicit) notification to either PA or WR	0.5
	(Implicit) notification to both PA and WR	1
Approval	Prior authorization by either PA or WR	0.5
	Prior authorization by both PA and WR is required	1
Consultations with WR	Consultation with WR prior to dismissal (no specific procedures)	0.5
	Consultation with WR prior to dismissal (specific procedures)	1
Alternatives to dismissal	Consideration of alternatives to dismissal	0.5
	Retrain worker before proceeding to dismissal	1
Priority for re-employment	Priority for re-employment (only some cases)	0.5
	Priority for re-employment (always)	1
Length of priority	Equal to the length of the priority for re-employment	# months
Lay-off rules	Need to set out rules to select workers to be dismissed	0.5
	Need to follow predefined rules to select workers to be dismissed	1

Notes: If the legislation does not provide for any requirement the variable takes value 0.

Table B2: Procedural requirement variables, subjective reason dismissals, professional incapacity

Variable	Requirement/provision	Value
Notification	(Implicit) notification to either PA or WR	0.5
	(Implicit) notification to both PA and WR	1
Approval	Prior authorization by either PA or WR	0.5
	Prior authorization by both PA and WR is required	1
Consultations with WR	Right to fair hearing prior to dismissal (WR not involved)	0.5
	Right to fair hearing prior to dismissal (WR involved)	1
Alternatives to dismissal	Retrain worker before proceeding to dismissal	1

Notes: If the legislation does not provide for any requirement the variable takes value 0.

Table B3: Procedural requirement variables, subjective reason dismissals, gross misconduct

Variable	Requirement/provision	Value
Notification	(Implicit) notification to either PA or WR	0.5
	(Implicit) notification to both PA and WR	1
Approval	Prior authorization by either PA or WR	0.5
	Prior authorization by both PA and WR is required	1
Consultations with WR	Right to fair hearing prior to dismissal (WR not involved)	0.5
	Right to fair hearing prior to dismissal (WR involved)	1

Notes: If the legislation does not provide for any requirement the variable takes value 0.

Table B4: Procedural requirement variables, no reason dismissals

Variable	Requirement/provision	Value
Notification	(Implicit) notification to either PA or WR	0.5
	(Implicit) notification to both PA and WR	1
Approval	Prior authorization by either PA or WR	0.5
	Prior authorization by both PA and WR is required	1
Consultations with WR	Right to fair hearing prior to dismissal (WR not involved)	0.5
	Right to fair hearing prior to dismissal (WR involved)	1

Notes: If the legislation does not provide for any requirement the variable takes value 0.

Table B5: Monetary cost variables, all dismissals except gross misconduct

Variable	Description	Value
Notice period	Period of notice to be given to worker before dismissal	# months
Severance payment	Indemnity to be paid to worker upon dismissal	# months

Table B6: Valid grounds and redress variables, all dismissals except no reason

Variable	Description	Compensation amount	Value
Valid grounds	No reason needed	/	0
	Any fair reason	/	0.25
	Only specific reasons, dismissal allowed	/	0.5
	Only specific reasons, dismissal not allowed	/	1
Time to fill claim	Length period to fill unfair dismissal claim	/	# months
Compensation	Compensation only	Set by law	0.5
	Compensation only	Decided by court	1
Reinstatement or compensation	Reinstatement or compensation	Set by law	0.5
	Reinstatement or compensation	Decided by court	0.67
	Reinstatement and/or compensation	Set by law	0.83
	Reinstatement and/or compensation	Decided by court	1
Reinstatement	Reinstatement only	/	0.5
	Reinstatement, compensation possible	Set by law	0.625
	Reinstatement, compensation possible	Decided by court	0.75
	Reinstatement and compensation	Set by law	0.875
	Reinstatement and compensation	Decided by court	1
Backwages awarded	Backwages possible	/	0.5
	Backwages mandatory	/	1
Maximum amount backwages	Maximum amount of backwages	/	# months
Compensation amount	Amount of compensation set by law (divided/multiplied by 2 if max./min.)	/	# months

Notes: The column compensation amount describes how the amount of compensation is set. Set by law means that either the exact or the maximum amount is established in statutory law. Decided by court implies that the amount of compensation is freely determined by the competent body. If the legislation does not provide for any requirement the variable takes value 0.

C. Countries by redress measures

Table C1: Countries ranked according to score in compensation, reinstatement or compensation and reinstatement variables, blue collar worker with 4-year tenure, large firm

Compensation only - max. amount set by law				
Albania	Chile	Finland	Spain	Tanzania
Argentina	Côte d'Ivoire	Hungary	Sweden	Turkey
Belgium	Estonia	Italy	Switzerland	United Kingdom
Compensation only - amount set by court				
Botswana	Cameroon	Hong Kong SAR	Malawi	Senegal
Burkina Faso	Georgia	Madagascar		
Reinstatement or compensation - max. amount set by law				
Australia	Ethiopia	Kenya	Lithuania	South Africa
Belarus	Germany	Kyrgyz Republic	Poland	Uganda
China	Ireland			
Reinstatement or compensation - amount set by court				
Canada	Ghana	Lesotho	Malaysia	Zimbabwe
France	Jamaica			
Reinstatement and/or compensation - max. amount set by law				
Mozambique				
Reinstatement and/or compensation - amount set by court				
Namibia	Norway	Pakistan	Swaziland	Zambia
Reinstatement only				
Algeria	Egypt	Korea	Nepal	Sri Lanka
Austria	India	Latvia	Netherlands	Tunisia
Bulgaria	Indonesia	Mexico	Romania	Ukraine
Colombia	Japan	Morocco	Russia	Uzbekistan
Czech Republic	Kazakhstan			
Reinstatement, compensation possible - max. amount set by law				
Azerbaijan	New Zealand			
Reinstatement and compensation - max. amount set by law				
Portugal				

Notes: The countries where dismissal at will is allowed are not listed in this table as no redress measure apply. We do not show the Reinstatement, compensation possible - amount set by court and the Reinstatement and compensation - amount set by court categories as no single country belongs to them.

D. Aggregation

Table D1: Default and maximum values assigned to certain variables in the aggregation

Variable	Default value	Maximum value
Probationary period	6	/
Length of priority	12	12
Notice period	0.23	6
Severance payment	1	6
Time to fill an unfair dismissal claim	3	12
Reinstatement or compensation	0.67	/
Reinstatement	0.625	/
Maximum amount backwages	12	12
Compensation amount	6	24

Notes: default values refer to what we use in the aggregation when dealing with NA entries. Maximum values refer to the parameters we use to transform variables expressed in months (equivalent) into continuous 0 to 1 variables. Refer to Section 3.1 for a detailed explanation.

Table D2: Weights used for the aggregation

Procedural requirements		**Valid grounds and redress measures**	
Variable	**Weight**	**Variable**	**Weight**
Notification	0.5	Valid grounds	0.5
Approval	2	Time to fill claim	1
Consultations with WR	1.5	Compensation	0.5
Alternatives to dismissal	1	Reinstatement or compensation	1.5
Priority	1	Reinstatement	3
Lay-off rules	1	Backwages	1
		Compensation amount	1.5

Monetary costs	
Variable	**Weight**
Notice period	3
Severance payment	4

Table D3: Weights used for the aggregation

Procedural requirements		
Variable	**Dismissal type**	**Weight**
Notification	i,ii,iii,iv,v	0.5
Approval	i,ii,iii,iv,v	2
Consultations with WR	i,ii,iii,iv	1.5
Alternatives to dismissal	i,ii,iii	1
Priority	i,ii	1
Lay-off rules	i,ii	1
Total	i,ii	7
Total	iii	5
Total	iv	4
Total	v	2.5

Monetary costs		
Variable	**Dismissal type**	**Weight**
Notice period	i,ii,iii,v	3
Severance payment	i,ii,iii,v	4
Total	i,ii,iii,v	7
Total	iv	0

Valid grounds and redress measures		
Variable	**Dismissal type**	**Weight**
Valid grounds	i,ii,iii,iv	0.5
Time to fill claim	i,ii,iii,iv	1
Compensation	i,ii,iii,iv	0.5
Reinstatement or compensation	i,ii,iii,iv	1.5
Reinstatement	i,ii,iii,iv	3
Backwages	i,ii,iii,iv	1
Compensation amount	i,ii,iii,iv	1.5
Total	i,ii,iii,iv	7
Total	v	0

TOTAL	
i,ii	21
iii	19
iv	11
v	9.5

Notes: i, ii, iii, iv, and v stand for individual objective reason, collective objective reason, professional incapacity, gross misconduct, and no reason dismissals. Total for valid grounds and redress measures does not sum to 9 since only one variable among compensation, reinstatement or compensation and reinstatement can take value different than 0.

E. Countries with heterogeneous legislation

Table E1: Countries differentiating between individual and economic dismissals, blue collars, large firms, as of 2015

Country	Threshold	Country	Threshold
Albania	20	Korea	10%
Argentina	10%	Latvia	10
Australia	15	Lithuania	30
Austria	5%	Malaysia	NA
Belarus	20%	Mozambique	10
Belgium	10%	Netherlands	20
Bulgaria	20	Norway	10
Burkina Faso	2	Peru	10%
Canada	50	Poland	20
China	20	Portugal	5
Côte d'Ivoire	NA	Romania	20
Czech Republic	20	Russia	50
Denmark	10%	South Africa	10
Estonia	30	Spain	9
Ethiopia	10%	Swaziland	5
Georgia	100	Sweden	5
Germany	10%	Switzerland	20
Greece	5%	Turkey	10
Hungary	20	Uganda	10
Ireland	10%	Ukraine	20%
Israel	10	United Kingdom	20
Italy	5	United States	33%
Japan	NA	Uzbekistan	NA
Jordan	NA	Vietnam	2

Notes: The Table lists countries where workers enjoy a different degree of protection in individual and collective objective reason dismissals, for blue collar workers, as of 2015. Threshold refers to the minimum number of workers to be involved in a collective dismissal for the different regulation to apply.

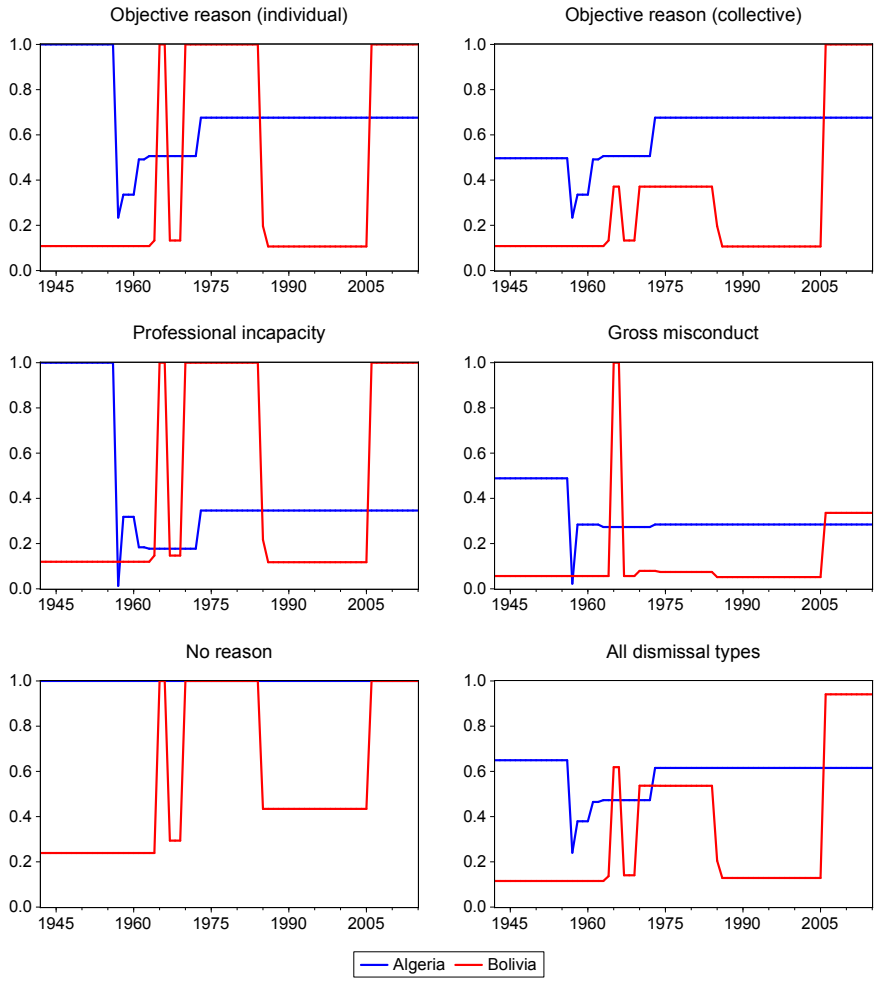
Table E2: Countries differentiating between small and large firms, individual objective reason dismissals, blue collars, as of 2015

Country	Threshold	Country	Threshold
Argentina	40	Korea	4
Australia	15	Morocco	9
Austria	5	Nepal	10
Colombia	100	Pakistan	20
Finland	20	Poland	20
France	20	Portugal	50
Germany	10	Sri Lanka	14
India	100	Turkey	29
Italy	15		

Notes: The Table lists countries where small workers in small firms face a lower degree of workers protection in individual objective reason dismissals, for blue collar workers, as of 2015. Threshold refers to the maximum number of workers that can be employed in a small firm for it to have lower protection.

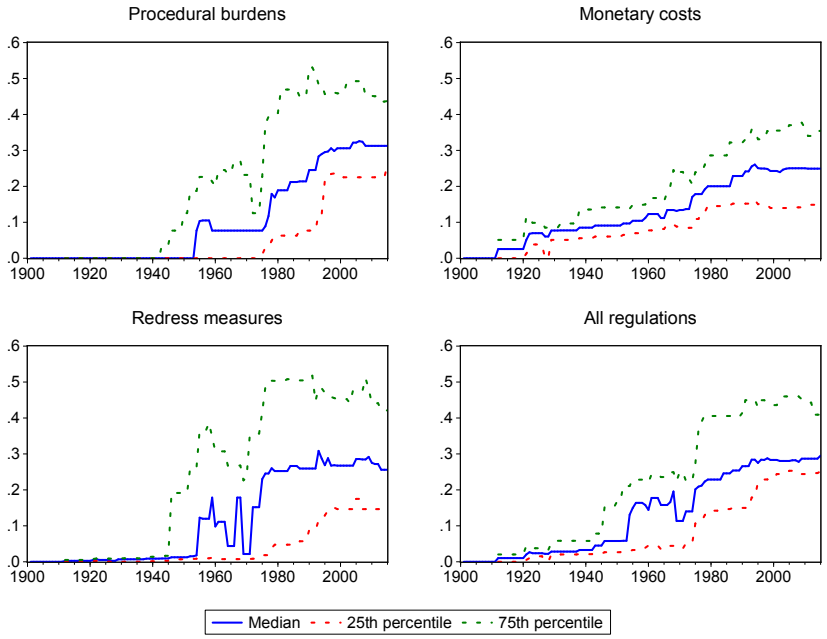
F. The index

Figure F1: ETI index for Bolivia and Algeria, different dismissal types, 1945-2015



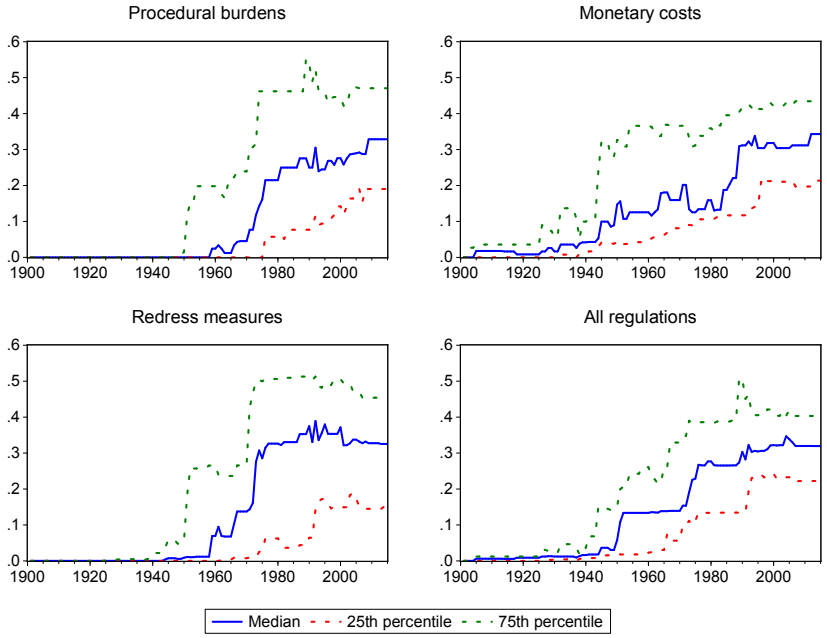
Notes: (Weighted) average of small and large firms, blue and white collars, workers of different tenures.

Figure F2: Employment Termination Index, advanced economies, 1900-2015



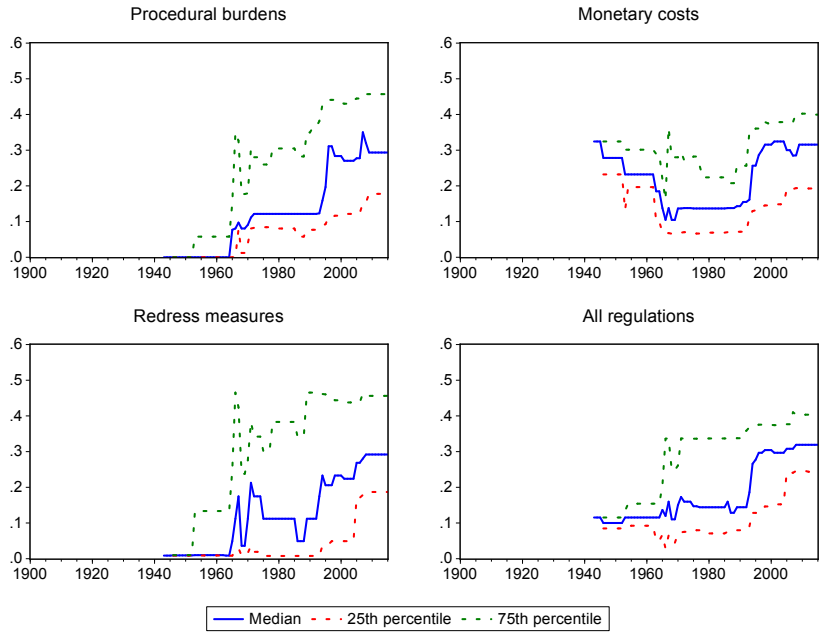
Notes: (Weighted) average of small and large firms, blue and white collars, and workers of different tenures. For a list of advanced countries included in the sample refer to Table A1.

Figure F3: Employment Termination Index, emerging markets, 1900-2015



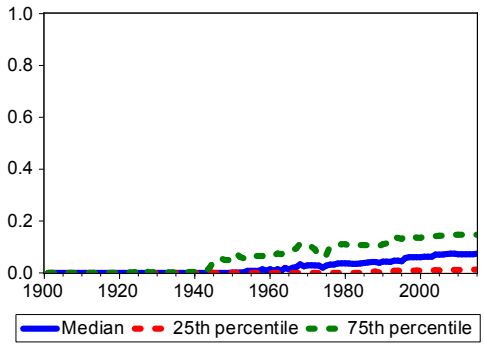
Notes: (Weighted) average of small and large firms, blue and white collars, and workers of different tenures. For a list of emerging market countries included in the sample refer to Table A1.

Figure F4: Employment Termination Index, low-income countries, 1900-2015



Notes: (Weighted) average of small and large firms, blue and white collars, and workers of different tenures. For a list of low-income countries included in the sample refer to Table A1.

Figure F5: Employment Termination Index, difference between senior and junior workers, 1900-2015



Notes: The figure shows the difference between EPL applying to senior and junior workers.

G. Descriptive statistics

Table G1: Correlation between the regulation type sub-indexes

	Procedural burdens	**Monetary costs**	**Redress measures**
Procedural burdens	1.00	0.56	0.82
Monetary costs		1.00	0.52
Redress measures			1.00

Table G2: Correlation between the dismissal type sub-indexes

	i	**ii**	**iii**	**iv**	**v**
i	1.00	0.86	0.67	0.62	0.58
ii		1.00	0.62	0.64	0.67
iii				0.54	0.48
iv				1.00	0.59
v					1.00

Notes: i, ii, iii, iv, and v refer respectively to individual objective reason, collective objective reason, professional incapacity, gross misconduct and no reason dismissals

Table G3: Pairwise correlation of ETI sub-indexes with other EPL indexes

	OECD	EPLex	BDPLS 1	BDPLS 2	LAMRIG
Total	0.66	0.56	0.22	0.49	0.45
Procedural burdens	0.61	0.34	0.27	0.58	0.45
Monetary costs	0.57	0.49	0.16	0.14	0.35
Redress measures	0.52	0.57	0.14	0.45	0.37
Individual, objective reason	0.65	0.38	0.26	0.52	0.37
Collective objective reason	0.63	0.48	0.24	0.45	0.43
Professional incapacity	0.49	0.52	0.16	0.36	0.34
Gross misconduct	0.53	0.57	0.17	0.34	0.32
No reason	0.27	0.29	-0.05	0.27	0.29

Notes: The left column refers to the ETI index and its sub-indexes. In the top row, OECD indicates to the version 1 of the indicator of strictness of employment protection against individual dismissal developed by the OECD for an unbalanced sample of 73 countries over the 1985-2013 period. EPLex refers to the quantitative indicator developed by the International Labour Organization from the EPLex database for an unbalanced sample of 36 countries over the 2008-2013 period. BDPLS 1 and BDPLS 2 indicate to the Cost of Firing Workers and the Dismissal Procedures indexes by Botero et al. (2004) and for a cross-section of 85 countries. LAMRIG refers to the index developed by Campos and Nugent (2012) for an unbalanced panel of 140 countries over the 1950-2004 period. The frequency of the LAMRIG index is 5-year. To compute correlations we transform our (sub-)index into a 5-year frequency index by taking simple averages.