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Liberal and trade-unionist concepts of flexicurity: Modelling in application to 16 European countries

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Liberal and trade-unionist concepts of flexicurity: Modelling in application to 16 European countries

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Abstract

The notion of *flexicurity* was introduced in the late 1990s. It promotes the idea of compensation of deregulation of labour markets (= flexibilization) by advantages in employment and social security, in particular for flexibly employed (other than permanent full-time, called also atypically employed). This paper suggests an operational definition of flexicurity, taking into account different views of liberals and trade unions. The corresponding flexicurity indices are derived from (a) data on the dynamics of employment types, (b) scores of the strictness of employment protection legislation provided by the OECD, and (c) qualitative juridical data on social security.

To convert the latter into numbers, eight employment types (permanent full-time, fixed-term part-time, etc.) in 16 European countries are ranked with respect to their eligibility to five social security benefits (unemployment insurance, public pensions, etc.). To avoid known shortages of ranking, the *Method of Total Ranks* is proposed. The ranks replace continuous variables as index entries, and a dedicated model estimates the total index error which results from such an ‘ordinal rounding’ of the index input.

The flexicurity indices are calculated for 16 European countries for the years 1994–2003. Contrary to theoretical opinions, the current deregulation of European labour markets is not compensated by improvements in the social security. If the flexicurity advantages/disadvantages are accounted proportionally to the size of affected groups then the factual trends are negative even from the viewpoint of liberals, to say nothing of trade unions. The reciprocity of the advantages/disadvantages turns out to be illusory, because gains are smaller than losses and winners are fewer than losers. Thereby the study warns against promoting flexicurity policies with no operational control and empirical feedback.

Keywords: Flexicurity, employment security, social security, employment protection legislation, European Union, statistical indices.

JEL Classification: C43 — Index Numbers and Aggregation, C51 — Model Construction and Estimation, J21 — Labor Force and Employment, Size, and Structure, J26 — Retirement; Retirement Policies, J65 — Unemployment Insurance; Severance Pay; Plant Closings, J83 — Workers’ Rights, J88 — Public Policy.

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1 Introduction: Economical and social background

The general employment insecurity has significantly increased in Europe in the recent two decades. In addition to unemployment, the number of atypically employed, like part-time, fixed-term, or self-employed, has disproportionately grown since the 1980s (EuroStat 2003). The atypical employment is not only less secured but also provides less carrier prospects and training chances (OECD 2002, p. 156–159). Besides, it often disqualifies workers from social benefits, since the eligibility of atypically employed is substantially lower than that of permanently employed (OECD 2002, p. 131). The growth of atypical employment can be explained by several factors.

1. **Globalization.** Investments under globalization are easily made worldwide, industries and services move from one country to another, making permanent employment restrictive for efficient economic performance. The collapse of the Socialist Block gave way to unconstrained capitalism. The market economy became total, imposing economic priorities over social ones.

To improve the competitiveness of firms in the background of exporting industries to countries with a cheap labour, European employers required for a liberalization of national economies; for the deregulation of labour markets see Esping-Andersen and Regini (2000). Some governments yielded their pressure, the employment protection legislation (EPL) became more relaxed, resulting in a number of negative effects on labour market and social structure (OECD 1999, section 2).

2. **Rapid technological changes.** Expanding information technologies are often implemented within relatively short-time projects. Some projects are realized by small temporary teams with a limited longevity and even by single individuals. These particularities and dynamics are transmitted to all branches which use information technologies and depend on their updates. Thus, the share of temporary employment in the total employment in France, Italy, Netherlands, and Spain doubled or tripled during 1985–2000, attaining in Spain 35% (OECD 2002, p. 133). The annual growth of self-employment in the non-agricultural sector in the OECD countries in 1990–1998 was 1.7%, whereas that of civilian employment 1% (OECD 2000, p. 159).
3. **Long-term unemployment.** During the 1990s the long-term unemployment in the OECD countries has become a more serious problem than before. In 1990 the unemployed for 6–12 months and for more than 12 months constituted respectively 44.6 and 30.9% of all unemployed. In 1998 these figures attained 48.6 and 33.4% (OECD 2002, p. 322). This means that the average duration of unemployment together with the *share* of long-term unemployment in the total unemployment has increased. This structural change signalizes about an unusual social process. Its consequence is that the workers having experienced a long-time unemployment “are more likely to be offered shorter contracts than other workers” (OECD 2002, p. 156).

4. **Immigration.** As stated by the OECD (2001, p. 171), “While admissions of new permanent foreign workers are currently very few in number, especially in the European OECD countries, the temporary employment of foreigners appear to be becoming more widespread. . . . The temporary employment of foreign workers introduces flexibility into the labour market.” Moreover, foreigners are overrepresented among long-term unemployed (OECD 2001, p. 181–182) whose chances to get a ‘normal’ permanent job are relatively low (OECD 2002, p. 156).
5. **High welfare.** Finally, high earnings and accumulated welfare in some European countries enabled a fraction of the population to turn to part-time jobs. For instance, the demand for part-time employment by full-time employed in the Netherlands is twice larger than vice versa. For women this ratio is even higher and surpasses three times (OECD 1999, p. 33).

Growth of atypical employment and intensive labour market transitions (Schmid and Gazier 2002) result in a new social situation which should be adequately reflected in the public policy. In most of the post-war Europe, employment relations were regulated by a rather constraining employment protection legislation and by collective agreements between employers and trade unions. The actual contradiction between the flexibilization pursued by employers and strict labour market regulation defended by trade unions makes topical the discussion on flexibilization and employment protection legislation with regard to economical performance and unemployment.

The pro’s and contra’s labour market regulation/flexibility versus employment were investigated by numerous scholars; for a review focusing at European welfare states as defined by Esping-Andersen (1990) see Esping-Andersen (2000a–b). As concluded by Esping-Andersen (2000b, p. 99), ‘the link between labour market regulation and employment is hard to pin down’. The same empirical evidence, that unemployment is practically independent of the strictness of employment protection legislation, was reported by the OECD (1999, pp. 47–132). There were even cases when the same legislation changes caused different effects. For instance, the impact of almost equal deregulation measures on easing restrictions on the use of fixed-term contracts ‘was sharply different’ in Germany and Spain (OECD, 1999, p. 71).

At the same time, a good labour market performance under little regulation was inherent in the ‘Anglo-Saxon model’, that is, USA, Canada, United Kingdom, and Australia (Esping-Andersen 2000a). The deregulation of labour market in the Netherlands, which had a different kind of economy, coincided with the ‘Dutch miracle’ of the 1990ies (Visser and Hemerijck 1997, Gorter 2000, van Oorschot 2000). A similar Danish practice in the background of ‘Eurosclerosis’ (Esping-Andersen 2000a, p. 67) was successful as well (Björklund 2000, Braun 2001, Madsen 2004). All of these convinced some scholars and politicians in the harmlessness and even usefulness of labour market deregulation. It was believed that employment flexibility improved competitiveness of firms and thereby stimulated production, which in turn animated labour markets.

The claims for flexibilization met a hard resistance, especially in countries with old traditions of labour movement. Wilthagen and Tros (2004, p. 179) reported with a reference to Korver (2001) that the *Green Paper: Partnership for a New Organisation of Work* of the European Commission (1997) ‘which promoted the idea of social partnership and balancing flexibility and security’ got a very negative response from French and German trade unions, because ‘the idea of partnership represents a threat to the independence of unions and a

denial of the importance of worker's rights and positions, notably at the enterprise level'. The ILO published a report, concluding that 'the flexibilization of the labour market has led to a significant erosion of worker's rights in fundamentally important areas which concern their employment and income security and (relative) stability of their working and living conditions' (Ozaki 1999, p. 116).

To handle the growing flexibility of employment relations with lower job security and decreasing eligibility to social benefits, the notion of *flexicurity* has been introduced. Wilthagen and Tros (2004) ascribe its idea to the member of the Dutch Scientific Council of Government Policy Professor Hans Adriaansens and the Dutch Minister of Social Affairs Ad Melkert (Labour Party). In the autumn of 1995 Adriaansens launched the concept of flexicurity in speeches and interviews, having defined it as a shift from job security towards employment security. He suggested to compensate the decreasing job security due to fewer permanent jobs and easier dismissals by improving the employment opportunities and social security.

For instance, a relaxation of the employment protection legislation was supposed to be counterbalanced by giving a better status to temporary and part-time workers, life-long professional training which facilitates changes of jobs, more favorable regulation of working time, and additional social benefits. In December 1995 Ad Melkert presented a memorandum *Flexibility and Security* on a relaxation of the employment protection legislation of permanent workers provided temporary workers get a regular employment status, without however adopting the concept of flexicurity as such.

These features were to a great extent already inherent in Denmark with its traditionally weak employment protection, highly developed social security, and easiness to find a job (Madsen 2004). The Denmark social security system met well the idea of flexicurity and along with that of the Netherlands was recognized a "good-practice example" (Braun 2001, van Oorschot 2001). Due to these circumstances the Netherlands and Denmark initiated the international flexicurity debate. Although some authors still consider the flexicurity a specific Dutch/Danish phenomenon (Gorter 2000), the idea spread all over Europe in a few years; for a selection of recent international contributions see Jepsen and Klammer (2004). At the Lisbon summit of 2000 the EU has already referred to this concept (Vielle and Walthery 2003, p. 2; Keller and Seifert 2004, p. 227).

Since the notion is rather new, there is neither established definition of flexicurity, nor means for its quantitative characterization. This study continues Tangian's (2004) attempt to fill in this gap and suggests operational definitions of flexicurity which reflect viewpoints of liberals and trade unions. For empirical investigation, the corresponding flexicurity indices are derived from (a) data on the dynamics of employment types, (b) scores of employment protection legislation provided by the OECD, and (c) qualitative juridical data on social security. To convert the latter into numbers, eight employment types (permanent full-time, fixed-term part-time, etc.) in 16 European countries are ranked with respect to their eligibility to five social security benefits (unemployment insurance, public pensions, etc).

Ranking is more objective and much easier than numerical estimation but it has some known shortages like the dependence of one's rank on changes of ranks of competitors (as in tournaments). To surmount these shortages, the *Method of Total Ranks* is proposed. It operates on all *instances* of all participants at once, so that the dynamics of competitors does not affect the rank of an invariable participant. The ranks replace continuous variables as index entries, and a dedicated model estimates the total index error which results from such

an ‘ordinal rounding’ of the index input, comparing to the index based on the non-observable ‘exact’ continuous variables. In the given application this error does not surpass 3.12%.

The index is calculated for 16 European countries for the years 1994–2003. The results are not much encouraging. Contrary to theoretical opinions, the current deregulation of European labour markets is not compensated by improvements in the social security. If the flexicurity advantages/disadvantages are accounted proportionally to the size of affected groups then the factual trends are negative even from the viewpoint of liberals, to say nothing of trade unions. The reciprocity of the advantages/disadvantages turns out to be illusory, because gains are smaller than losses and winners are fewer than losers. Thereby the study warns against promoting flexicurity policies with no operational control and empirical feedback.

2 Liberal view at flexicurity

The comprehensive 758-page report on flexicurity (Klammer and Tillmann 2001, p. 16) defines flexicurity following Wilthagen (2001, p. 1). Three years later Wilthagen and Tros (2004, p. 169) used the same definition, having replaced the word ‘coordinated’ by the word ‘deliberate’:

Definition 1 (liberal) *[Flexicurity is] a policy strategy that attempts, synchronically and in a deliberate way, to enhance the flexibility of labour markets, work organization and labour relations on the one hand, and to enhance security — employment security and social security — notably for weak groups in and outside the labour market on the other hand.*

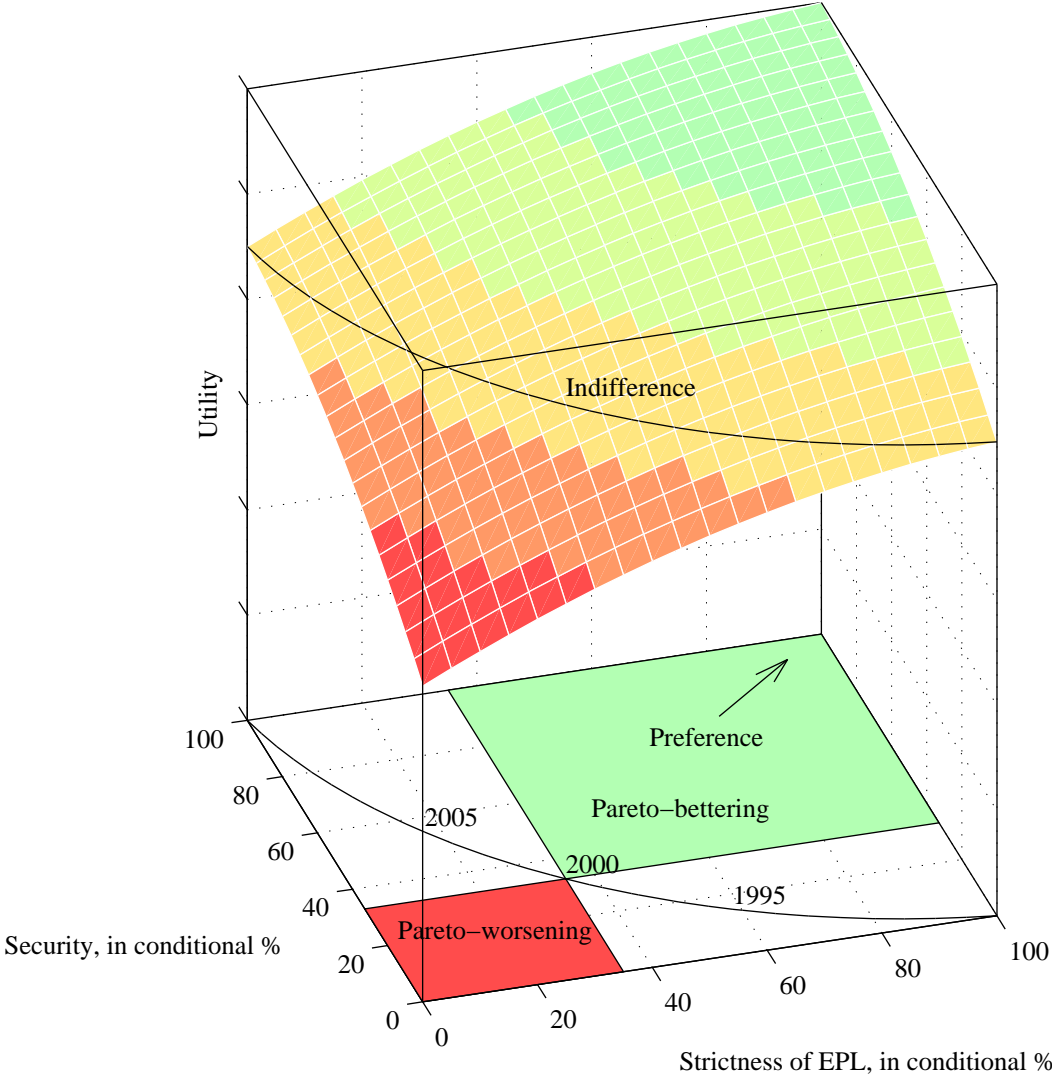
Wilthagen and Tros (2004, p. 170) emphasize that flexicurity is not ‘simply social protection for flexible work forces as Klammer and Tillmann (2001), Ferrera et al (2001) and many others tend to analyze it’. According to Wilthagen and Tros (2004, p. 167), flexicurity policies aim at increasing the competitiveness of European economies by their further liberalization:

... The mission of the EU as formulated in Lisbon in 2000 clearly reflects the ambition of enhancing both flexibility and security as the aims ‘to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth’...

Therefore, ‘enhancing security’ is not the prime goal. It is rather a means to attain a deliberate compromise (cf. with Wilthagen–Tros’ ‘deliberate’) between employers, who seek for the deregulation of labour markets, and employees, who wish to protect their rights. It explicitly manifests itself in the description of flexicurity as a flexibility versus security trade-off; see Visser and Hemerijck (1997, p. 44) and Wilthagen and Tros (2004, p. 171). Let us consider this description in some detail.

In a two-commodity space, a trade-off is an indifference curve along which a decrease in one commodity is compensated by an increase in another commodity. In application to our consideration such a space is shown in Figure 1. The frontal horizontal axis *Strictness of EPL* displays the strictness of employment protection legislation measured in some conditional %.

Figure 1: A flexicurity policy along a tradeoff ‘Flexibility versus security’ imagined by liberals



The employment protection legislation is understood in a broad sense, concerning not only dismissals but other aspects of labour market regulation. The strictness grows from left to right, implying flexibility at the left hand and rigidity at the right hand, so to speak,

$$\text{Flexibility} = 100\% - \text{Strictness of EPL} .$$

The second axis *Security* shows the aggregated employment and social security also measured in some conditional %. States of the society are depicted by points (vectors) in the two-dimensional plane *Flexibility–Security*.

To speak of a trade-off, one has to assume a preference on the space of states of the society. A preference is usually represented by a utility function which takes greater values at more preferable points and remains constant at equivalent points joined into *indifference curves* (= trade-offs). The indifference curves are but points of the same height on the utility hill; see Figure 1. A flexicurity policy is imagined as a motion along one of such indifference curves towards a higher flexibility, while the loss in the employment protection

being compensated by a gain in the social security. In Figure 1 such a policy is depicted by some hypothetical states of the society in years 1995, 2000, 2005, which are all located in the same indifference curve.

As long as flexibility, security, and social utility are not measurable, the reference to a trade-off is just a scientific metaphor. It nevertheless discloses the one-sided intention to favor employers (motion towards higher flexibility) and not to favor workers (no increment in social utility), retaining however the social status quo (remaining at the same level of social utility).

3 Trade-unionist view at flexicurity

From the viewpoint of trade unions, a flexibilization of employment relations can be hardly compensated by social security benefits, and giving up labour rights for social advantages is not appropriate. Even if each particular compromise seems more or less fair, their succession can lead away from the social status quo and the employees can finally get nothing or very little for their pains. It can run as in the known tale about a man who goes to the market with a horse, exchanges it for a cow, then the cow for a sheep, and so on unless he finds himself but with a needle which he loses on the way home.

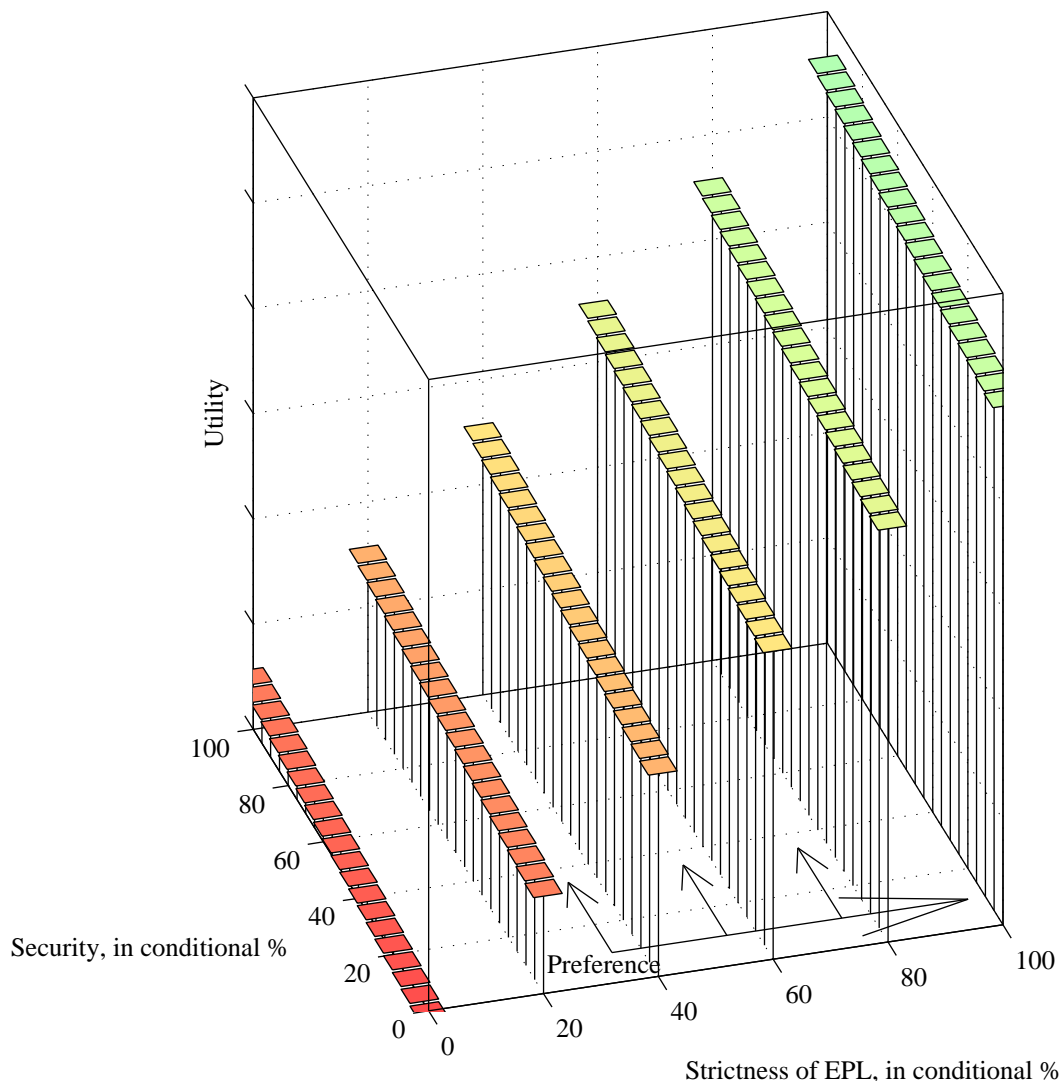
Since trade unions see little possibilities to compensate flexibilization of employment relations by social security advantages, the preference of trade unions is determined primarily by the strictness of EPL, and the second factor, security, is considered *ceteris paribus*, if only the first factor remains invariable. It means that for every given strictness of EPL the preference grows from 0% to 100%-security level; and every such a run is superior to any run which starts from a lower strictness level of EPL; see Figure 2. It can be imagined as a staircase with floors being EPL strictness levels and each flight of stairs being the full-range ascent along the social security scale.

This type of preference is called *lexicographic* by analogy with a lexicon which words are ordered alphabetically by the first letter (here, the strictness of EPL), and those with the same first letter are ordered alphabetically by the second letter (the security level), and so on. The lexicographic preference has no indifference curves, because indifference levels are single points. It means that a shortage of a high-priority factor cannot be compensated by any surplus of lower-priority factors. Finally, no lexicographic preference on a plane can be represented by a utility function, because the number of ‘flights of stairs’ is non-countable as the number of points in the first axis (Tangian 1991, p. 49–50). To overcome this representation inconvenience, one can disregard the continuity of the first scale (here, of the strictness of EPL) and to calibrate it by reducing to several levels as in Figure 2. Such a calibrated lexicographic preference is representable by a utility function, but the calibration levels should be sufficiently dense, otherwise the utility will be little sensible to variations in the EPL.

The difference between viewpoints of liberals and trade unions compels the latter to promote their own definition of flexicurity. It is just the one criticized by Wilthagen and Tros (2004, p. 170):

Definition 2 (trade-unionist) [*Flexicurity is*] *social protection for flexible work forces as Klammer and Tillmann (2001), Ferrera et al (2001) and many others tend to analyze it,*

Figure 2: Lexicographic preference of trade unions with no trade-offs to follow



understood as ‘an alternative to pure flexibilization’ (Keller and Seifert 2004, p. 226), and ‘to a deregulation-only policy’ (Klammer 2004, p. 283); see also WSI (2000).

The interrelation of the liberal and trade-unionist definitions can be illustrated with Figure 1 by superimposing both preferences. The only common is the ‘self-evident’ Pareto-preference which stands for bettering one factors with no worsening others. In Figure 1, the Pareto-bettering domain for the year 2000 is shown by a green rectangle. It contains the states of the society with more or equally strict EPL and with higher or equal security. The Pareto-worsening domain with both less strict EPL and lower security is depicted by a red rectangle.

From the viewpoint of trade unions, there is no much room for a flexicurity policy. In Figure 1, the corresponding flexicurity trajectory should ascend along the vertical edge of the Pareto-bettering domain. Deviations towards a lower flexibility (into the domain) are undesirable for employers, and deviations towards a higher flexibility (out of the domain) are undesirable for trade unions.

Thus, the main distinction of the trade-unionist understanding of flexicurity is that it should protect employees' positions in the globalization-driven processes, as opposed to liberal suggestions to meet employer's requirements under new economical conditions. In other words, trade-unions consider flexicurity an instrument of labour movement with a reference to the status-quo, whereas liberals narrow it down to a form of bargaining with relativized values (Cf. with Wilthagen and Tros' (2004, p. 170) 'weaker groups in and outside the labour market ... [where] ... the classifications 'stronger' or 'weaker' only have a relative meaning here and cannot be defined in advance').

4 Flexibility versus security

Let us have a closer look at notions *Flexibility* and *Security* to better understand which exchange is proposed. In fact, the *Flexibility* stands for a multivariate aggregate which, according to the OECD (1989, p. 13–20), includes:

1. *External numerical flexibility* (*employment flexibility* by Standing 1999, p. 101–114; *numerical flexibility* by Regini 2000, p. 16, *external quantitative flexibility* by Vielle and Walthery 2003, p.8) defined as the employer's ability to adjust the number of employees to current needs. In other words, it is the easiness of 'hiring and firing' which manifests itself in the mobility of workers between employers (external job turnover).
2. *Internal numerical flexibility* (*work process* or *functional flexibility* by Standing 1999, p. 114–116; *temporal flexibility* by Regini 2000, p. 17, *internal quantitative flexibility* by Vielle and Walthery 2003, p.8) which is the employer's ability to modify the number and distribution of working hours with no change of the number of employees. It appears in shiftworking, seasonal changes in the demand for labour, weekend/holiday working, overtime and variable hours, see also Keller and Seifert (2004, p. 228).
3. *Functional flexibility* (*job structure flexibility* by Standing 1999, p. 117–124; *internal-functional flexibility* by Keller and Seifert 2004, p. 228, *internal qualitative flexibility* by Vielle and Walthery 2003, p. 8), that is, the employers' ability to move their employees from one task or department to another, or to change the content of their work. It is reflected by the mobility of workers within enterprises (internal labour turnover), see also Regini (2000, p. 16).
4. *Wage flexibility* (*flexible* or *variable pay* by Wilthagen and Tros 2004, p. 171), which enables employers to alter wages in response to changing labour market or competitive conditions. Typically, employers seek for applying individual performance-linked rewarding systems additionally to (or instead of) usual collective agreements independent of individual performance, see also Regini (2000, p. 16–17, 19–21).
5. *Externalization flexibility* (*external functional flexibility* by Keller and Seifert 2004, p. 228; one of constituents of *job structure flexibility* by Standing 1999, p. 123; *external qualitative flexibility* by Vielle and Walthery 2003, p.8), that is, the employers' ability to order some works from external workers or firms without employment contracts but with commercial contracts in such forms as distance working, teleworking, virtual organizations, and *entreployees*, that is, self-entrepreneurial activities, see Pongratz and Voß (2003).

The notion *Security* also includes several issues. For instance, Standing (1999, p. 52) enumerates seven types of security. They are not all relevant to the flexicurity debate, like *labour market security* through state-guaranteed full employment in socialist countries. Within the debate Vielle and Walthery (2003, p. 18–19), following Dupeyroux and Ruellan (1998), focus the attention at compensatory functions of securities in case of unemployment, illness, advancing age, maternity, invalidity, as well as exceptional medical or family burdens (decommodification in the sense of Esping-Andersen (1990)). More specifically, Wilthagen, Tros and van Lieshout (2003, p. 4) restrict consideration to the following four types of security:

1. *Job security (employment security)* by Standing (1999, p. 52), ‘the certainty of retaining a specific job with a specific employer’. It is guaranteed by the protection of employees against dismissals and against significant changes of working conditions. This is the main subject of the employment protection legislation.
2. *Employment/employability security (job security)* by Standing (1999, p. 52), the ‘certainty of remaining at work (not necessarily with the same employer)’. It means the availability of jobs for dismissed and unemployed, corresponding to their qualification and previous working conditions. The employability of job seekers can be improved by life-long professional training which can be offered both by employers and by training programs within active labour market policies; see Keller and Seifert (2004, p. 235). Trost (2004, p. 5) also mentions organization of firm-firm job pools and facilities for work-work transitions.
3. *Income (social) security*, the ‘income protection in the event that paid work ceases’. Standing considers it more generally as protection of income through minimum wage machinery, wage indexation, comprehensive social security, including progressive taxation, provisions for old age (post-employment security by Keller and Seifert 2004, p. 236–238), etc.
4. *Combination security* (not considered by other authors cited), ‘the certainty of being able to combine paid work with other social responsibilities and obligations. This last form of security cannot be traced back to the other forms of security.’ Tros (2004, p. 5) explains it further as a work-life balance, work-family balance, early flexible part-time retirement, flexible working hours, and leave facilities.

Matrices like in Table 1 are often used to show the compound structure of flexibility and security and to illustrate the idea of flexicurity trade-offs. The given example is taken from Tros’ (2004) paper on flexicurity policies for old-aged workers. The cells of the table show organization measures relevant to the intersecting types of flexibility and security. Some measures are multi-relevant, like *entreployees*, that is, supporting self-entrepreneurial activities.

The matrix in Table 1 gives a clear idea of the composition of both axes *Flexibility* and *Security* and provides a frame to classify organization measures with respect to types of flexibility and security. However, its aiming at explaining flexicurity trade-offs is misleading by two reasons.

Table 1: The matrix aimed at tracing flexibility versus security trade-offs with a flexicurity policy for older workers as given by (Tros 2004) with two bottom rows added

Flexibility types	Security types			
	Job security	Employment security	Income security	Combination security
External numerical		Firm-firm job pools Facilities work-work transitions Older <i>entreployees</i>	Retirement arrangements	
Internal numerical	Part-time work Flexible retirement Part-time <i>entreployees</i>		Flexible retirement	Part-time retirement Flexible age (pre)pension Flexible working hours Leave-facilities
Functional	Education/training Adaptation in working hours/tasks	Education/training Seniority/bridge jobs Job-rotation Age-aware career and job structures		
Wage flexibility				
Externalization		<i>Entreployees</i>		

Structure of policy space and of flexicurity matrix. One reason is that the table neither *separates* flexibility and security components in the organization measures adduced, nor specifies the *compensation rate* of the former by the latter, which is the main content of a trade-off. Conversely, the organization measures in the table serve for flexibility and security *simultaneously*. This makes them ambiguous (for flexibility, or for security?), conceals the compensation aspect, and creates an illusion of a ‘deliberate’ solution.

For instance, consider *Firm-firm job pools* at the intersection of row *External numerical flexibility* and column *Employment security*. If it is a flexibility measure to ‘softly’ dismiss workers (it stands in the row *External numerical flexibility*!) then the equivalent social compensation should be specified. If it is a security measure against easy dismissals (it stands in the column *Employment security*!) then it is too weak because it provides poorer career opportunities than retaining the same job. If it is thought as a measure combining both flexibility and security in a ‘deliberate’ rate then it is too vague to be taken seriously.

The column *Income security* is even less clear. What can *Retirement arrangements* in the row *External numerical flexibility* mean? That a dismissed worker will retire? And additionally will get a pension equivalent to the wage? What can *Flexible retirement* in the row *Internal numerical flexibility* mean? That a non-benevolent part-timer gets a part-time retirement? In which rate then?

On the other hand, Table 1 provides no space for locating deregulation-only measures or purely security innovations. For instance, the Dutch Law on Flexibility and Security which came in force on January 1, 1999 (Wilthagen and Tros 2004, p. 175) consists of a number of measures, each contributing either to flexibility, or to security. All these real measures cannot be included in Table 1 just because its cells are linked both to flexibility and security.

To make the flexicurity matrix consistent with the idea of trade-offs, the organization measures in the matrix should meet the way the flexibility trade-offs are described. Recall that a flexicurity trade-off consists of vectors in the plane *Flexibility–Security*; see Figures 1–2. Organization measures affect these vectors, in other words, they operate as increments, implying that they themselves are vectors in the plane *Flexibility–Security*.

For instance, each flexibility measure i from the Dutch Law’99 cited should be described by an EPL decrement, that is, vector $(-x_i, 0)$, and every security measure j should be described with a security increment $(0, y_j)$. Then the resulting effect is $(-\sum_i x_i, \sum_j y_j)$, showing the flexibility/security contributions to the current policy and their compensation rate $\frac{\sum_i x_i}{\sum_j y_j}$. Then the effect of the Dutch reform’99 is associated with a vector in the policy space which operates as an increment in the policy’98 vector. If such a quantitative specification is difficult then at least the verbal representation format should be respected: (a) What the measure, (b) Which *contribution* to flexibility, and (c) Which contribution to security.

Dimensionality of policy space and of flexicurity matrix. The second reason why the matrix in Table 1 is not appropriate for tracing trade-offs is its insufficient dimensionality to contain all the information required.

Usually two matrix dimensions are associated with successive grades of two parameters. For instance, locating *Spain-1999* in the top-right cell of cross-table *Unemployment–Inflation* means that in 1999 its inflation and unemployment were quite high. Then by default *Spain-1999* is associated with a two-dimensional vector (unemployment rate, inflation rate) located top-right in the plane *Unemployment–Inflation*.

Following this standard, vertical and horizontal dimensions of Table 1 are perceived as *Flexibility* and *Security* axes, respectively. Then *Job security* and *Combination security* look as extremities of the *Security*-axis with intermediate grades *Employment security* and *Income security* which are in fact security components. The same relates to the *Flexibility* dimension.

In actuality the axes *Flexibility* and *Security* fall into five and four sub-axes, respectively. Consequently, the preferences of both liberals and trade unions are defined on a nine-dimensional space. Trade-offs, being hypersurfaces, have one dimension less, but there still remain eight-dimensions. To represent a trade-off in a nine-dimensional space, one needs a nine-dimensional array which dimensions correspond to the nine sub-indices of flexibility and security. If necessary, the dimensionality of the array can be reduced to the dimensionality of the trade-off, that is, to eight, but not to two. Flexicurity measures, correspondingly, are described by 9-dimensional vectors $(\underbrace{x_1, \dots, x_5}_{\text{increments in 5 types of flexibility}}, \underbrace{y_1, \dots, y_4}_{\text{increments in 4 types of security}})$.

$\underbrace{x_1, \dots, x_5}_{\text{increments in 5 types of flexibility}}, \underbrace{y_1, \dots, y_4}_{\text{increments in 4 types of security}}$

Thus, Table 1 provides only the information on (a) what the measure, (b) its *simultaneous relevance* to one *Flexibility* sub-axis, and to one *Security* sub-axis, that is, which one of five *Flexibility* and one of four *Security* increments are non-zero. If the measure relates to several sub-axes, like *enterployees*, it has several instances in the table. Because of the dimensionality shortage, neither relevance to a single sub-axis can be reflected, nor the sign of the increments can be specified. Therefore, Table 1 is not adapted to describe *Flexibility–Security* trade-offs.

Double functionality of factors and reduction of the space dimensionality. Let us see, whether the dimensionality of the flexicurity space is indeed that high, or can be lowered down. Note that the security factors, except *Income (social) security*, are the flexibility factors regarded from the security viewpoint and ‘securitively’ labelled. For instance, *Job security* is just the inverse of the *External numerical flexibility*. It decreases proportionally to the growth of *External numerical flexibility*, and vice versa. Therefore, considering *Job security* within *Security* instead of *Flexibility* means accounting debts for credits. It should be accounted once, and actually within the increasing *Flexibility*.

With minor reservations, *Employment security* is closely interrelated with *Internal numerical* and *Functional flexibility*. Variable tasks, training, and using variable hours are attributes of internal numerical and functional flexibility. Employees are compelled to meet the increasing requirements of employers under the increasing risk of unemployment. At the same time, these measures are presented as employment security measures, because without these measures the employer will more likely look for new personnel, which means an increasing risk of dismissals. Thus, the *Employment security* in the given form is but the inverse of two kinds of *Flexibility*.

The *Combination security* is a ‘positively-minded’ reformulation of negative consequences of three types of flexibility (*External numerical*, *Internal numerical*, and *Externalization*). For instance, *enterployees*, flexible working hours, part-time work, and early retirement are all on the flexibility agenda. Having been reformulated as combination security measures, they look as consolations for non-benevolently self-employed, flexible-hours workers, part-timers, or early retired. Every cloud has a silver lining.

For the *Wage flexibility*, there is no security measure even for consolation.

Summing up what has been said, the *Security* against *Flexibility* looks thin rather than full-valued. It has little sense to oppose all types of security to flexibility, because the latter implies most of the former. With minor reservations, the real room for tracing trade-offs contains five flexibility sub-indices against one security index *Income (social) security*. Roughly speaking, the situation is reduced to money compensations to workers who suffer from flexibilization. It is exactly the axis of bargaining between employers and trade unions which struggle for guaranteed jobs and stable wages instead of inequivalent social security benefits.

5 Operationalizing three constituents of flexicurity

Recall how the OECD (1999, p. 49–132) evaluates the impact of employment protection legislation on labour market performance. At first the strictness of EPL is quantitatively estimated for 27 countries which scores (so the EPL-index is called) range from 0 to 6. These 27 scores are regarded manifestations of the independent variable *Strictness of EPL*. Then the national unemployment rates are assumed dependent on the EPL, and a regression line is fitted to the observations. Similarly, other employment indicators (youth unemployment, share of temporal unemployment, etc.) are represented as linear functions of the strictness of EPL.

This approach is noteworthy in three respects. First, it shows how to empirically study qualitative phenomena by designing appropriate indices. Second, the estimation of strictness

of EPL provides an instructive example of defining a numerical index from juridical data. Third, the index *Strictness of EPL* is ready to use in our application.

Convention on indices of flexibility and security. In our study, we restrict attention to two main indices, *Strictness of EPL* and *Social (income) security*. As for the former, recall that the flexicurity debate originates from claims to relax the EPL which constrains the external numerical flexibility. Consequently, the *Strictness of EPL* can be regarded an indicator of the *External numerical flexibility* which plays the key role in the debate. As for the latter, its prime importance is explained in the previous section. Constructing the full nine-dimensional space ‘five flexibilities versus four securities’, and aggregating five flexibility and four security indicators into two principal axes as in Figures 1–2 is postponed to the next paper.

Utility of trade unions. The third structural constituent of flexicurity, *Social utility*, often remains in the shade. It operates ‘behind the scene’ but nevertheless determines flexicurity goals, difference in bargaining values, and policy strategies either as trade-offs, or as Pareto-bettering. It embodies the *General Will* in the sense of J.-J.Rousseau (1762) and activates the interaction between otherwise passive descriptive factors of flexibility and security. This constituent is explicitly represented in Figures 1–2 by the third (vertical) dimension and by projections of the indifference levels of the utility hill onto the plane *Flexibility–Security*.

The utility of trade unions is constructed in two steps. At the first step, the indices of flexibility and security are aggregated. At the second step, the lexicographic order is applied to the two aggregates. Consequently, constructing the utility of trade unions requires constructing the indices of flexibility and security, and then the lexicographic ordering follows ‘automatically’. Since in our study the flexibility is represented by the *Strictness of EPL* available from the OECD, and the security bundle is represented by the index of *Social security*, it remains to construct the latter.

Utility of liberals. Unlike the utility of trade unions, the liberals’ utility is defined directly on the nine-dimensional space of flexibility types and of security types. Although its construction has only one step, it is a complex task with a great deal of subjectivity. Alternatively, one can first aggregate the flexibility and security indices and then order them by some preference on the plane *Flexibility–Security*.

In the given study we deal with one flexibility and one security factor. Under no information, their statistically most likely ratio is 1:1 provided the factors have equal range; see Section 7 for methodological details. Therefore the liberal’s utility is assumed to be the sum of *Strictness of EPL* and *Social security*, both being reduced to the standard scale 0%–100%. Such a utility can be certainly doubted, because it actually depends on how the two indices are evaluated, how the values are distributed within the range, and what they practically mean. Since this information is unavailable (even if it were could it be sufficiently reliable?), the assumption on the liberal utility is just the least of all evils.

It should be emphasized that these doubts would arise for **any** flexibility-to-security weight ratio. They result from the liberal concept of flexicurity itself which includes trade-offs with subjective (‘deliberate’) rates of substitution. This difficulty is however not crucial

for our study aimed primarily at developing the model’s general framework rather than at adjusting its parameters by experts.

6 Index of flexibility

As explained previously, the *Flexibility* is characterized by the OECD’s index *Strictness of EPL* given in Table 2 for permanently and fixed-term employed. For the index of *Security* such a classification is insufficient, because the eligibility to social security benefits depends also on other employment indicators. Let us introduce a universal classification of employment types for both indices *Flexibility* and *Security*.

Klammer and Tillmann (2001c, p. 514) and Hoffmann and Walwei (2000) classify flexibly employed with respect to four dichotomic indicators: (a) *permanent/fixed-term*, (b) *full-time/part-time*, (c) *employed/self-employed*, and (d) *in agriculture/not in agriculture*. For self-employed the indicator *permanent/fixed-term* is not relevant, and from $2^4 = 16$ employment groups it remains the following eight:

1. Permanently full-time employed
2. Permanently part-time employed
3. Fixed-term full-time employed
4. Fixed-term part-time employed¹
5. Full-time self-employed in agriculture
6. Full-time self-employed not in agriculture
7. Part-time self-employed in agriculture
8. Part-time self-employed not in agriculture.

To obtain the *Strictness of EPL* for these groups for control years 1990–2003 do the following.

- Attribute the scores for *late 1980s* to 1989 and the scores for *late 1990s* to 1999.
- Assume constant the score of *Collective dismissals* which is given only for *late 1990s*.
- Compute the *Strictness of EPL* for employment group 1–8 for 1989 and 1999 by the formula with the weight coefficients suggested by the OECD (1999, p. 118):

$$\text{Strictness of EPL} = \begin{cases} \frac{5}{6} \cdot \text{Score of the group} & \text{for employed (groups 1–4)} \\ + \frac{1}{6} \cdot \text{Collective dismissals} & \\ 0 & \text{for self-employed (groups 5–8)} \end{cases} .$$

¹Fixed-term part-timers with low income are sometimes singled out into the group of *Mini-job-holders*; see Keller and Seifert (2004, p. 240). We do not consider mini-jobs here, because they are ill-socially-secured, not sufficiently reflected in the available statistics, and because it is impossible to consider all minor forms of employment relations. One has to stop somewhere, not descending to tips for hotel porters. The natural criterion of significant jobs is the tax liability which cuts mini-jobs off.

Table 2: Summary indicators of the strictness of employment protection legislation. Source: own estimation based on OECD (1999) pp. 52–53, 66

	Permanent employment		Fixed-term employment		Collective dismissals
	Late 1980s	Late 1990s	Late 1980s	Late 1990s	Late 1990s
	Score 0–6	Score 0–6	Score 0–6	Score 0–6	Score 0–6
Germany	2.7	2.8	3.8	2.3	3.1
Austria	2.6	2.6	1.8	1.8	3.3
Belgium	1.5	1.5	4.6	2.8	4.1
Switzerland	1.2	1.2	0.9	0.9	3.9
Czech Republic	2.8	2.8	0.5	0.5	4.3
Danemark	1.6	1.6	2.6	0.9	3.1
Spain	3.9	2.6	3.5	3.5	3.1
Finland	2.7	2.1	1.9	1.9	2.4
France	2.3	2.3	3.1	3.6	2.1
Italy	2.8	2.8	5.4	3.8	4.1
Netherlands	3.1	3.1	2.4	1.2	2.8
Norway	2.4	2.4	3.5	2.8	2.8
Poland	2.2	2.2	1.0	1.0	3.9
Portugal	4.8	4.3	3.4	3.0	3.6
Sweden	2.8	2.8	4.1	1.6	4.5
United Kingdom	0.8	0.8	0.3	0.3	2.9

- Obtain the EPL-scores for 1990–2003 by linear regression. Thereby each triplet *employment group/country/year* (= employment group in a country in a year) gets its own score.
- Normalize the scores to the range 0–100%. Thereby 0% and 100% are assigned to the triplets *employment group/country/year* with the lowest, respectively, highest index attained within the control period 1990–2003.

The results for Germany are shown in Table 3 coupled with Figure 3. The top number of each cell is the size of the group in % to total employment. In Figure 3 it is the length of the corresponding color rectangle. The bottom number of the cell is the *Strictness of EPL* for the group shown by the color rectangle’s height. The black background is the *EPL-deficit*, that is, the remainder to attain the 100%-strictness of EPL.

The factual rather than intended job security in a country can be described by the average *Strictness of EPL* weighted proportionally to the size of the employment groups. For example, if a strongly protected group is small and a weakly protected group is large then the factual job security is low. Such a weighted average is shown in the next to last column of Table 3. In Figure 3 it is the share of colored area in the framing rectangle of the year.

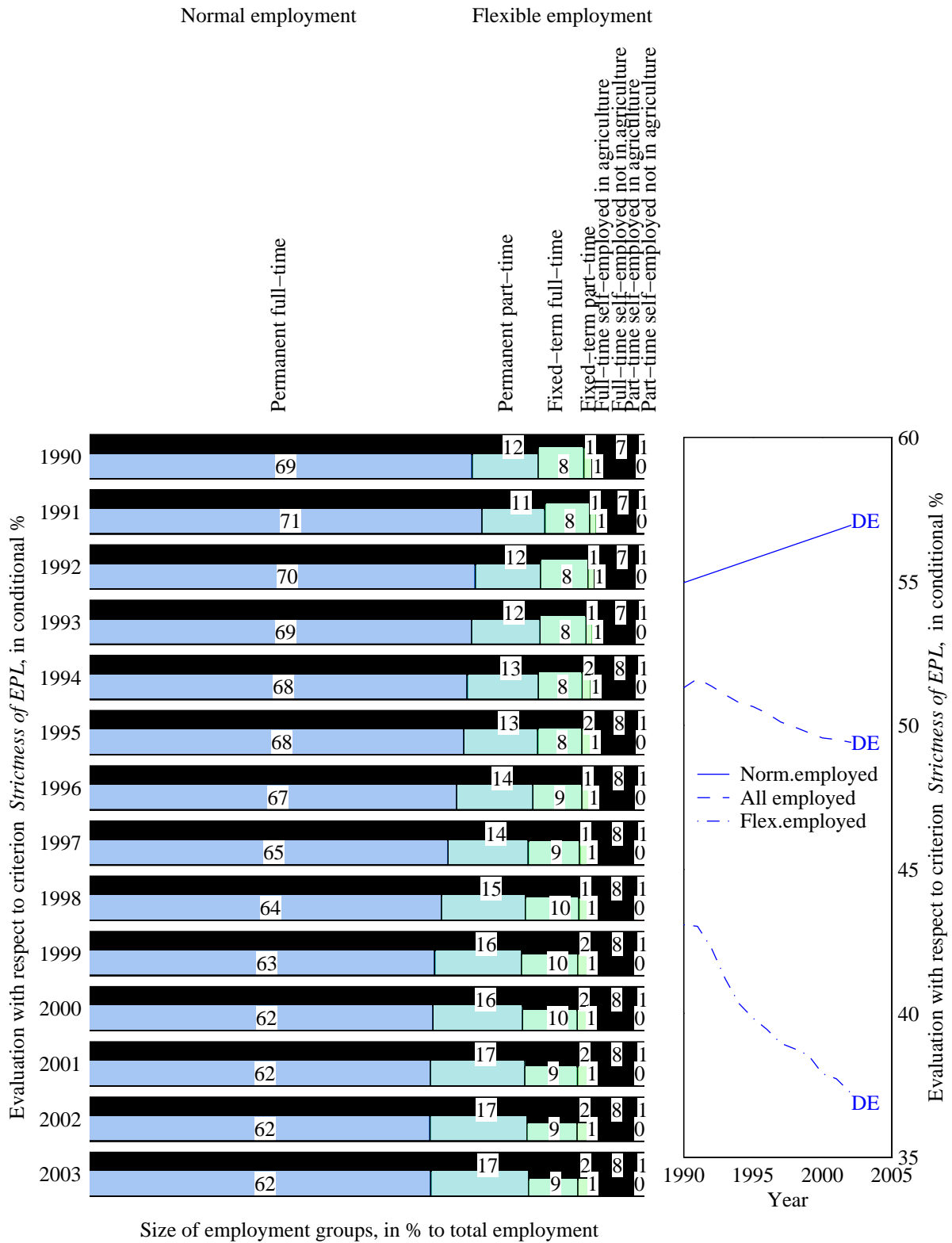
The last column of Table 3 contains a similar index but for flexibly employed only. In Figure 3 it is the share of colored area in the reduced framing rectangle of the year with no first (permanent full-time) section. The reference to all or only to flexibly employed is necessary to distinguish between the liberal and trade-unionist concepts of flexicurity.

The auxiliary graph in Figure 3 visualizes the *Strictness of EPL* yearly dynamics for normally, for all, and for flexibly employed (the first and two last columns of Table 3).

Table 3: Employment types in Germany and their evaluation with respect to criterion *Strictness of EPL* (Source: EuroStat and own estimation)

Year	Employment group, in % to total employment / Its summary score with respect to criterion <i>Strictness of EPL</i> , in %								<i>Strictness of EPL</i> (weighted average of summary scores)	
	Normal	Flexible employment								
	Perma- nent full-time	Perm- anent part- time	Fixed- term full-time	Fixed- term part- time	Full- time self-em- ployed in agri- culture	Full- time self-em- ployed not in agricul- ture	Part- time self-em- ployed in agri- culture	Part- time self-em- ployed not in agricul- ture	For all em- ployed (liberal concept)	For flexibly em- ployed (trade- unionist concept)
%	%	%	%	%	%	%	%	%	%	
1990	69.3	11.8	8.1	1.4	1.3	7.0	0.1	0.9	51.3	43.1
	55.0	55.0	70.5	70.5	0.0	0.0	0.0	0.0		
1991	71.1	11.2	8.0	1.2	1.0	6.6	0.1	0.8	51.6	43.0
	55.1	55.1	68.0	68.0	0.0	0.0	0.0	0.0		
1992	69.9	11.7	8.5	1.1	1.0	6.9	0.1	0.8	51.4	42.3
	55.3	55.3	65.5	65.5	0.0	0.0	0.0	0.0		
1993	69.2	12.2	8.2	1.2	1.0	7.2	0.1	0.9	51.1	41.2
	55.4	55.4	63.0	63.0	0.0	0.0	0.0	0.0		
1994	68.4	12.7	7.8	1.5	1.0	7.6	0.1	0.9	50.8	40.3
	55.6	55.6	60.6	60.6	0.0	0.0	0.0	0.0		
1995	67.8	13.2	7.9	1.5	0.9	7.6	0.1	1.0	50.6	39.8
	55.8	55.8	58.1	58.1	0.0	0.0	0.0	0.0		
1996	66.5	13.6	8.8	1.3	0.9	7.9	0.1	1.0	50.4	39.4
	55.9	55.9	55.6	55.6	0.0	0.0	0.0	0.0		
1997	65.0	14.3	9.2	1.4	0.9	8.1	0.1	1.1	50.1	39.0
	56.1	56.1	53.1	53.1	0.0	0.0	0.0	0.0		
1998	63.8	15.0	9.5	1.5	0.8	8.0	0.1	1.2	49.9	38.8
	56.3	56.3	50.7	50.7	0.0	0.0	0.0	0.0		
1999	62.6	15.5	10.1	1.7	0.9	8.1	0.1	1.2	49.7	38.5
	56.4	56.4	48.2	48.2	0.0	0.0	0.0	0.0		
2000	62.3	16.0	9.8	1.7	0.8	8.2	0.1	1.2	49.6	37.9
	56.6	56.6	45.7	45.7	0.0	0.0	0.0	0.0		
2001	61.9	16.8	9.4	1.7	0.8	8.1	0.1	1.2	49.5	37.7
	56.8	56.8	43.2	43.2	0.0	0.0	0.0	0.0		
2002	61.8	17.3	9.0	1.8	0.8	8.1	0.1	1.2	49.4	37.3
	56.9	56.9	40.8	40.8	0.0	0.0	0.0	0.0		
2003	61.9	17.5	8.8	1.8	0.8	7.9	0.1	1.2	49.4	36.9
	57.1	57.1	38.3	38.3	0.0	0.0	0.0	0.0		

Figure 3: Employment types in Germany and their evaluation with respect to criterion *Strictness of EPL* (Source: EuroStat and own estimation)



7 The OECD methodology and rank-based indices

Recall that the OECD’s EPL-index is based on 20 first-level indicators which are estimated cardinally (= numerically) by the authors of the study. Then these indicators are aggregated through a four-level hierarchy of taking weighted sums; see OECD (1999, p. 115–118) and Grubb and Wells (1993). The OECD itself acknowledges that ‘the scoring algorithm is somewhat arbitrary’ (Op. cit., p. 115). Indeed, the overcomplicated hierarchical summation, unexplained weight assignments, and subjective cardinal evaluation of first-level indicators are little substantiated.

The situation is however not that bad. First of all note that a hierarchy of weighted sums of first-level indicators is mathematically equivalent to a one-level sum of the indicators with appropriately adjusted weights. In turn, a weighted sum of input variables can be always regarded the first-order approximation of an index defined in a most general functional form, which is explained in the remark below.

Remark 1 (Why indices are weighted sums of variables)

An *index* is a formula with n entries, in other words, a function f in n variables which to each set of input values x_1, \dots, x_n puts into correspondence the index value $y = f(x_1, \dots, x_n)$. Usually an index is not expected to abruptly change its *behavior*, meaning the differentiability of f . Then its Taylor expansion in a neighborhood of some reference point (x_1^0, \dots, x_n^0) gives the *first-order approximation* of f :

$$\begin{aligned}
 f(x_1, \dots, x_n) &\approx \underbrace{f(x_1^0, \dots, x_n^0)}_{\text{Function value at } (x_1^0, \dots, x_n^0)} + \sum_{i=1}^n \underbrace{\frac{\partial f(x_1^0, \dots, x_n^0)}{\partial x_i}}_{\text{Partial derivative of } f \text{ at } (x_1^0, \dots, x_n^0)} \underbrace{(x_i - x_i^0)}_{\text{Argument increment}} \\
 &= \underbrace{f(x_1^0, \dots, x_n^0) - \sum_{i=1}^n \frac{\partial f(x_1^0, \dots, x_n^0)}{\partial x_i} x_i^0}_{\text{Constant } C} + \underbrace{\sum_{i=1}^n \frac{\partial f(x_1^0, \dots, x_n^0)}{\partial x_i} x_i}_{\text{Weighted sum of variables } \sum_{i=1}^n a_i^0 x_i} \quad . \quad (1)
 \end{aligned}$$

Since indices are primarily designed to show relative changes, the constant C in (1) is omitted. The remaining weighted sum of variables is, consequently, the index to within its first-order approximation.

Consequently, the hierarchical organization of the OECD’s EPL-index is logically consistent, and the first problem is resolved.

Next, the weight assignments made by the OECD would be doubtful only if the summary scores were questionable. The OECD EPL-index implicitly incorporates the OECD’s expert knowledge, and it is not surprising that the summary scores look adequate, implying that the weight coefficients are also trustworthy. It does not matter, whether they were fixed a priori, or fitted to the intended summary scores suggested by experts. However, a direct estimation of the EPL-scores might have the advantage of being less obscure.

The last and the most critical point is the direct cardinal estimation of the first-level indicators which can be hardly considered reliable. The OECD mentions the alternative

possibility of using rank-based methods which are generally regarded more objective. Nevertheless, the OECD (1999, p. 115) argues for the cardinal estimation:

One limitation of a summary indicator based on ranking is that a given country's strictness score could either rise or fall over time, even though its employment protection practice were completely unchanged, for the simple reason that other countries changed their policies. Even more fundamentally, it would be invalid to compare rank-based score for the late 1980s, which was based on an analysis of 16 European countries, with a rank-based score for the late 1990s based on a sample of 27 countries. Quite independently of any changes in EPL, the maximum rank score has nearly doubled.

The first anxiety here is that rank-based indices can make a country's score dependent on changes in other countries. It is similar to what occurs in tournaments when one's rating is altered by wins/losses of competitors. This phenomenon, known in the theory of choice as the *dependence of irrelevant alternatives*, is not always critical; for the historical discussion see Black (1958, pp. 156–238) and McLean and Urken (1994, Introduction). In case of labour laws, changes are seldom and not revolutionary, so country ranks do not change radically. Besides, the very idea of strictness of EPL has only a relative meaning, especially in a comparative study. For instance, if one country stagnates in the background of general progress, it is not wrong to interpret the being out of date as a relative degradation. Finally, the ranking method itself can be adapted as follows.

Remark 2 (Method of Total Ranks)

To be specific, consider Denmark (DK) and Netherlands (NL) with regard to the duration of unemployment insurance in 1994–2004. In 1994 the duration of Danish insurance was 30 months, and in the Netherlands it was 6–54 months, depending on the length of service and age (Schmid and Reissert 1996, p. 239–241). In 2004 Denmark extended the duration unconditionally to 48 months (European Commission 2004). Although the duration of Dutch insurance remained unchanged, the Netherlands fall in the two successive rankings:

Rank	1994		2004	
	Country	Insurance duration	Country	Insurance duration
1	NL	6–54 months, conditioned	DK	48 months, unconditioned
2	DK	30 months, unconditioned	NL	6–54 months, conditioned

Now rank all the pairs *Country/Year*. For this purpose consider Denmark in 1994 and Denmark in 2004 as two different objects (as they actually are) and the Netherlands in 1994 and in 2004 as two copies of the same object. Hence, the total ranking is

Rank	Country	Year	Insurance duration
1	DK	2004	48 months, unconditioned
2	NL	1994	6–54 months, conditioned
2	NL	2004	6–54 months, conditioned
3	DK	1994	30 months, unconditioned

which implies the constant rank of the Netherlands and changing ranks of Denmark:

Rank	1994		2004	
	Country	Insurance duration	Country	Insurance duration
1			DK	48 months, unconditioned
2	NL	6–54 months, conditioned	NL	6–54 months, conditioned
3	DK	30 months, unconditioned		

Thus ranks can be made independent of ‘irrelevant alternatives’.

The second ‘more fundamental’ anxiety of the OECD is that the first-level indicators based on ranks are invalid when the number of countries changes (e.g. the top rank of 27 countries almost doubles the top rank of 16 countries). This problem can be resolved by proportionally reducing all the ranks to the standard scale 0–1. The rigorous normalizing rules as well as the estimation of error from substituting ordinal ranks for cardinal scores are given in the following remark.

Remark 3 (Accuracy of an index based on normalized ranks)

Options are often hard to evaluate numerically but easy to rank with respect to partial criteria. The ranks can be regarded manifestations of continuous evaluations which are not observed directly. Consequently, if one defines an index as a weighted sum of partial scores and disposes but partial ranks, it is natural to substitute the ranks for the scores.

This idea goes back to the justification of Borda’s (1733–1799) method of marks by Laplace (1749–1827); for the modern account see Black (1958), Tangian (1991), and McLane and Urken (1994). Recall that Borda proposed to evaluate candidates to the members of the Royal Academy of Sciences in Paris by the sum of their ranks in the ballot schedules. Laplace assumed that these ranks were manifestations of some n latent metrical estimates (scores) uniformly distributed in the segment $[0; 1]$. He showed that the ratio of expectations of the scores was as that of their ranks

$$\mu_1 : \mu_2 : \dots : \mu_n = 1 : 2 : \dots : n .$$

By the Central Limit Theorem (the first version is attributed to Moivre (1667–1754); see Kendall and Stuart 1958, Korn and Korn 1968) a sum of a large number of metrical scores is well approximated by the sum of their expectations, or ranks. Laplace concluded that in a large statistical model scores could be replaced by ranks with a negligible error.

This way of thought can be implemented already for a few metrical estimates (scores) under a controllable accuracy of approximation. The next theorem suggests a normalizing rule for the input ranks and estimates the index errors which result from ‘ordinal rounding’ of continuous index entries.

Theorem 1 (Accuracy of an index based on normalized ranks)

Let given options be independently ranked with respect to partial criteria $k = 1, \dots, K$, each time falling into R_k ranking classes, depending on the criterion k . For each criterion, the ranks are ordinal manifestations of unknown continuous scores x_1, \dots, x_{R_k} which are random variables uniformly distributed in the segment $[0; 1]$ (in statistics, if a distribution is not known it is assumed uniform by default). Consider an index (weighted sum of variables with criteria weights a_k) both for ranks and continuous scores:

$$I = \sum_k a_k \frac{r_k}{R_k + 1} \quad \leftrightarrow \quad \tilde{I} = \sum_k a_k x_{r_k}, \quad \sum_k a_k = 1, \quad a_k \geq 0 , \quad (2)$$

where x_{r_k} is the r_k th score from the bottom in the set of the k th criterion's scores. Then the 'rounding error' $\Delta = I - \tilde{I}$ has the expectation and the variance, respectively,

$$\begin{aligned}\mu &= \mathbb{E} \Delta = 0 \\ \sigma^2 &= \mathbb{V} \Delta = \sum_k a_k^2 \frac{r_k(R_k - r_k + 1)}{(R_k + 1)^2(R_k + 2)} \quad \left(\leq \frac{1}{4} \sum_k \frac{a_k^2}{R_k + 2} \right)\end{aligned}\quad (3)$$

PROOF. Fix the k th criterion. As shown by Kendall and Moran (1963), the r_k th ordered score x_{r_k} is beta-distributed with the expectation and variance

$$\mathbb{E}x_{r_k} = \frac{r_k}{R_k + 1}, \quad \mathbb{V}x_{r_k} = \frac{r_k(R_k - r_k + 1)}{(R_k + 1)^2(R_k + 2)}.$$

Hence, taking into account that I is constant regardless of values x_{r_k}

$$\mu = \mathbb{E} \Delta = \mathbb{E} I - \mathbb{E} \tilde{I} = \sum_k a_k \frac{r_k}{R_k + 1} - \sum_k a_k \mathbb{E} s_{r_k} = 0.$$

By the independence of estimation with respect to different criteria, the variance of the sum of scores is equal to the sum of their variances. We obtain

$$\sigma^2 = \mathbb{V} \Delta = \underbrace{\mathbb{V} I}_{=0 \text{ since } I \text{ is constant}} + \mathbb{V} \tilde{I} = \sum_k a_k^2 \frac{r_k(R_k - r_k + 1)}{(R_k + 1)^2(R_k + 2)},$$

as required. ■

As estimated below by formula (3), the rank-based flexicurity index (*Flexibility + Security*)/2 does not deviate from the unknown 'true' cardinal-input index by more than 3.12%. Such a deviation is likely smaller than the error from an uncontrollable cardinal estimation multiplied by the complexity of aggregation hierarchy used by the OECD.

We conclude that the OECD's anxieties about the rigor of its EPL-index, as well as about using ranks in indices are overemphasized. The hierarchical weighted summation of first-level indicators and using ranks instead of their cardinal estimates are absolutely acceptable. The minor shortages of rank-based indices are by far compensated by their objectivity, accuracy, and transparency. It means that the OECD approach can be appropriately modified to satisfy most fastidious critics.

8 Index of security

As mentioned in Section 4, the main function of social security is to compensate income losses in case of unemployment, illness, etc. We consider the following five benefits:

1. Unemployment insurance (OECD 2002, p. 144–150)
2. Participation in a public pension scheme (OECD 2002, p. 144–150)

3. Paid sick leave (OECD 2002, p. 144–150)
4. Paid maternity leave (OECD 2002, p. 144–150)
5. Paid holidays (OECD 2002, p. 144–150)²

Let us explain the construction of the first security indicator, *Unemployment insurance*, step-by-step. The national eligibility conditions are listed in the first section of Table 4. The juridical data are taken from OECD (2002, p. 146–148) and updated from the data base of European Commission (2004) by Martin Kimmich. Having compared these data with the data on unemployment insurance in Europe in 1994 compiled by Schmid and Reissert (1996, pp. 239–241), Judith Aust found no significant changes during 1994–2003. Some changes occurred in Denmark, France, Italy, Sweden in 2004, that is, outside the control period. Since data on dynamics of social regulation were not available, the scores were assumed constant over the whole period 1994–2003 (standard default assumption used in statistics in such cases).

The second section of Table 4 contains ordinal evaluations (also by Martin Kimmich) of all the 8 employment groups in 16 countries, totally 128 options. Different employment groups of the same country meet the national eligibility conditions differently, implying different degree of advantageousness reflected in the evaluation.

Start from rank 1, assigning it to the best pair(s) *Group/Country* with respect to the given criterion. Then attribute rank 2 to the next-best group(s), and so on. It can happen that certain options have been overlooked and should be inserted between the ones already ranked. Not to rearrange all, they are given an intermediate fractional rank, say, 1.5. These fractional ranks are converted to actual integer-valued ranks (in parentheses) by computer. NAN (Not A Number) stands for missed data. As traditional in empirical studies, missing data are replaced by mean values, in this case by the rounded middle rank. Since there are 12 rank degrees (= maximal rank R_1 ; specified in the caption to the table), the NaN is ranked 6.5 (ranks start from 1!) rounded to 7.

The (partial) ranks r_k with respect to partial criteria *Pensions*, *Sick leave*, *Maternity leave*, and *Paid holidays* are obtained in the same way. For every of the 128 *Group/Country*'s, the *summary rank* r is derived from its five partial ranks by formula (2) with equal weight coefficients $a_k = \frac{1}{5}$ (if the relative importance of partial security criteria is not specified then equal weights are statistically most likely) which also reduces r to the standard scale 0–1. To meet the rule ‘the more the better’ convert the summary rank into the *summary score* by the rule $(1 - r) \cdot 100\%$.

For example, the group of permanently full-time employed in Germany has partial ranks with respect to the five partial criteria $r_k = 5, 4, 1, 1, 4$; see Tables 4–7. The corresponding maximal ranks are $R_k = 12, 9, 15, 8, 7$; see captions to Tables 4–7. Substituting these values into (2), obtain the summary rank 0.292 and the summary score $(1 - 0.292) \cdot 100\% = 70.2\%$, which is the bottom-left element of Table 9. Partial ranks r_k can be individually reduced to the scale 0–1, as done in (2), and converted into *partial scores* $(1 - \frac{r_k}{R_{k+1}}) \cdot 100\%$ which show the contribution of each partial criterion to the summary score. The composition of

²Entitlement to paid holidays is usually not considered within the flexicurity debate. It is not quite logical. Securities are aimed at compensating income losses and exceptional medical and family burdens, including vacations. Therefore, no entitlement to paid holidays discriminates those flexibly employed who work few hours, under short-time contracts, or self-employed, which should be taken into account.

summary scores from partial scores for the sample year 2003 is displayed in the foot section of Table 9.

The summary scores for eight German employment groups as well as their yearly weighted totals (= *Security index*) are displayed in Table 9 coupled with Figure 4 analogous to Table 3–Figure 3 for *Flexibility*. The difference is that each summary *Security*-score is composed of five partial scores shown in Figure 4 by color layers.

9 Charts of liberal and trade-unionist flexicurity

After the time series for both country indices *Strictness of EPL* and *Security* have been constructed, one can draw dynamical trajectories of the 16 countries in the plane *Flexibility–Security*.

Chart of liberal flexicurity. The time series for both indices *Strictness of EPL* and *Security*, as well as for the liberal flexicurity utility function $u = (\textit{Strictness of EPL} + \textit{Security})/2$ for 16 European countries are displayed in Table 10 coupled with Figure 5, where the third dimension, the height of the utility hill, is shown by diagonal isolines. The last column of Table 10 provides ranks of the countries at the end of the control period (2003) with respect to each indicator and with respect to the utility function.

The *flexicure* countries with a high flexibility and a high security are located in the top-left corner (Denmark and Finland). The *inflexicure* countries with a low flexibility (= high *Strictness of EPL*) and a high index of *Security* are located in the top-right corner of the chart (Sweden and the Netherlands). The only outlier in the left-bottom corner with high flexibility and low social security indicator is the *flex-insecure* United Kingdom. The bottom-right corner is occupied by *inflex-insecure* countries with a strict employment protection legislation and relatively little advanced social security (Spain, Portugal, and Czech Republic).

The most striking feature of the flexicurity chart is that, with the only exceptions for Denmark in the 1990s and the Netherlands in the late 1990s, no country evolves in the top-left flexicurity direction, but clearly degrades in both indicators towards *flex-insecurity*. Indeed, the dynamical trajectories of the countries, instead of going parallel to the utility isolines (= flexicurity trade-offs), cross them obliquely or even orthogonal. This means a factual violation of the flexicurity concept, contrary to political promises and theoretical declarations.

The problem here is not that the given liberal utility function $u = (\textit{Strictness of EPL} + \textit{Security})/2$ is selected erroneously and its weight coefficients are inappropriate. In fact, no adjustment of utility function can help, because most country trajectories are directed towards the Pareto-worsening domain (the bottom-left quadrant with respect to a given point) which are common to *all* liberal utility functions³. Hence, whatever the liberal utility function is, the degradation is still persistent. One can conclude that deregulation prevails

³The very idea to compensate flexibilization by social security prompts that advancing in flexibilization is bad and advancing in security is good. This means that every liberal utility function increases in both axes *Strictness of EPL* and *Security*. Consequently, under every liberal utility function the Pareto-worsening domain is the bottom-left quadrant with respect to a given point.

Table 4: Ranking (1–12) groups of employees with respect to social security benefit *Unemployment insurance*. Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004)

	General conditions		Employment type							
	Statutory right	Conditions	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
Germany	yes	12 months in last 3 years or 6 months if a seasonal worker	2(5)	2(5)	2.5(6)	2.5(6)	6(12)	6(12)	6(12)	6(12)
Austria	yes	52 weeks in past 24 months and earnings > 309 EUR	2(5)	2.5(6)	3(8)	3(8)	6(12)	2(5)	6(12)	2.5(6)
Belgium	yes	312 days in past 18 months for < 36 years old and more days for older age groups	3(8)	4(10)	3(8)	4(10)	6(12)	6(12)	6(12)	6(12)
Switzerland	yes	6 months in past 2 years; 12 months for repeat claim	1.5(3)	1.5(3)	1.75(4)	1.75(4)	NaN(7)	NaN(7)	NaN(7)	NaN(7)
Czech Republic	yes	12 months in past 3 years	2(5)	2(5)	2.75(7)	2.75(7)	NaN(7)	NaN(7)	NaN(7)	NaN(7)
Danemark	voluntary participation	52 weeks in past 3 years; 34 weeks for part-timers	2(5)	2(5)	2.75(7)	2.75(7)	2.5(6)	2.5(6)	2.5(6)	2.5(6)
Spain	yes	360 days in past 6 years	2(5)	2(5)	2.5(6)	2.5(6)	6(12)	6(12)	6(12)	6(12)
Finland	yes	43 weeks in past 24 months and > 18 hours per week	1.75(4)	4(10)	2(5)	4(10)	1.75(4)	1.75(4)	4(10)	4(10)

Table 4: Ranking (1–12) groups of employees with respect to social security benefit *Unemployment insurance*. Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004) (continued)

	General conditions		Employment type							
	Statutory right	Conditions	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
France	yes	4 months in past 18 months	1(1)	1(1)	1.25(2)	1.25(2)	6(12)	6(12)	6(12)	6(12)
Italy	yes	52 weeks in past 2 years	2(5)	2(5)	3(8)	3(8)	6(12)	6(12)	6(12)	6(12)
Netherlands	yes	26 weeks in last 39 weeks income past year	1.5(3)	1.5(3)	1.75(4)	1.75(4)	6(12)	6(12)	6(12)	6(12)
Norway	yes	> 125% of basis; or mean income past 3 years > 100% of basis	2.5(6)	3(8)	2.5(6)	3(8)	6(12)	6(12)	6(12)	6(12)
Poland	yes, if earnings > minimum wage	365 days in past 18 months	2(5)	3.5(9)	3(8)	3.5(9)	NaN(7)	NaN(7)	NaN(7)	NaN(7)
Portugal	yes	540 days in past 24 months	3.5(9)	4.5(11)	4.5(11)	4.5(11)	6(12)	6(12)	6(12)	6(12)
Sweden	yes	6 months in past 12 months	1.5(3)	1.5(3)	1.5(3)	1.5(3)	2.5(6)	2.5(6)	2.5(6)	2.5(6)
United Kingdom	yes	some employment in past 2 years and contributions paid > some multiple of threshold	3(8)	3.5(9)	3(8)	3.5(9)	6(12)	6(12)	6(12)	6(12)

Table 5: Ranking (1–9) groups of employees with respect to social security benefit *Pension*.
Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004)

	General conditions		Employment type							
	Statutory right	Employment duration	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
Germany	yes	> 325 EUR and 60 months	2.5(4)	3(5)	3.5(6)	3.5(6)	3(5)	2.5(4)	4.5(8)	3(5)
Austria	yes	180-300 months with earnings > 309 EUR all	3(5)	3.5(6)	3(5)	3.5(6)	3(5)	3(5)	3.5(6)	3.5(6)
Belgium	yes	1 year	1(1)	1(1)	1(1)	1(1)	1.5(2)	1.5(2)	1.5(2)	1.5(2)
Switzerland	yes	not applicable	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)
Czech Republic	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Danemark	yes	15 years	3(5)	3(5)	4(7)	4(7)	3(5)	3(5)	3(5)	3(5)
Spain	yes	a month and minimum earnings	1(1)	2(3)	1(1)	2(3)	1.5(2)	1.5(2)	2(3)	2(3)
Finland	yes	all	1(1)	1(1)	1(1)	1(1)	2(3)	2(3)	2(3)	2(3)
France	yes	5 years	2.5(4)	3(5)	3.5(6)	3.5(6)	2.5(4)	2.5(4)	3(5)	3(5)
Italy	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Netherlands	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Norway	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Poland	yes	it varies	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)
Portugal	yes	15 years with >120 days earnings > threshold	3(5)	5(9)	4(7)	5(9)	3(5)	3(5)	5(9)	5(9)
Sweden	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
United Kingdom	yes	earnings > threshold	2(3)	2.5(4)	2(3)	2.5(4)	2(3)	2(3)	2.5(4)	2.5(4)

Table 6: Ranking (1–15) groups of employees with respect to social security benefit *Sick leave*. Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004)

	General conditions		Employment type							
	Statutory right	Employment duration	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
Germany	yes	all	1(1)	1(1)	1(1)	1(1)	6(15)	6(15)	6(15)	6(15)
Austria	yes (not for on-call workers)	monthly earnings > 309 EUR	1.5(2)	3.5(9)	1.5(2)	3.5(9)	6(15)	3.5(9)	6(15)	3.5(9)
Belgium	yes	3 months	2(4)	2(4)	2.5(5)	2.5(5)	3.5(9)	3.5(9)	3.5(9)	3.5(9)
Switzerland	voluntary participation	3 months	2(4)	2(4)	2.5(5)	2.5(5)	NaN(8)	NaN(8)	NaN(8)	NaN(8)
Czech Republic	no	not applicable	6(15)	6(15)	6(15)	6(15)	NaN(8)	NaN(8)	NaN(8)	NaN(8)
Danemark	yes	> 72 hours in past 8 weeks	1(1)	3.5(9)	1(1)	3.5(9)	3.75(10)	3.75(10)	3.75(10)	3.75(10)
Spain	yes	180 days in past 5 years	4(11)	4.5(13)	5(14)	5(14)	4(11)	4(11)	4.5(13)	4.5(13)
Finland	yes	all	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
France	yes	800 hours in past 12 months	3(7)	4(11)	3.5(9)	4(11)	6(15)	5(14)	6(15)	5(14)
Italy	yes	all	1(1)	1(1)	1(1)	1(1)	6(15)	6(15)	6(15)	6(15)
Netherlands	yes	all	1(1)	1(1)	1(1)	1(1)	6(15)	6(15)	6(15)	6(15)
Norway	yes	14 days	1.5(2)	1.5(2)	1.5(2)	1.5(2)	2(4)	2(4)	2(4)	2(4)
Poland	yes	30 days	1.75(3)	1.75(3)	1.75(3)	1.75(3)	NaN(8)	NaN(8)	NaN(8)	NaN(8)
Portugal	yes	6 months	3.5(9)	3.5(9)	3.75(10)	3.75(10)	4(11)	4(11)	4.25(12)	4.25(12)
Sweden	yes	all	1(1)	1(1)	1(1)	1(1)	1.5(2)	1.5(2)	1.5(2)	1.5(2)
United Kingdom	yes	3 months and earnings > 500 EUR	2.5(5)	4(11)	2.75(6)	4(11)	3(7)	3(7)	3.25(8)	3.25(8)

Table 7: Ranking (1–8) groups of employees with respect to social security benefit *Paid maternity leave*. Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004)

	General conditions			Employment type							
	Statutory right	Contribution period	Beyond contract	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
Germany	yes	all	yes	1(1)	1(1)	1(1)	1(1)	6(8)	6(8)	6(8)	6(8)
Austria	yes	monthly earnings > 309 EUR	yes	1(1)	3(4)	1(1)	3(4)	5.5(7)	3(4)	5.5(7)	3(4)
Belgium	yes	all	yes (at benefit level)	1(1)	1(1)	1(1)	1(1)	3(4)	3(4)	3(4)	3(4)
Switzerland	yes	all	yes	1(1)	1(1)	1(1)	1(1)	NaN(5)	NaN(5)	NaN(5)	NaN(5)
Czech Republic	no	not applicable	yes	6(8)	6(8)	6(8)	6(8)	NaN(5)	NaN(5)	NaN(5)	NaN(5)
Danemark	yes	> 120 hours in past 13 weeks	yes	1.5(2)	3(4)	1.5(2)	3(4)	1.5(2)	1.5(2)	1.5(2)	1.5(2)
Spain	yes	180 days in past 5 years	no	3(4)	3.5(5)	3.5(5)	3.5(5)	3(4)	3(4)	3.5(5)	3.5(5)
Finland	yes	all	yes (by the state)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
France	yes	200 hours per quarter in past 6 months or 800 hours in past year	yes	1.75(3)	3(4)	3(4)	3(4)	1(1)	NaN(5)	1(1)	NaN(5)
Italy	yes	all	no	1(1)	1(1)	1(1)	1(1)	1.5(2)	1.5(2)	1.5(2)	1.5(2)
Netherlands	yes	all	no	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Norway	yes	all	yes	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
Poland	yes	6 months	no	3(4)	3(4)	3.5(5)	3.5(5)	NaN(5)	NaN(5)	NaN(5)	NaN(5)
Portugal	yes	6 months	yes	3(4)	3(4)	3.5(5)	3.5(5)	6(8)	6(8)	6(8)	6(8)
Sweden	yes	all	yes	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
United Kingdom	yes	26 weeks and earnings > 500 EUR	yes	3(4)	4(6)	3.5(5)	4(6)	1(1)	1(1)	1(1)	1(1)

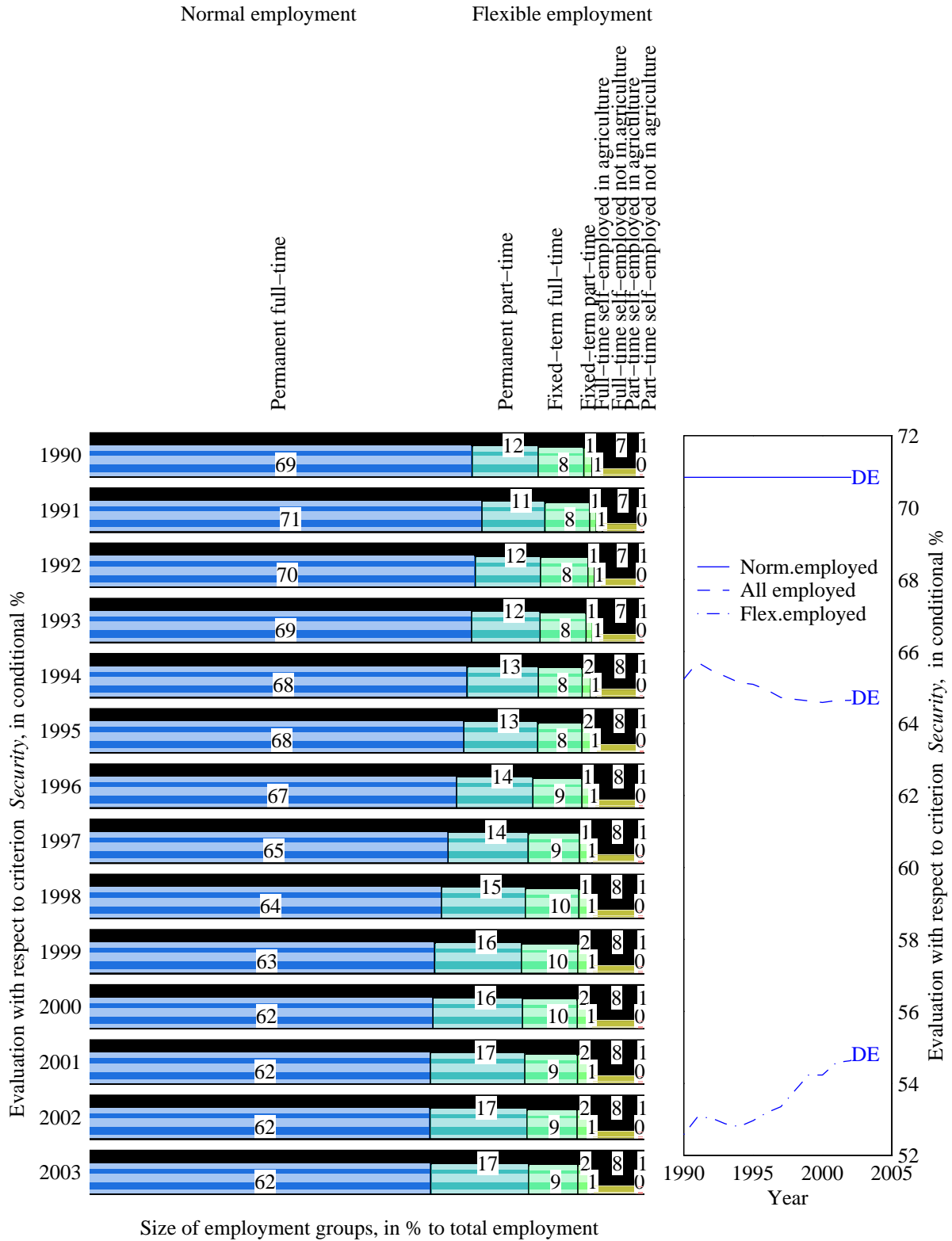
Table 8: Ranking (1–7) groups of employees with respect to social security benefit *Paid holidays*. Source: own estimation based on OECD (2002), p. 146–148 and MISSOC (2004)

	General conditions		Employment type							
	Statutory right	Contribution period	Permanent full-time	Permanent part-time	Fixed-term full-time	Fixed-term part-time	Full-time self-employed in agriculture	Full-time self-employed not in agriculture	Part-time self-employed in agriculture	Part-time self-employed not in agriculture
Germany	yes	6 months	3(4)	3(4)	3(4)	3(4)	6(7)	6(7)	6(7)	6(7)
Austria	yes	6 months	3(4)	3(4)	3(4)	3(4)	6(7)	6(7)	6(7)	6(7)
Belgium	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Switzerland	yes	pro rata	2(3)	3(4)	2(3)	3(4)	6(7)	6(7)	6(7)	6(7)
Czech Republic	yes		NaN(4)	NaN(4)	NaN(4)	NaN(4)	6(7)	6(7)	6(7)	6(7)
Danemark	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Spain	yes		NaN(4)	NaN(4)	NaN(4)	NaN(4)	6(7)	6(7)	6(7)	6(7)
Finland	yes	> 14 days or > 35 hours per month	1.5(2)	1.5(2)	1.5(2)	1.5(2)	6(7)	6(7)	6(7)	6(7)
France	yes	1 month	2(3)	2(3)	2(3)	2(3)	6(7)	6(7)	6(7)	6(7)
Italy	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Netherlands	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Norway	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Poland	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
Portugal	yes	30 days	2(3)	2(3)	2(3)	2(3)	6(7)	6(7)	6(7)	6(7)
Sweden	yes	all	1(1)	1(1)	1(1)	1(1)	6(7)	6(7)	6(7)	6(7)
United Kingdom	yes	13 weeks	4(5)	4(5)	4(5)	4(5)	6(7)	6(7)	6(7)	6(7)
	(not for all sectors)	(currently under consideration to remove this restriction)								

Table 9: Employment types in Germany and their evaluation with respect to criterion *Security* (Source: EuroStat and own estimation)

Year	Employment group, in % to total employment / Its summary score with respect to criterion <i>Security</i> , in %								<i>Security</i> (weighted average of summary scores)	
	Normal	Flexible employment							For all em- ployed (liberal concept)	For flexibly em- ployed (trade- unionist concept)
	Perma- nent full-time	Perma- nent part- time	Fixed- term full-time	Fixed- term part- time	Full- time self-em- ployed in agri- culture	Full- time self-em- ployed not in agricul- ture	Part- time self-em- ployed in agri- culture	Part- time self-em- ployed not in agricul- ture		
%	%	%	%	%	%	%	%	%	%	
1990	69.3	11.8	8.1	1.4	1.3	7.0	0.1	0.9	65.2	52.6
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1991	71.1	11.2	8.0	1.2	1.0	6.6	0.1	0.8	65.7	53.1
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1992	69.9	11.7	8.5	1.1	1.0	6.9	0.1	0.8	65.5	53.0
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1993	69.2	12.2	8.2	1.2	1.0	7.2	0.1	0.9	65.3	52.9
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1994	68.4	12.7	7.8	1.5	1.0	7.6	0.1	0.9	65.1	52.8
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1995	67.8	13.2	7.9	1.5	0.9	7.6	0.1	1.0	65.1	53.0
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1996	66.5	13.6	8.8	1.3	0.9	7.9	0.1	1.0	64.9	53.2
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1997	65.0	14.3	9.2	1.4	0.9	8.1	0.1	1.1	64.7	53.4
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1998	63.8	15.0	9.5	1.5	0.8	8.0	0.1	1.2	64.7	53.8
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
1999	62.6	15.5	10.1	1.7	0.9	8.1	0.1	1.2	64.6	54.2
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
2000	62.3	16.0	9.8	1.7	0.8	8.2	0.1	1.2	64.6	54.2
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
2001	61.9	16.8	9.4	1.7	0.8	8.1	0.1	1.2	64.6	54.6
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
2002	61.8	17.3	9.0	1.8	0.8	8.1	0.1	1.2	64.6	54.6
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
2003	61.9	17.5	8.8	1.8	0.8	7.9	0.1	1.2	64.7	54.8
	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5		
Construction of summary score <i>Security</i> from partial scores for 2003, in %									Criterion weight	
Unempl.insur.	61.5	61.5	53.8	53.8	7.7	7.7	7.7	7.7	0.2	
Pension	60.0	50.0	40.0	40.0	50.0	60.0	20.0	50.0	0.2	
Sick leave	93.8	93.8	93.8	93.8	6.3	6.3	6.3	6.3	0.2	
Matern.leave	88.9	88.9	88.9	88.9	11.1	11.1	11.1	11.1	0.2	
Paid holidays	50.0	50.0	50.0	50.0	12.5	12.5	12.5	12.5	0.2	
Weighted sum	70.8	68.8	65.3	65.3	17.5	19.5	11.5	17.5	1.0	

Figure 4: Employment types in Germany and their evaluation with respect to criterion *Security* (Source: EuroStat and own estimation)



unambiguously, whereas much promoted flexicurity policies are practically invisible.

No increase in the *Security* index is observed in all the countries with the only exception for the Netherlands in the late 1990s. It does not necessarily imply that there are no improvements in national social security systems all over Europe. The explanation is that an increase in flexible employment disqualifies more workers from social benefits. Let us comment on it in some detail.

Recall that the indices *Flexibility* and *Security* are weighted, reflecting the average factual situation in the country. If a flexibilization lowers down the employment status *on the average* then, also *on the average*, it disqualifies workers from social security benefits and thereby lowers down the factual security. Consequently, even a developing social security system can fail in increasing the *Security* index if the flexibilization is followed with a delay and if eligibility conditions are fitted to outdated norms.

The impact of flexibilization on the factual state of security can be most clearly observed in Germany, where a relaxation of employment protection legislation caused since 1991 a reduction of the share of normal employment from 71% to 62%; see the top figures for 1991 and 2003 in the first column of Table 9 and the narrowing first (blue) rectangles in Figure 4. Since fewer employed got qualified for high security benefits, the factual security lowered down by 1%; see the figures for 1991 and 2003 in the next to last column of Table 9 and the falling middle curve in Figure 4. Thus an increase in *Flexibility* was aggravated by an implicit decrease in *Security*, according to the principle ‘who does not swim drowns’. (A similar relaxation of EPL in Spain did not cause structural changes in employment as in Germany, because the share of normally employed in Spain was already as low as 50% and did not decrease further.)

Some countries develop their social security systems but manage only to ‘keep standing at the place’ against the counter-flow of flexibilization. For instance, the share of flexibly employed in Portugal decreased since 1992 from 65% to 56%, but the *Security* index remained unchanged. Thus, security measures intended to compensate a growing flexibilization can suffice only to retain the existing security level but not to pursue a flexicurity policy. **To be a real balance weight for flexibilization, the security system must be itself flexible and double-generous with increasing compensatory capacities and relaxing eligibility conditions.**

Chart of trade-unionist flexicurity. According to the trade-unionist concept of flexicurity, the focus should be made at improving the employment and social security of flexible workers without giving up the rights of regular workers. As follows from the previous analysis, it is not the case, and we could immediately stop here. Nevertheless, let us have a look what happens at the market of flexible labour forces, abstracting from its interactions with the market of regular employment.

Under this abstraction consider Table 11 coupled with Figure 6. The vertical indifference isolines in the latter reflect the first-priority values in the trade-unionist lexicographic preference. They show the principal role of labour rights (EPL tightens in the right hand direction, orthogonal to indifference isolines). Comparing to the key questions of employment protection, security questions with corresponding up-downward displacements are regarded secondary. Therefore, any policy trajectory with a shift to the left is unfavorable for trade unions, regardless of vertical increment. An upward increment is of interest if only the

horizontal increment is negligible, otherwise it can be ignored as unimportant.

There are clear manifestations of flexicurity policies during the control period 1994–2003. As follows from Table 11 (for flexibly employed only!), the decisive indicator *Strictness of EPL* increased in France (29.6 ↗ 39.4%), Italy (15.9 ↗ 21.0%), Spain (36.0 ↗ 40.9%), Austria (29.3 ↗ 34.0%), Poland (10.0 ↗ 14.3%), and Belgium (24.2 ↗ 26.2%). The general security of flexible employed has improved in some of these countries as well, like Italy (39.8 ↗ 45.9%), Belgium (54.7 ↗ 61.0%), France (51.5 ↗ 55.7%), Poland (45.7 ↗ 49.1%), and Austria (45.2 ↗ 47.1%). The progress in Poland is especially remarkable, because it occurred within only four years 2000–2003 of availability of Poland’s statistical data to the EU.

However, in many cases this increase is not due to a better employment and social protection of flexibly employed. To a great extent it is due to the increasing share of permanently part-time employed. For instance, more and more young people and women entering the labour market sign part-time contracts, thereby reducing the share of normal employment (Austria, France, Belgium, Poland). Another factor is the decreasing share of self-employed since they close their business and become employees (France, Austria, Belgium). Thereby the share of better employment/socially protected within flexibly employed increases and their average employment and social security status grows. This is just reflected by the indices.

The greatest degression in social utility due to a decrease in the decisive indicator *Strictness of EPL* (again, we speak exclusively of flexibly employed!) is inherent in Sweden (42.8 ↘ 31.6%), Denmark (31.0 ↘ 21.9%), Germany (43.1 ↘ 36.9%), Czech Republic (15.6 ↘ 11.7%), the Netherlands (42.9 ↘ 40.5%), and Portugal (25.4 ↘ 24.9%). As for compensation of these degradations by security measures, there is no sense to discuss it as long as the trade-unionist lexicographic utility is considered.

The degressions are often caused also by flexibilization-driven transitions between employment categories rather than by institutional changes. For instance, in Sweden the share of best-protected permanently part-time employed decreased from 18.3 to 14.1% (to total employment), and in Denmark from 19.5 to 17.3%. In Czech Republic the share of well-protected permanent part-timers in total employment decreased not that significantly (3.1 ↘ 2.3%) but the share of self-employed, who are not protected by labour laws at all, increased (10.7 ↗ 15.3%). That means that the average employment status within flexibly employed lowered down and the average employment protection of flexibly employed lowered down respectively.

The changes in the indices for flexibly employed should not be misinterpreted. A great deal of changes are caused by flexibilization-driven transitions between employment categories. The flexicurity indices for flexibly employed reflect average effects but not specific causes of these transitions. Moreover, they restrict attention at the group of flexibly employed, disregarding normally employed. Therefore, analyzing the indices of flexicurity should be done with keeping eye on dynamics of employment categories. Comparisons with the development of the indices for all employed also provide a more general outlook and explain where the improvements come from and at which price. For instance, if the strictness of EPL for flexibly employed increases but of all employed decreases then, most likely, the share of normally employed feeds the share of flexibly employed with a high employment status.

Table 10: Yearly country indices *Strictness of EPL / Security / (Strictness of EPL+Security)/2* for all employed (liberal perspective)

	Strictness of EPL Security (Strictness of EPL+Security)/2 in conditional % (liberal concept)														Ranks
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2003
DE Germany	51.3	51.6	51.4	51.1	50.8	50.6	50.4	50.1	49.9	49.7	49.6	49.5	49.4	49.4	4
	65.2	65.7	65.5	65.3	65.1	65.1	64.9	64.7	64.7	64.6	64.6	64.6	64.6	64.7	10
	58.3	58.7	58.4	58.2	58.0	57.9	57.7	57.4	57.3	57.2	57.1	57.1	57.0	57.1	5
AT Austria							47.1	46.8	46.9	46.8	46.8	46.9	46.9	46.9	6
							61.4	61.2	61.1	61.0	60.9	60.9	60.8	60.6	11
							54.2	54.0	54.0	53.9	53.9	53.9	53.8	53.8	9
BE Belgium	34.1	34.4	34.1	33.9	33.8	33.7	33.7	33.9	34.0			34.3	33.8	33.7	13
	69.6	70.1	70.0	69.8	69.9	69.8	69.8	70.0	69.8			70.5	70.3	70.3	6
	51.9	52.2	52.0	51.9	51.9	51.8	51.8	51.9	51.9			52.4	52.1	52.0	10
CH Switzer- land							27.6	27.3	27.5	27.4	27.4	27.5	27.6	27.4	15
							68.8	68.5	68.7	68.6	68.5	68.7	68.8	68.5	7
							48.2	47.9	48.1	48.0	47.9	48.1	48.2	47.9	11
CZ Czech Re- public								50.5	50.2	49.4	48.9	48.8	48.5	47.3	5
								36.1	36.2	36.3	36.3	36.3	36.3	36.4	16
								43.3	43.2	42.8	42.6	42.5	42.4	41.8	15
DK Danemark	34.4	34.5	34.1	33.8	33.8	33.5	33.2	33.0	32.7	32.5	32.3	32.2	32.0	31.6	14
	75.9	76.1	76.2	76.1	76.4	76.5	76.5	76.4	76.4	76.6	76.6	76.9	76.8	76.6	5
	55.2	55.3	55.2	55.0	55.1	55.0	54.9	54.7	54.5	54.6	54.4	54.5	54.4	54.1	8
ES Spain	55.4	54.6	53.1	51.7	50.4	49.7	48.7	48.0	47.2	46.7	46.1	44.8	43.8	42.9	9
	42.8	42.7	42.5	42.6	42.4	42.3	42.4	42.5	42.7	42.9	43.1	43.2	43.3	43.4	14
	49.1	48.7	47.8	47.1	46.4	46.0	45.6	45.3	45.0	44.8	44.6	44.0	43.6	43.2	14
FI Finland						38.8	37.8	37.3	36.8	36.5	35.8	35.4	34.6	33.9	12
						79.7	79.6	79.7	79.7	79.8	79.8	79.9	79.8	79.8	3
						59.3	58.7	58.5	58.2	58.1	57.8	57.6	57.2	56.9	4
FR France	40.2	40.4	40.5	41.0	41.1	41.5	41.8	42.0	42.4	42.7	43.3	43.5	43.5	43.0	10
	66.7	66.9	66.8	67.1	67.0	67.0	67.1	67.0	67.1	67.2	67.3	67.5	67.7	67.5	8
	53.5	53.6	53.7	54.0	54.0	54.2	54.4	54.5	54.7	54.9	55.3	55.5	55.6	55.3	7
IT Italy	46.2	46.1	46.7	46.2	46.2	45.9	45.7	45.8	45.7	45.8	45.7	45.8	45.8	45.7	7
	66.4	66.4	66.3	66.4	66.3	66.1	66.0	66.1	66.1	66.0	66.1	66.3	66.5	66.6	9
	56.3	56.3	56.5	56.3	56.3	56.0	55.8	55.9	55.9	55.9	55.9	56.1	56.2	56.1	6
NL Nether- lands	53.2	53.4	53.1	52.6	51.8	51.4	51.4	51.4	51.2	51.2	50.5	49.8	49.7	49.4	3
	82.5	82.8	82.9	82.6	82.3	82.1	82.4	82.5	82.7	82.8	82.9	82.6	82.7	82.8	2
	67.8	68.1	68.0	67.6	67.0	66.8	66.9	66.9	67.0	67.0	66.7	66.2	66.2	66.1	2
NO Norway						45.2	46.2	46.0	45.8	45.9	45.8	45.9	45.8	45.6	8
						78.1	78.7	78.7	78.7	78.8	78.9	79.0	78.9	78.8	4
						61.7	62.5	62.3	62.3	62.4	62.4	62.4	62.4	62.2	3
PL Poland											36.7	35.7	35.1	35.0	11
											60.3	60.0	59.8	59.9	12
											48.5	47.8	47.4	47.5	13
PT Portugal	63.1	62.1	64.9	64.3	62.7	61.6	60.0	59.1	58.7	58.6	58.7	56.9	56.1	55.6	1
	39.7	39.5	40.6	40.6	40.3	40.1	39.7	39.5	39.4	39.5	39.7	39.3	39.1	39.1	15
	51.4	50.8	52.8	52.5	51.5	50.9	49.9	49.3	49.0	49.1	49.2	48.1	47.6	47.4	12
SE Sweden						53.4	53.2	53.0	52.6	52.0	51.4	50.8	50.2	49.8	2
						84.9	85.0	85.1	85.1	85.2	85.2	85.3	85.2	85.3	1
						69.2	69.1	69.0	68.8	68.6	68.3	68.0	67.7	67.6	1
UK United Kingdom	19.3	19.4	19.4	19.4	19.3	19.3	19.3	19.3	19.5	19.6	19.7	19.7	19.7	19.6	16
	50.0	49.9	49.8	49.7	49.7	49.6	49.6	49.5	49.6	49.6	49.6	49.6	49.6	49.6	13
	34.6	34.6	34.6	34.6	34.5	34.4	34.5	34.4	34.5	34.6	34.6	34.7	34.7	34.6	16

Figure 5: Flexibility-Security nexus for all employed (liberal perspective) in the background of liberals' diagonal flexicurity isolines

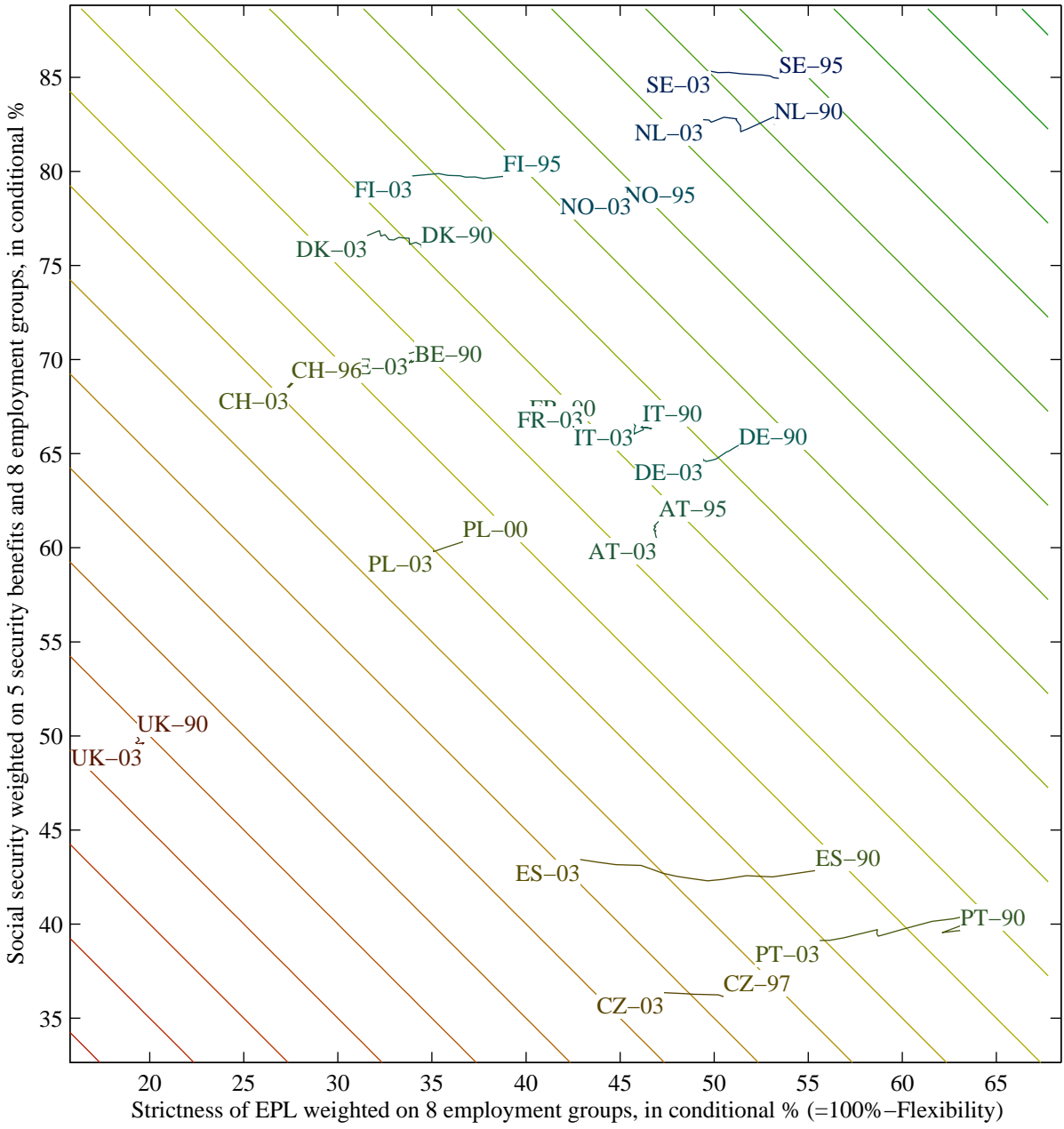
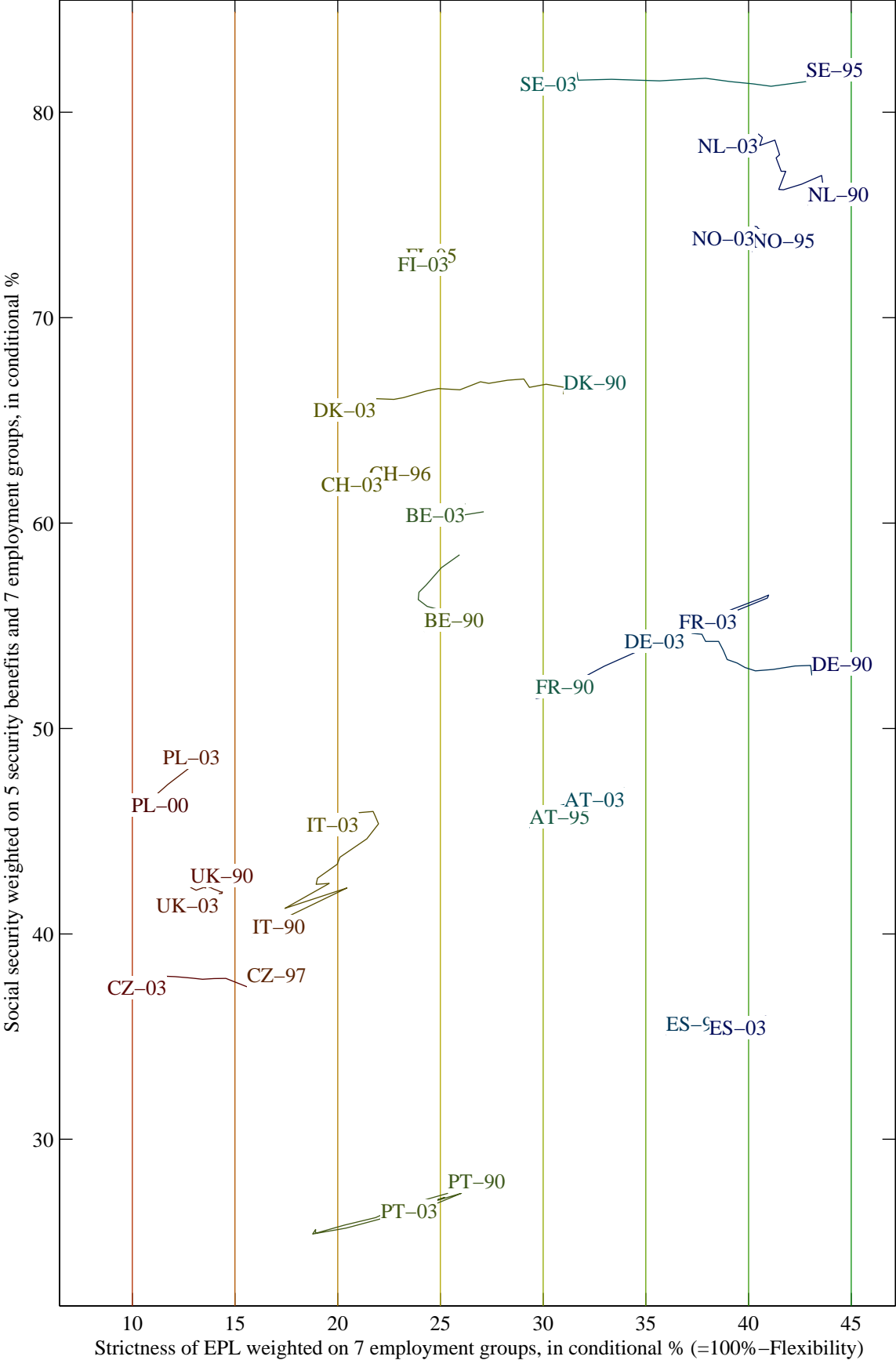


Table 11: Yearly country indices *Strictness of EPL / Security / (Strictness of EPL+Security)/2* for flexibly employed only (trade-unionist perspective)

	Strictness of EPL Security (Strictness of EPL+Security)/2 in conditional % (trade-unionist concept)														Ranks
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2003
DE Germany	43.1	43.0	42.3	41.2	40.3	39.8	39.4	39.0	38.8	38.5	37.9	37.7	37.3	36.9	5
	52.6	53.1	53.0	52.9	52.8	53.0	53.2	53.4	53.8	54.2	54.2	54.6	54.6	54.8	9
	47.8	48.0	47.7	47.0	46.6	46.4	46.3	46.2	46.3	46.4	46.1	46.2	45.9	45.9	6
AT Austria						29.3	30.5	31.1	31.4	32.3	32.4	32.5	33.3	34.0	6
						45.2	46.2	46.3	46.4	46.8	46.8	47.0	46.9	47.1	11
						37.2	38.4	38.7	38.9	39.5	39.6	39.7	40.1	40.5	10
BE Belgium	24.2	25.0	24.4	24.1	23.9	24.0	24.3	25.0	25.9			27.1	25.9	26.2	8
	54.7	55.8	55.9	56.1	56.3	56.6	57.0	57.8	58.5			60.5	60.4	61.0	7
	39.5	40.4	40.2	40.1	40.1	40.3	40.6	41.4	42.2			43.8	43.1	43.6	8
CH Switzer- land							21.5	21.3	21.7	21.7	21.6	22.1	22.4	22.2	12
							61.9	61.6	62.0	62.0	61.9	62.4	62.7	62.5	6
							41.7	41.5	41.9	41.9	41.7	42.3	42.5	42.3	9
CZ Czech Re- public								15.6	14.6	14.0	13.4	12.9	12.1	11.7	16
								37.4	37.8	37.8	37.8	37.8	37.9	37.9	14
								26.5	26.2	25.9	25.6	25.4	25.0	24.8	16
DK Danemark	31.0	31.0	30.1	29.3	29.1	28.3	27.4	26.9	26.0	24.9	24.3	23.2	22.7	21.9	11
	66.3	66.6	66.8	66.6	67.0	67.0	66.8	66.9	66.5	66.5	66.4	66.1	66.0	66.1	5
	48.6	48.8	48.5	48.0	48.0	47.6	47.1	46.9	46.2	45.7	45.4	44.7	44.4	44.0	7
ES Spain	36.0	37.7	37.9	36.9	37.3	38.3	38.1	38.8	39.1	40.0	40.7	40.2	40.5	40.9	3
	35.1	35.3	35.3	35.2	35.3	35.4	35.4	35.6	35.6	35.8	35.9	35.8	35.9	36.0	15
	35.5	36.5	36.6	36.0	36.3	36.9	36.8	37.2	37.4	37.9	38.3	38.0	38.2	38.4	11
FI Finland						23.3	23.6	23.8	24.3	25.5	25.3	25.6	25.3	25.4	9
						72.4	72.8	72.9	72.9	73.2	73.2	73.4	73.1	73.2	4
						47.9	48.2	48.3	48.6	49.4	49.2	49.5	49.2	49.3	4
FR France	29.6	29.9	30.5	32.3	33.0	34.7	35.6	36.6	37.9	38.6	40.6	41.0	40.9	39.4	1
	51.5	51.5	51.7	52.7	53.0	53.8	54.2	54.7	55.3	55.6	56.3	56.5	56.4	55.7	8
	40.5	40.7	41.1	42.5	43.0	44.2	44.9	45.6	46.6	47.1	48.5	48.7	48.6	47.6	5
IT Italy	15.9	16.1	20.5	17.4	19.6	19.0	19.0	20.0	20.1	21.4	22.0	21.8	21.7	21.0	13
	39.8	40.1	42.2	41.2	42.5	42.4	42.7	43.4	43.7	44.6	45.4	45.8	46.0	45.9	12
	27.8	28.1	31.3	29.3	31.0	30.7	30.9	31.7	31.9	33.0	33.7	33.8	33.8	33.5	12
NL Nether- lands	42.9	43.7	43.6	42.6	41.7	41.5	41.8	41.6	41.3	41.5	41.3	40.5	40.7	40.5	2
	75.4	76.3	76.9	76.5	76.2	76.2	77.1	77.1	77.8	77.9	78.6	78.4	78.8	79.0	2
	59.2	60.0	60.2	59.5	59.0	58.9	59.5	59.4	59.6	59.7	60.0	59.5	59.7	59.7	1
NO Norway						40.2	42.2	41.6	40.8	41.0	40.6	40.5	40.4	40.3	4
						73.2	74.3	74.2	74.0	74.3	74.3	74.3	74.4	74.4	3
						56.7	58.2	57.9	57.4	57.6	57.4	57.4	57.4	57.4	2
PL Poland											10.0	11.7	12.9	14.3	15
											45.7	47.3	48.1	49.1	10
											27.8	29.5	30.5	31.7	13
PT Portugal	25.4	22.9	21.8	20.3	18.9	18.9	18.8	20.4	24.3	24.9	26.0	24.2	25.2	24.9	10
	27.4	26.7	26.2	25.8	25.4	25.6	25.4	25.7	26.7	26.9	27.4	26.8	27.2	27.1	16
	26.4	24.8	24.0	23.1	22.2	22.3	22.1	23.0	25.5	25.9	26.7	25.5	26.2	26.0	15
SE Sweden						42.8	41.1	40.2	39.1	37.9	35.7	33.3	31.7	31.6	7
						81.5	81.3	81.4	81.5	81.7	81.5	81.6	81.6	82.0	1
						62.2	61.2	60.8	60.3	59.8	58.6	57.5	56.6	56.8	3
UK United Kingdom	12.8	13.1	13.5	13.6	13.5	13.5	13.8	13.8	14.0	14.2	14.3	14.4	14.4	14.2	14
	42.3	42.1	42.3	42.2	42.3	42.4	42.3	42.3	42.2	42.1	42.0	42.0	42.0	42.0	13
	27.6	27.6	27.9	27.9	27.9	27.9	28.0	28.0	28.1	28.1	28.2	28.2	28.2	28.1	14

Figure 6: Flexibility-Security nexus for flexibly employed only (trade-unionist perspective) in the background of trade unions' vertical flexicurity isolines of first priority



In actuality, however, the price of certain advantages for flexibly employed is non-comparable with disadvantages for regularly employed. The latter are so significant that the general average trend is essentially negative. This disproportion in flexicurity advantages/disadvantages is unambiguously illustrated in Figure 5 which reflects the factual situation of all workers in general. This means that relatively few flexibly employed little benefit from significant losses of much more numerous normally employed. It is certainly not the appropriate price for flexicurity advantages.

Thus, during the last decade the situation of flexibly employed in certain European countries has visibly improved. It would be a trade unions' victory, if the situation improved *ceteris paribus*, not having been aggravated by other factors. Not necessary to emphasized that a growth in indices of flexibly employed due to transitions from regular employment does not enjoy trade unions.

10 Accuracy of the indices

To complete the study, estimate *total errors* σ in country indices *Strictness of EPL* and *Security*, and in utility $(Flexibility+Security)/2$, which result from using ranks instead of metrical estimates in the first-level security indicators. Fix a country and year, and do the following:

- Since the EPL-index is not based on ranking, assume its 'ordinal rounding error' to be 0.
- For every employment group g obtain the *summary error* σ_g . For this purpose use formula (3) with equal weights $a_k = \frac{1}{5}$ of partial criteria, as specified in the bottom-right section of Table 9:

$$\sigma_g = \begin{cases} 0 & \text{for } \textit{Strictness of EPL} \\ \frac{1}{5} \sqrt{\sum_{k=1}^5 \frac{r_{gk}(R_k - r_{gk} + 1)}{(R_k + 1)^2(R_k + 2)}} & \text{for } \textit{Security} \\ \frac{1}{10} \sqrt{\sum_{k=1}^5 \frac{r_{gk}(R_k - r_{gk} + 1)}{(R_k + 1)^2(R_k + 2)}} & \text{for } \frac{\textit{Strictness of EPL} + \textit{Security}}{2} \end{cases}, \quad (4)$$

where

g is the number of employment group, e.g., $g = 1$ is *Permanently full-time employed*, $g = 2$ is *Permanently part-time employed*, etc.,

k is the number of *Security* partial criterion, e.g., $k = 1$ is *Unemployment insurance*, $k = 2$ is *Pension*, etc.,

r_{gk} is the integer-valued rank of employment group g with respect to partial criterion k ; see Tables 4–8 (this group in the given country (and year) is ranked with regard to other employment groups in different countries (in different years)), and

R_k is the maximal rank under partial criterion k ; see captions to Tables 4–8.

- For given country and year denote by e_g the size of employment group $g = 1, \dots, 8$. Then the *total error* in the country index in the given year is the weighted average of the group's summary errors σ_g :⁴

$$\sigma = \begin{cases} \frac{1}{\sum_{g=1}^8 e_g} \cdot \sum_{g=1}^8 e_g \sigma_g & \text{(Liberal concept)} \\ \frac{1}{\sum_{g=2}^8 e_g} \cdot \sum_{g=2}^8 e_g \sigma_g & \text{(Trade-unionist concept)} \end{cases} \quad (5)$$

Substitute three types of summary errors (4) into (5) and obtain three total errors for different indices.

The yearly total errors for country's three indices computed in this way constitute triple cells of Table 12, or 13, respectively. The last column of the tables provides the maximal total index error during the control period 1994–2004.

11 Discussion

Who is interested in flexicurity? Thus, according to the liberal viewpoint, the relaxation of the EPL required by employers can be equivalently compensated by better social security benefits to workers. Flexicurity is thereby a particular manifestation of social compromise, discussed since Rousseau's (1762) *Social Contract*.

Since changes in the EPL are required by employers, the compromise tends to meet their interests first, although Wilthagen and Tros (2004) argue for 'win-win strategies' (p. 173) in 'positive sum games' (p. 179). However, it seems that even if prosperous enterprises offer additional benefits to workers, the general profit distribution is unlikely to be fair, taking into account the income scissors between workers and owners with top managers.

A trade-off in the liberal concept of flexicurity is a chain of compromises, meaning that flexibility and security are opposed to each other. Since a relaxation of the employment protection legislation requires a compensation, flexibilization is implicitly recognized 'socially bad' (otherwise what is the compensation for?). One can ask the questions: If flexibilization is 'socially bad', why not to abolish it? Why not to move along the same indifference curve in the opposite direction, towards a stricter employment protection legislation accompanied by a reduction of social security? At least, it could release considerable social security funds with no loss in the social utility.

Since this possibility is not discussed, there should be some motivation exclusively for flexibilization. Since a flexicurity policy along a trade-off results in no increment in social

⁴Given a criterion and a country, ranks of employment groups are not independent. Consequently, the summary scores of employment groups are dependent, and the total index error σ cannot be found from the sum of summary variances

$$\sigma = \frac{1}{\sum_g e_g} \cdot \sqrt{\sum_g e_g^2 \sigma_g^2} .$$

Therefore, the less advantageous formulas (5) are used to include correlation effects.

Table 12: Total standard error σ in estimating Strictness of EPL / Security / (Strictness of EPL+Security)/2 for all employed (liberal concept)

	σ_{EPL} σ_{Security} in % (liberal concept) $\sigma_{\text{(EPL+Security)/2}}$														$\max \sigma$	
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	%	
DE Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.56	5.57	5.56	5.56	5.56	5.56	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.57
	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.77	2.78	2.78	2.78	2.78	2.78
AT Austria							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							5.85	5.86	5.86	5.87	5.88	5.88	5.89	5.90	5.91	5.91
							2.93	2.93	2.93	2.94	2.94	2.94	2.94	2.95	2.95	2.95
BE Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00	0.00
	4.89	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88			4.86	4.86	4.86	4.86	4.89
	2.45	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44			2.43	2.43	2.43	2.43	2.45
CH Switzerland							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							5.71	5.72	5.71	5.72	5.72	5.72	5.72	5.72	5.72	5.72
							2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
CZ Czech Re- public								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
								5.73	5.74	5.74	5.74	5.74	5.74	5.74	5.75	5.75
								2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
DK Danemark	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.02	5.02	5.01	5.02	5.00	5.00	5.00	5.01	5.01	5.00	5.00	4.99	4.99	5.00	5.02	5.02
	2.51	2.51	2.51	2.51	2.50	2.50	2.50	2.51	2.50	2.50	2.50	2.50	2.50	2.50	2.51	2.51
ES Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6.20	6.20	6.19	6.19	6.19	6.19	6.19	6.20	6.21	6.22	6.23	6.23	6.23	6.24	6.24	6.24
	3.10	3.10	3.10	3.10	3.09	3.09	3.10	3.10	3.10	3.11	3.11	3.11	3.12	3.12	3.12	3.12
FI Finland							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							4.82	4.82	4.82	4.83	4.83	4.83	4.83	4.83	4.83	4.83
							2.41	2.41	2.41	2.41	2.42	2.41	2.42	2.42	2.42	2.42
FR France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.46	5.47	5.47	5.47	5.48	5.48	5.48	5.48	5.49	5.49	5.50	5.50	5.50	5.49	5.50	5.50
	2.73	2.73	2.73	2.74	2.74	2.74	2.74	2.74	2.74	2.75	2.75	2.75	2.75	2.74	2.75	2.75
IT Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.03	5.03	5.03	5.03	5.03
	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51
NL Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.27	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.29	4.28	4.28	4.28	4.28	4.29
	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14
NO Norway							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							4.62	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63
							2.31	2.31	2.31	2.31	2.31	2.32	2.32	2.32	2.31	2.32
PL Poland											0.00	0.00	0.00	0.00	0.00	0.00
											5.90	5.90	5.90	5.89	5.90	5.90
											2.95	2.95	2.95	2.95	2.95	2.95
PT Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.96	5.95	6.00	6.00	5.98	5.97	5.95	5.94	5.94	5.95	5.96	5.94	5.93	5.93	6.00	6.00
	2.98	2.98	3.00	3.00	2.99	2.99	2.97	2.97	2.97	2.97	2.98	2.97	2.97	2.97	3.00	3.00
SE Sweden							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							4.35	4.35	4.35	4.34	4.34	4.34	4.34	4.34	4.35	4.35
							2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17
UK United Kingdom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6.11	6.12	6.12	6.12	6.12	6.12	6.12	6.12	6.13	6.13	6.14	6.14	6.14	6.13	6.14	6.14
	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.07	3.07	3.07	3.07	3.07	3.07	3.07

Table 13: Total standard error σ in estimating Strictness of EPL / Security / (Strictness of EPL+Security)/2 for flexibly employed only (trade-unionist concept)

	σ_{EPL} σ_{Security} in % (trade-unionist concept) $\sigma_{(\text{EPL}+\text{Security})/2}$														$\max \sigma$																																																		
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	%																																																		
DE Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.35	5.36	5.36	5.35	5.35	5.35	5.36	5.36	5.37	5.38	5.38	5.39	5.39	5.39	5.39	2.67	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.69	2.69	2.69	2.69	2.70	2.70	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
AT Austria							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							6.03	6.02	6.04	6.05	6.07	6.09	6.09	6.13	6.14	6.14							3.01	3.01	3.02	3.03	3.04	3.04	3.05	3.06	3.07	3.07																		
BE Belgium	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00	5.05	5.03	5.02	5.02	5.02	5.01	5.00	4.99	4.98			4.94	4.94	4.93	5.05	2.52	2.51	2.51	2.51	2.51	2.50	2.50	2.49	2.49				2.47	2.47	2.46	2.46	2.52																		
CH Switzerland							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							5.84	5.83	5.83	5.83	5.83	5.83	5.82	5.83	5.84							2.92	2.92	2.92	2.92	2.92	2.91	2.91	2.91	2.92																				
CZ Czech Re- public								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							5.90	5.92	5.92	5.92	5.93	5.93	5.93	5.93								2.95	2.96	2.96	2.96	2.96	2.96	2.97	2.97	2.97																				
DK Danemark	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.34	5.33	5.33	5.33	5.32	5.32	5.33	5.33	5.34	5.33	5.34	5.35	5.35	5.35	5.35	2.67	2.66	2.66	2.67	2.66	2.66	2.66	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.68	2.67	2.68																		
ES Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.89	5.91	5.91	5.90	5.91	5.92	5.92	5.93	5.93	5.94	5.95	5.95	5.96	5.96	5.96	2.95	2.96	2.96	2.95	2.95	2.96	2.96	2.96	2.97	2.97	2.98	2.98	2.98	2.98	2.98																				
FI Finland							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							4.87	4.87	4.87	4.88	4.89	4.89	4.89	4.90	4.90							2.44	2.43	2.44	2.44	2.44	2.44	2.45	2.45	2.45	2.45																			
FR France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.35	5.36	5.36	5.39	5.39	5.41	5.42	5.43	5.44	5.45	5.47	5.47	5.46	5.44	5.47	2.68	2.68	2.68	2.69	2.70	2.71	2.71	2.72	2.72	2.72	2.73	2.73	2.73	2.73	2.72	2.73																			
IT Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.93	4.93	4.94	4.93	4.94	4.94	4.94	4.94	4.94	4.95	4.95	4.95	4.96	4.95	4.96	2.46	2.46	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.48	2.48	2.48	2.48	2.48																			
NL Netherlands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.23	4.24	4.25	4.24	4.24	4.24	4.25	4.25	4.26	4.26	4.27	4.26	4.27	4.27	4.27	2.12	2.12	2.12	2.12	2.12	2.12	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13																			
NO Norway							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							4.56	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57							2.28	2.28	2.28	2.28	2.28	2.28	2.29	2.29	2.29	2.29																			
PL Poland												0.00	0.00	0.00	0.00											6.00	5.98	5.97	5.96	6.00													3.00	2.99	2.99	2.98	3.00																		
PT Portugal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.33	5.28	5.23	5.21	5.18	5.19	5.18	5.19	5.27	5.28	5.32	5.28	5.31	5.30	5.33	2.66	2.64	2.62	2.60	2.59	2.60	2.59	2.60	2.63	2.64	2.66	2.64	2.65	2.65	2.66																				
SE Sweden							0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00							4.41	4.41	4.41	4.41	4.40	4.41	4.41	4.40	4.41							2.20	2.21	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.21																			
UK United Kingdom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.75	5.77	5.79	5.80	5.80	5.81	5.82	5.83	5.84	5.85	5.86	5.86	5.85	5.84	5.86	2.88	2.88	2.90	2.90	2.90	2.90	2.91	2.91	2.92	2.92	2.93	2.93	2.93	2.92	2.93																				

utility, the motivation is beyond the social preference. In other words, someone ‘beyond the society’ wins from flexibilization but not the society which gets no advantages. Therefore, the understanding of flexicurity as a trade-off cannot be a ‘win–win strategy’. At best it is a ‘win—no-win-no-loss’ policy with a ‘positive sum’ but not for the society.

Obviously, **every** step towards a higher flexibility **always** meets interests of employers regardless of the state of social security. Business gets rid of restrictions, managers improve performance by rotating personnel, and firms gain higher profits. All expenses are recovered by the state which arranges everything: paves the way for a favorable public opinion, accepts new laws, and provides compensations to workers in the form of additional social security benefits. One can argue that employers, having got advantages, gain higher profits, pay more taxes, and thereby refill governmental funds. It is however unlikely that all the additional tax-returns will be channelled to social security but not to other purposes and that firms’ share in this financial loop will be enough modest to be socially fair. Therefore, such a flexibilization scenario leads not only to a liberalization of the economy but also turns out to be a long-running indirect governmental donation to firms. Since the state budget originates from taxpayers, that is the employees who contribute to the donation.

Which are the doubts? Trade unions put in question the main argument of adherents of flexicurity as a trade-off, that sufficiently high social **guarantees** can compensate an **increment in the risk** to loose a job. Let us outline the train of thought which ‘disproves’ the argument. Assume that an increment in the risk to loose a job can be compensated by a sufficiently high increment in guaranteed social benefits, that is, in income and status. Then one arrives inductively step-by-step to the extreme case, when the growing risk to loose the job turns into certainty, while the social compensation remains adequate. It means that for (almost) every employee the loss of his/her employment can be adequately compensated by social security in income and status. Then very few individuals will be motivated to work, and the resulting low production will not cover high expenditures for social security. This economical contradiction shows that every relaxation of EPL can be compensated by social security benefits only partially but never completely.

Even if it were possible to more or less adequately compensate a decrement in the strictness of EPL by social security advantages, entrusting the workers’ welfare to the welfare-giver, the state, would be too risky. Indeed, every political turn or economic recession may result in easily realizable social cuts (as now in Germany). Employment protection, on the contrary, guarantees jobs and, consequently, a stable income even during recessions and political crises (Bewley 1999).

The next point is that non-benevolently changing jobs destroys career prospects. Since past achievements play a little role, each time one must begin from the start and establish oneself anew. Since the acquired experience can be insufficient, it is often necessary to learn new skills and to accommodate to the new environment. Besides, one can be obliged to move from one place to another which complicates the family life. All of these can be psychologically difficult, time-consuming, and little successful, especially at an older age.

Finally, it is often emphasized that the flexicurity as a trade-off is advantageous for social beneficiaries. For employees it turns out that the already incomplete social security compensation for their labour rights is further reduced in favor of ‘weaker groups’ (otherwise, where to take resources from? In fact, all money paid to anybody is subtracted from somebody).

Moreover, the compensation for employees in the form of social security looks as a charity rather than as a reward for their contribution to the national economy. This ethical nuance damages the civil image of employees, equalizing them to non-employed.

How to unify values? Summing up what has been said, the liberal understanding of flexicurity as a trade-off implies one-sided advantages for employers and undesirable consequences for employees. Preferences of liberals and trade unions more than just differ, they differ in the **type of preference**. Liberals have a hill-shaped utility with gradual ascents/descents in every direction. Trade-unions have a stair-like utility with gradual ascents/descents only along the ‘flight of stairs’ but with leaps in all other directions. What liberals suggest as a subject for ‘deliberate’ bargaining— determining the slope of social trade-off—is questionable for trade unions whose preference has no indifference curves which might have a slope.

It meets the remark of Wilthagen and Tros’ (2004, p. 169): ‘some recent studies are pessimistic that appropriate trade-offs can be found between flexibility and security’. In p. 181 they even more specifically point at the problem of the very existence of trade-offs: ‘If these levels . . . do not exist, negotiations and trade-offs are hard to envisage, because there is ‘no more/or less’ situation.’

Thus, the critical component of flexicurity is the *Utility function* which incorporates the view at social values and implies trade-offs. One possibility of making it operational and transparent is to identify the social utility with the labour market performance. The labour market performance, being little dependent on *Flexibility* reported in empirical studies, can depend on the combination *Flexibility* and *Security*. Such a utility function could be acceptable for liberals and convincing for trade unions.

Flexicurity as a trade-off of utility function ‘labour market performance’. The flexicurity trade-offs can be level curves of the function of unemployment rate in variables ‘flexibility’ and ‘security’. Such a function can be empirically estimated by fitting the regression (hyper)plane to European survey data provided flexibility and security factors being represented by numerical indices. The casual relation ‘flexibility-security→unemployment’ can be considered with a delay of one year. A trade-off with respect to such a function can convince trade unions, providing a basis for bargaining.

Similarly, flexicurity trade-offs can be determined from the index of economic performance (weighted sum of indicators of unemployment, GDP growth, inflation, and increase in public debt) estimated as a function of flexibility and security.

If the idea of the second component of flexicurity, *Flexibility*, is clearly linked to a relaxation of EPL, the idea of the third flexicurity component, *Security*, remains quite vague. A simple solution could be as follows.

Flexicurity as ‘social insurance’ for flexibly employed. Since all types of flexibility are projected on the one-dimensional money-compensation bargaining axis, the role of social security becomes similar to that of health insurance or life insurance, which rates depend only on risk and sum of compensation. The employer contributions to social security (\sim rates) can be double-progressive, depending both on wage (\sim the insurance compensation) and

flexibility of the contract (\sim risk of unemployment). Flexibly employed can be additionally ‘insured’ similarly to the additional health insurance for the medical expenses not recognized by the state.

This way the social security system receives contributions, corresponding to the social risk of insured. The employers are less rigidly constrained than under the employment protection legislation. Flexibly employed enjoy equal or even more generous social benefits than permanently employed (due to the additional insurance for flexibly employed). Finally, the society finds the consensus by equilibrating the supply and demand for all degrees of employment flexibility.

12 Conclusions

The given study operationalizes liberal and trade-unionist concepts of flexicurity, suggests the corresponding indices, provides an empirical investigation of 16 European countries, and outlines some prospects.

1. **(Composition of the index)** The Flexicurity index is based on statistical data on (a) the size of eight employment groups (b) scores of the employment protection legislation available from the OECD, (c) five security rank-based indicators obtained from juridical data, and (d) weight coefficients with which these indicators are accounted.
2. **(Analytic capacities)** The *Flexibility–Security* indices provide quantitative tools for analysis of current policies and comparing viewpoints of liberals and trade unions.
3. **(Methodology)** The study proposes some practical devices for constructing indices from qualitative (juridical) data. The Method of Total Ranks can sometimes overcome the dependence on ‘irrelevant alternatives’ inherent in ranking.
4. **(Accuracy estimates)** The index is based on rankings which are rounded ‘latent’ metrical scores with a certain rounding error. The error can be reduced by applying more levels of ranking of the juridical cases and by considering more security criteria.
5. **(Empirical observations)** The first quantitative analysis shows that the practical implementation of flexicurity is far behind its theory. Minor advantages for flexibly employed turn into great disadvantages for regularly employed with a negative general balance.
6. **(Practical solutions)** Operationalizing the notion of flexicurity and keeping it under instrumental control with empirical feedback can contribute to finding efficient and acceptable forms of social consent.

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