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**Article**

## Pay Transparency across Countries and Legal Systems

CESifo Forum

**Provided in Cooperation with:**

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Ceballos, Martha; Masselot, Annick; Watt, Richard (2022) : Pay Transparency across Countries and Legal Systems, CESifo Forum, ISSN 2190-717X, Ifo Institut - Leibniz-Institut für Wirtschaftsforschung an der Universität München, München, Vol. 23, Iss. 02, pp. 3-11

This Version is available at:

<https://hdl.handle.net/10419/263836>

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# Mind Gender Gaps!

## How Men and Women Get Equal Working Opportunities and Wages

Women's participation in the labor market is increasing and the gender pay gap is narrowing worldwide. Yet how fast and how profound the development takes place varies from one country to another. In Europe, there is still controversy as to whether the regulations introduced on pay transparency have made an effective contribution to reducing these differences. While more women are available on the labor market, their wage in some segments has not grown to the same extent. However, the discussion about the gender pay gap has broadened and become more differentiated: the aspect of the natural gender gap has been added, to which countries would gravitate in absence of legal regulations designed to reduce this gap. And there is a new discussion about the differences in pension payments between men and women. This edition of the CESifo Forum offers country-specific experiences as well as insights into these critical policy issues in selected countries.

*Martha Ceballos, Annick Masselot and Richard Watt*

### Pay Transparency across Countries and Legal Systems

The undervaluation of women's work is the primary driver of the gender pay gap in developed economies (Milgrom et al. 2001 and Bennedsen et al. 2019). All countries in the EU, along with Australia and Canada, have some form of legislation which requires "equal pay for work of equal value" as is enshrined

in the International Labour Organisation (ILO) Equal Remuneration Convention of 1951 (CFR n.d.). But despite the efforts to enforce "equal pay for work of equal value," the gender pay gap has persisted in all modern economies to some extent (ILO 2018). In recent years, lack of pay transparency has arisen as a



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possible explanation. Ramachandran (2011) indicates that a lack of pay transparency provokes a disparate impact on women and people of color and that pay transparency allows workers to negotiate fair wages. Without transparent wage information, it might be realistic for a worker to realize her pay is unjust relative to her co-workers in the same position (i.e., equal pay for equal work), but it is significantly more difficult for a worker to realize she is not paid fairly relative to a worker in a different role who she probably has little contact with (i.e., equal pay for work of equal value). Therefore, workers need to be presented with transparent information about the pay of other comparable roles in their company for them to know if equal pay for work of equal value is in place. As Lobel (2020, 547) notes, “efforts to eradicate wage discrimination have failed in large part because of information asymmetries and difficulties in identifying and proving discrimination.” Part of the reason explaining why the gender pay gap has closed so slowly in the developed world is that companies have historically used their wage information asymmetry to make it difficult for employees to identify and act against pay discrimination. Thus, although pay equity legislation exists in some developed economies, it has not always been effectively enforced.

What is less well understood is the exact effect of legislating pay transparency. In particular, what are the effects of different types of pay transparency legislation upon the gender pay gap? There have been studies that are restricted to particular countries (e.g., Gulyas et al. 2021), who studied the case of Austria; and Bennedsen et al. 2019), who looked at Denmark), with contrasting results.<sup>1</sup> Part of the issue, of course, resides in the fact that pay transparency legislation is but one of a myriad of variables – cultural, economic, and legal – that affect the gender pay gap, and attempting to separate out all of the effects economically becomes overly complex. In the present article, we take a more simplified approach to this question. The bottom line is that, independently of all of the other possible interferences, pay transparency is legislated with the intention that it should reduce the gender pay gap to levels below that which would be achieved without the legislation. Essentially, the passage of a pay transparency law acts as a type of structural change that should show up as a decreased gender pay gap relative to not having the transparency regulations in place. In order to attempt to visualize this in a relatively simple manner, in this article we restrict our attention to a set of developed OECD countries with different experiences regarding gender pay transparency legislation. Our set of countries are,

<sup>1</sup> Gulyas et al. (2021) found that pay transparency had no effect on the gender pay gap in Austria, while Bennedsen et al. (2019) found that transparency decreased the Danish gender pay gap, even though the gap decrease was attributable to decreased wage growth of male workers rather than increased wage growth of females. Baker et al. (2019) also failed to find any effect of pay transparency on female earnings.

broadly speaking, similar in nature (at least in terms of economic and social development), and so our implicit assumption is that any variables other than the particular parameters employed related to pay transparency legislation are similar across our set of countries, and thus can be assumed to be held constant. Our intention is to consider the following general questions:

1. Does having some form of pay transparency law in place tend to reduce the gender pay gap to levels below those which might have reasonably been expected in absence of such a law?
2. Which particular elements of a pay transparency law appear to have the most effect upon the gender pay gap?
3. Can countries be grouped together according to the general parameters of their pay transparency legislation, and if so, which groups of countries appear to have employed the most successful pay transparency law?

The article proceeds as follows. In the next section, we detail the legislative experiences of the different countries that are included in our data set. The third section employs latent class analysis to group the different countries in our data set according to their gender pay gap and their pay transparency legislation. The fourth section posits a new perspective on the gender pay gap of non-legislating countries that leads to a theory (and indeed a value, at least for the countries in our data set) of a “natural rate” of the gender pay gap and a useful separation between countries with pay transparency legislation in place – those that out-perform the benchmark of not legislating, and those that under-perform relative to that same benchmark. Together with our latent class analysis groupings, this allows us to draw conclusions regarding the types of pay transparency law that appear to be more successful in the endeavor of reducing the gender pay gap. Finally, the fifth section concludes.

## PAY TRANSPARENCY LEGISLATION EXPERIENCES

In recent years, organizations and governments have begun to acknowledge and highlight the issue of pay opacity, which has sparked efforts to create pay transparency measures in developed economies. The most significant of these measures was the EU 2014 Recommendation on encouraging member states to enact a range of transparency measures, but other measures in Canada and Australia have also been implemented (European Commission 2014). Measures in the EU revolve around employees’ right to request information on pay levels, requiring firms to report on the workforce gender pay gap, requiring firms to undergo gender pay audits, and to include equal pay in collective bargaining. Outside the EU, measures include prohibiting employers from blocking salary discussions and requiring employers to disclose to job

Table 1

## Pay Transparency Measures to Ensure Equal Pay for Equal Work: An Overview

Measure	Description	Example
Gender pay reports	Employers compile a report comparing average 'pay and other employment measures across different work positions in the organization. The data must be disaggregated by gender. This report is either handed to authorities or distributed among employees or employees' representatives. An additional obligation to publishing the report exists in some countries.	Australia requires firms to submit a report to the WGEA regarding: gender composition of the workforce, gender composition of governing bodies, equal pay between men and women, availability of flexible work practices, etc. In Canada employers must submit an equity plan to the Ministry of Labor. Portugal, Spain, the UK, Italy, Austria, Belgium, and Germany, among other countries, set out the duty to undertake the report.
Gender pay audits	Employers themselves, alone or involving workers representatives, must assess workforce wages, comparing wage setting processes across employees, including classification systems to detect discriminatory gender pay differences. Often firms are required to explain why differences exist and action plans should follow to correct any unjust gender pay differences.	In Finland, employers must analyze pay information disaggregated by gender across similar groups of employees. If gender imbalances are detected, the employer must analyze why these pay gaps occurred. Results should inform the equality plan that firms must complete. Sweden requires written pay audits. In Spain equal pay audits must be carried out as part of the equality plans.
Right to request information	Workers directly or through a worker's representative can ask employers to disclose pay information affecting the worker and co-workers in the same category. Often the criteria for determining wages are also included.	In Norway, workers can request information regarding co-workers' pay and the criteria used to determine their wages. Finland, Germany, and Spain also set down the right to request information.
Pay disclosure	Firms must disclose the pay range of a position to prospective employees.	Some states of the US, for instance California and Colorado, have set down the obligation to publish salary ranges in employment advertisements.
Gender pay discussion in collective bargaining	Equal pay and gender pay audits are included in collective bargaining discussions.	France, Belgium, Germany, Spain, and Finland have established the obligation to include equal pay measures in collective bargaining. Other countries promote the inclusion of equal pay in the tripartite social dialogue.
Employer preclusion to ask candidate's salary history	Employers are forbidden to ask for the prior salary of a prospective employee during the recruitment process.	This duty is established in some US states such as Maryland, Connecticut, Washington, California, and Colorado.
Equal pay certification	An independent body certifies that the employer has an equal pay system through an audit of the wage-setting process.	In Iceland, employers must obtain the equal pay certification.

Source: Authors' own compilation.

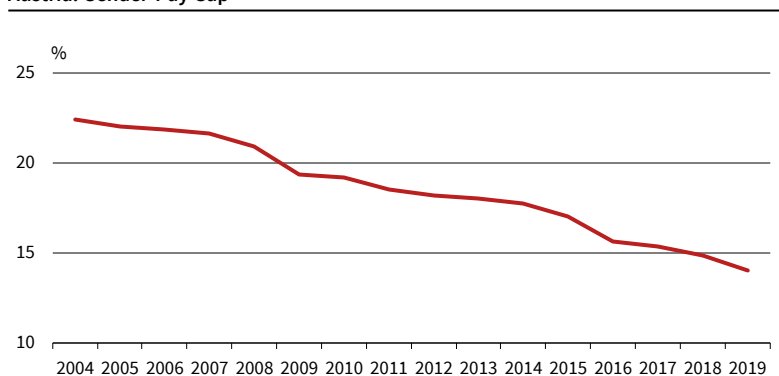
seekers the pay range for the job position.<sup>2</sup> The EU has also published a proposal for a new directive, which establishes mechanism directed to enforce pay transparency measures and put forward additional measures.<sup>3</sup> Table 1 gives an overview of these measures along with specific examples from some countries.

Ironically, in many countries these measures are optional, meaning that in effect there is still no adequate enforcement of equal pay legislation, and employers are still able to use their informational superiority to make pay equity legislation difficult to enforce. One such case is Austria, where pay transparency reporting was implemented in 2014, but no enforcement mechanism or penalty was enacted. Two independent studies by Gulyas et al. (2021), and Böheim and Gust (2021) both found that the legislation had no effect on the gender pay gap or wages. This can be directly seen in the time-series of the Austrian pay gap (see Figure 1), in which no notable change in the trend is visible at or near 2014.

Meanwhile, Bennedsen et al. (2019) in their analysis of Denmark, Duchini et al. (2020) in their analysis of the UK, and Baker et al. (2019) in their analysis of Canada, all found that pay transparency decreases the gender pay gap and by a significant amount (between 10 percent and 20 percent in most cases). All of these countries had penalties to enforce their gender pay reporting, which suggests that enforcement must be forcefully binding otherwise employers risk continuing to favor price discrimination against women. This is most evident in the

Figure 1

## Austria: Gender Pay Gap



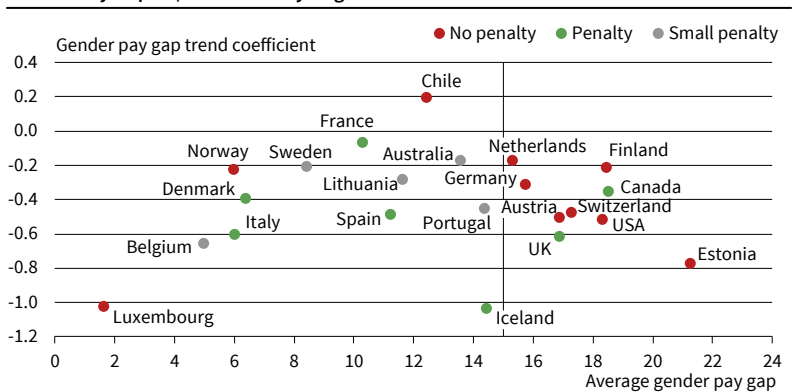
Source: OECD.

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<sup>2</sup> This is the case, for instance, in some states in the US, such as California, Colorado, Connecticut, Maryland, and Washington (Chrisbans and Patrick 2021).

<sup>3</sup> Directive to Strengthen the Application of the Principle of Equal Pay for Equal Work or Work of Equal Value between Men and Women through Pay Transparency and Enforcement Mechanisms, COM(2021) 93 final, Brussels, 4.3.2021, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:percent3A52021PC0093>.

Figure 2  
Gender Pay Report/Audit Penalty Regime



Source: OECD.

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UK, where originally a voluntary gender pay reporting scheme was implemented and only five eligible companies complied with the legislation (BBC 2015).<sup>4</sup>

If we take a wider view of pay transparency legislation among OECD countries, a negative association between pay transparency enforcement and the gender pay gap appears. The scatter plot in Figure 2 shows that, among countries that have an average gender pay gap below 15 percent and a negative time coefficient, or adjustment factor (i.e., the gender pay gap is decreasing over time), countries with some type of enforcement of their gender pay reporting legislation make up 83 percent of the sample. Whereas, among countries with average gender pay gaps above 15 percent, countries with enforcement mechanisms only make up 22 percent.<sup>5</sup>

Countries such as France and Iceland not only have reporting requirements but also correction requirements; that is, if an unexplained gender pay gap is found then it must be corrected. However, these countries do not appear to be particularly different from other countries in our sample. Neither the UK nor Denmark require employers to correct any identified pay gaps, but as mentioned before, the literature has found both countries to have effective implementations. This appears to indicate that giving workers information on gender pay equality is all that is truly required, and individual legal action by employees (or the threat of legal action by employees) is sufficient to induce compliance.

In short, considering all evidence, the picture is clear: pay transparency lowers the gender pay gap, but only with adequate enforcement.

<sup>4</sup> To address the low implementation and enforcement of pay transparency measures, the EU has published a proposal for a directive that is currently being discussed in the European Parliament.

<sup>5</sup> The gender pay gap data is sourced from the OECD (see <https://data.oecd.org/earnwage/gender-wage-gap.htm>) and described in the appendix. The penalty regime information is from a forthcoming ILO report on pay transparency measures (Massetot forthcoming). Small penalties are typically minor monetary penalties under EUR 5,000. The selection of countries included was determined by the available data on pay transparency law penalties. The data used is provided in full in the appendix to this article.

## LATENT CLASS ANALYSIS

The fact that enforcement shows up as a critical element of an effective pay transparency legislation leads us to consider the more general question of whether there is any evidence to suggest certain measures work better in certain types of countries or if specific legal frameworks lend themselves to certain characteristics in pay transparency law. To answer this, we have employed a Latent Class Analysis (LCA) method on our dataset formed from legal analysis of the relevant pay transparency legislation in the different countries.<sup>6</sup> We supplied the model with mixed continuous and categorical data regarding the average pay gap, variables describing the pay gap trend coefficient and how it changed before and after legislation, and some general variables regarding the type of pay transparency that a country implemented (i.e., the penalty regime, types of companies it applies to, etc.). The LCA technique identifies groups of countries that are “similar” according to characteristics of pay transparency law and the pay gap. Thereby, we can observe patterns or trends that suggest a relationship between pay transparency measures and the reduction of gender pay gap. While the LCA technique is not devoid of limitations, especially with a relatively small data set such as ours, it is still useful for the purpose of showing that pay transparency does have an impact on the pay gap, without considering other underlying causes and effects which would require further analysis.

Our LCA model identified 5 categories of countries, which appear to have significant legal meaning and are illustrative of the different categories of pay transparency in developed economies.<sup>7</sup> We interpret the 5 categories to correspond to (1) Commonwealth law pay transparency, (2) countries without pay transparency law, (3) typical European pay transparency, (4) Germanic pay transparency, and (5) outliers. In Figure 3, we have recoded Figure 2 with the LCA categories for illustration. Since the model was also given variables indicating the effect pay transparency had on the gender pay gap, these groupings also partly reflect the success of the legislation.

The model was not given any variables around the general legal characteristics of each country, so the fact that it has isolated Germanic civil law and Commonwealth law countries is highly relevant. Looking closely at Commonwealth law pay transparency implementations suggests a few key principles and characteristics:

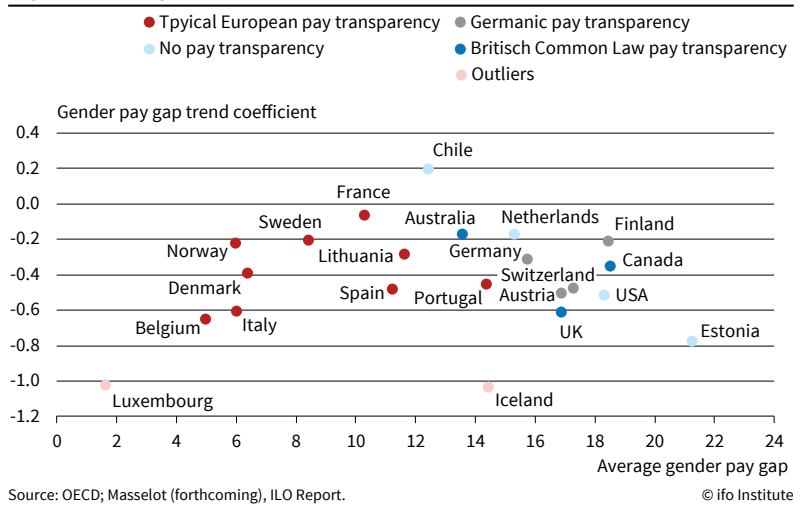
<sup>6</sup> LCA is a statistical technique that groups data according to their characteristics in a given dataset. It is an unsupervised technique which clusters data into relevant groups revealing an underlying hidden latent class to the researcher. This latent class can be informative in legal analysis as it can be used by the researcher to identify groupings of legal regimes and structures which otherwise might be ambiguous or difficult to find.

<sup>7</sup> Information regarding the algorithm used can be found in the appendix to this article.

- Pay reports are the core pillar to Commonwealth law pay transparency legislation, with audits as a secondary measure or omitted entirely. Both Australia and the UK only implement pay reporting, and the Canadian system does have audits, but they are randomly applied and only target a minority of employers. However, in all systems the pay report process is robust and is designed to open discussion and critique from employees and the public. In Australia, the government explicitly provides employers with a comparison of their gender pay report versus a competitor benchmark, whereas in Canada employers are under the obligation to consult with employee representatives when writing the report. Meanwhile in the UK, pay reports are released publicly on each company's website, which opens the report to critique and feedback.
- Pay transparency law only applies to large employers. Australia and Canada only require employers with 100+ employees to submit gender pay reports, and the UK only requires employers with 250+ employees to submit reports. In this regard, Commonwealth law pay transparency is similar to the Germanic model and fundamentally different to the typical European implementation (where the firm size caps are much smaller).
- Failure to comply with pay transparency reporting must be met with sanctions. In Canada the Ministry of Labor can impose fines on non-compliant companies, and in UK the EHRC can issue court orders and fines to ensure compliance. In Australia, employers are not explicitly fined, but can lose government contracts and financial assistance if they fail to comply (WGEA n.d.). In this respect, the Commonwealth law pay transparency laws are directly opposed to Germanic pay transparency (which has no sanctions for non-compliance) and more aligned with typical European pay transparency implementations (which typically have some sanction for non-compliance).
- Pay transparency in these countries appears to have had an effect on the trend of pay transparency, meaning that the legislation is likely to have been effective where implemented. Although both the UK and Australia had declining gender pay gaps prior to the enactment of the legislation, after the legislation was enacted the rate of the gender pay gap decline increased by around 0.5 percent to 2 percent more per year. The case of Australia in particular is quite visually stark and indicates the legislation may have had a significant effect (see Figure 4). Not enough time has passed to see the effect of the legislation in Canada.

Germanic pay transparency is another major grouping identified by the LCA model, and it included Germany, Austria, Switzerland, and Finland. Finland is an unexpected inclusion given it does not share a tradition

Figure 3  
Pay Transparency Latent Class Scatterplot



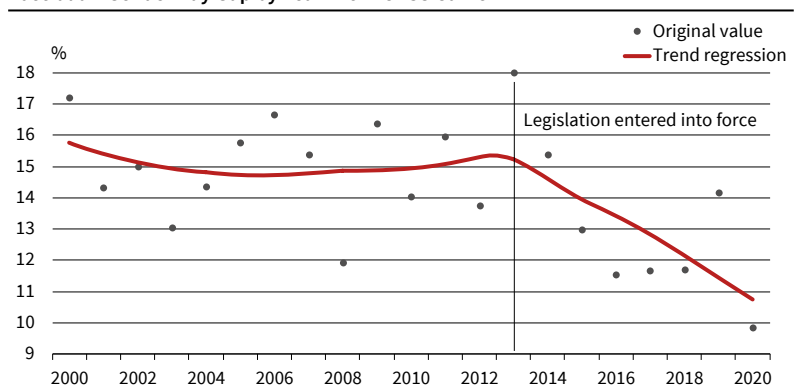
Source: OECD; Masselot (forthcoming), ILO Report.

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of Germanic civil law (rather it is more aligned with Scandinavian civil law), and we find that in some areas it diverges from the rest of the Germanic group countries. However, potentially its inclusion is enlightening on how the law is applied in practice.

- Germanic pay transparency is largely characterized by soft-handed enforcement. In Germany, Switzerland, Austria, and Finland there are no provisions at all to penalize employers who fail to comply with the legislation. In the case of Germany, audits are explicitly voluntary, and employers can choose the evaluation criteria as they see fit.
- Typically, Germanic pay transparency is exclusively directed towards large employers. In Switzerland, Germany, and Austria only employers with 100+, 500+, and 150+ employees respectively, are included in the legislation—though, in Finland the legislation applies to employers with 30+ employees. However, given that the law is not enforced, this could be a distinction without a difference as there is little pressure on small employers with 30–50 employees to comply with the law.

Figure 4  
Australian Gender Pay Gap by Year with LOESS Curve



Source: OECD.

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- Ironically, although the law is not strictly enforced, it tends to contain a wide range of provisions regarding reports, audits, and the right to information. Germany, Switzerland, and Finland include provisions for both reporting and audits. The Swiss government even went as far as to develop an application called “logib” for firms to use when conducting their audits. In Austria there is no audit requirement, but provisions regarding the employee’s right to information are included instead.
- It is difficult to disentangle small effects from no effect, but overall it does not appear that the pay transparency legislation was significantly effective in any of the countries in this category. However, there is some evidence that German legislation may have slightly increased the rate at which the gender pay gap fell.

The final major group identified by the model is the typical European implementation of pay transparency. This covers a broad range of European countries, including Romance-speaking Europe, parts of Scandinavia, and the Baltics.

- Typical European pay transparency tends to cover a much smaller number of employers than Commonwealth law pay transparency or Germanic pay transparency, and this is a nearly homogenous characteristic. In fact, out of the nine countries identified as in the typical European pay transparency group, eight have laws which apply at 50+ employees or below. Only Portugal is different from the others in this respect because it applies to publicly listed companies only.
- Enforcement of legislation is characteristic of these countries, with eight out of nine countries all having some kind of sanction for non-compliance. Only Norway differs from the rest in this regard, since it has no sanctions for non-compliance.
- There is no clear trend among the provisions enacted with broad differences among different countries. France, for example, has a strong reporting framework which is similar to that observed in Commonwealth law pay transparency, whereas Norway and Spain have a broad set of measures more characteristic of Germanic pay transparency countries.

The two other categories are no pay transparency and outliers. The outliers are two European countries with unusual systems and usually heavy declines in the gender pay gap even prior to any legislation. Both Iceland and Luxembourg saw declines of around 1 percent per year on average in their gender pay gaps well before any legislation was implemented. Luxembourg implemented a basic gender pay reporting framework in 2016 with no sanctions for non-compliance. Our

most recent gender pay gap data for Luxembourg indicates that gender pay gap was slightly negative in 2018 (meaning women earn more than men according to the OECD definition), but this could be part of a much wider existing trend in Luxembourg. On the other hand, Iceland has implemented one of the most comprehensive gender pay transparency laws in the world from 2021. The gender pay reporting and audit system is comprehensive, with companies being required to become pay equity certified every few years. Fines are large and can amount up to USD 385 per day of non-compliance. The legislation also has a broad net which applies to all firms employing 25+ employees. However, it is still too early to evaluate any effects of the legislation.

### A “NATURAL RATE” THEORY, AND THE SUCCESS OF PAY TRANSPARENCY LEGISLATION

Our analysis of the different countries in terms of their gender pay gap and the rate of change of the gender pay gap (the scatter plots above) are suggestive of an interesting hypothesis and corresponding theory that also throws some light upon the success of pay transparency legislation. Just as such concepts as the “natural rate of unemployment” exist in an economy (the rate of unemployment that will occur naturally, without any policy interventions), so there could also be a similar concept related to the gender pay gap. That is, there could be a “natural” gender pay gap number to which countries would gravitate in absence of legal regulations and legislation designed to reduce the gap. Our graph is suggestive of exactly such a concept.

Notice that there are four countries in our dataset that have not legislated specifically on gender pay transparency, namely, Chile, the Netherlands, the US,<sup>8</sup> and Estonia. Notice further that in the graphical space of the size of the gender pay gap and its rate of change (the scatter plots above), those four countries all locate very closely to a straight line with negative slope passing through the graph. Let us refer to this line as the “natural convergence line,” and we hypothesize that any developed country that does not legislate pay transparency will lie somewhere upon this line. As our best approximation to the natural convergence line, we use the ordinary linear least squares regression line through the points corresponding to the non-legislating countries here.

Under the hypothesis of the existence of a natural convergence line, and when that line has negative slope (in our graphical space), then we immediately arrive at a theory of the natural rate of the gender gap. A country such as Estonia, which is on the natural convergence line but which has a high gender

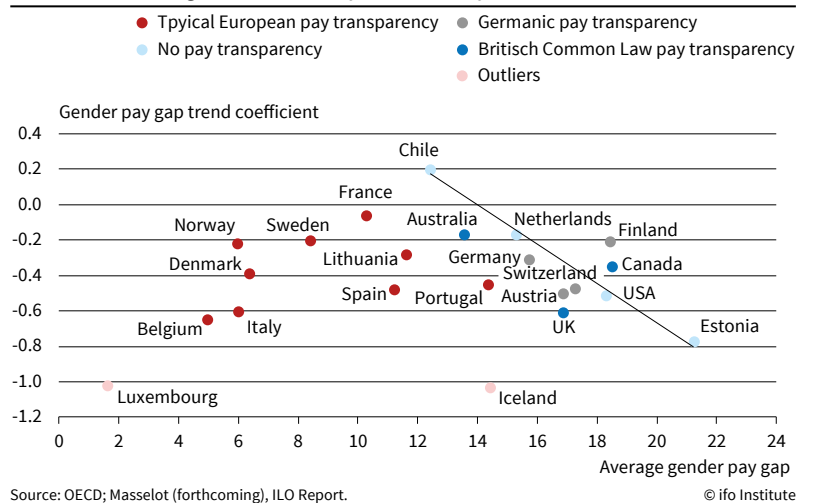
<sup>8</sup> The US has no federal law mandating pay transparency measures. However, some individual states have very recently enacted pay transparency laws or are in the process of enacting pay transparency measures. The pay gap data used in this article is at the federal level, including states with and without pay transparency legislation.

pay gap, also has a high negative trend. This means that the gender pay gap in Estonia, while high, is falling rapidly. So long as Estonia does not legislate pay transparency (i.e., it remains within the group of non-legislated countries), it should therefore move upwards over time along the line, achieving a progressively smaller gender pay gap, but also a progressively smaller absolute value of the adjustment.<sup>9</sup> Where would this process stop? When the country achieves the point at which the adjustment (or trend) is 0, then there would be no further changes in the gender pay gap (again, absent any legislation to force a change). Thus, the point at which the natural convergence line reaches the trend (or adjustment) value of 0, we obtain a “natural rate” for the gender pay gap. Using our dataset, the natural rate is about 14 percent.<sup>10</sup>

In short, given the hypothesis that if a country does not legislate pay transparency measures specifically designed to reduce the gender pay gap, then it will be confined to moving along a negatively sloped natural convergence line, and we get the theoretical result that over time its gender pay gap will converge to the natural rate.<sup>11</sup> Under the natural convergence line hypothesis, we can split our graph into two mutually exclusive sections, using the natural convergence line as the boundary between them. Countries that lie above and to the right of the line either have a gender pay gap that is larger than it needs to be given its rate of adjustment or it has a rate of adjustment that is insufficient given the size of its gender pay gap. Such a country is clearly doing worse than not legislating at all. On the other hand, countries that locate below and to the left of the line are clearly performing better than the benchmark of not legislating. Either their gender pay gap is lower than would be expected from doing nothing or their rate of downward adjustment is greater than would be expected from doing nothing, or both. Such countries are the success stories of pay transparency legislation. This is shown in Figure 5, in which the natural convergence line has been superimposed upon the scatter graph of the LCA country groupings.

As can be seen, there are only two countries that are underperforming relative to the natural conver-

Figure 5  
The Natural Convergence Line and Pay Transparency Latent Class Scatterplot



Source: OECD; Masselot (forthcoming), ILO Report.

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gence line – Finland and Canada. All of the other countries, most notably, the entire set of countries that are within the class of “typical European pay transparency,” are well to the right of the natural convergence line.<sup>12</sup> This shows that in all of those countries, the pay transparency legislation is successfully reducing the gender pay gap below what it would otherwise have been.

## CONCLUSIONS

Overall, our results suggest that pay transparency laws have a systematic impact on the reduction of the gender pay gap in countries that implemented wage transparency measures. This result appears through our groupings of countries according to similarities in their pay transparency laws and where the different groupings locate on our scatter-graphs of the pay gap data. However, the variation in the pay gap rate between countries with strong enforcement mechanisms, that is, with direct penalties for non-compliance, and countries with soft-handed approaches to non-compliance, indicates that the positive effect of effect pay transparency measures increase when it is accompanied by a credible enforcement mechanism. Optional and voluntary measures are largely not effective. That said, the evidence currently does not indicate that very harsh or heavy-handed enforcement is necessary, but some amount of pressure or drawbacks imposed upon non-compliant companies as a result of the failure are required to induce compliance.

Targeting legislation to large employers (i.e., 100+ employees) seems to be adequate in many cases

<sup>12</sup> While we do not provide such an analysis here, one way to rank the different countries according to their relative success in the graph is to simply use as the measure of success the length of the line joining a given country's point with the natural convergence line, where the line is orthogonal to the natural convergence line. Such a line would show the minimum distance between the country's location and the set of points that are (hypothesized as being) possible under no legislation.

<sup>9</sup> Likewise, a non-legislated country that is above the adjustment of 0 point, such as is Chile, has a small gender pay gap, but a positive adjustment coefficient. That country would move downward along the line until it reaches the adjustment value of 0.

<sup>10</sup> We take the natural convergence line to the ordinary linear least square regression line of the points corresponding to the countries that have no gender pay transparency law. In fact, the linear regression line for the four non-legislating countries is  $y = 1.5418 - 0.1103x$  (where  $y$  is the trend, measured on the vertical axis, and  $x$  is the pay gap, as measured on the horizontal axis). This solves out for a natural rate of the pay gap of 13.97 percent.

<sup>11</sup> It is also interesting that three other countries, specifically Germany, Switzerland, and Austria, are also clustered quite close to the natural convergence line. That is, those three countries appear similar to what we might expect from a country that does not legislate pay transparency. It is no surprise that Germany, Switzerland, and Austria are three countries that, while they do legislate, do not include sanctions. This goes some way to showing the importance of sanctions for effective pay transparency legislation.



to have a large impact on the gender pay gap. However, it should be noted that all the Commonwealth law pay transparency countries in our sample had relatively high gender pay gaps prior to the legislation being enacted. Hence, countries with much smaller gender pay gaps may need to look to smaller private sector employers as well in order to see adequate results.

Countries with a robust right to information law were not identified as a relevant grouping by the LCA model and did not appear to have better pay transparency results than other countries. Therefore, in general, while there is an impact of the transparency measures on the reduction of the gender pay gap, sorting out which specific measures are more effective for lowering the pay gap is beyond this study and the statistical technique applied.

Finally, we have hypothesized the existence of a negatively sloped natural convergence line and therefore a theoretical natural rate for the gender pay gap, which is where countries that do not legislate pay transparency would converge to. This separates our data set into legislating countries that have been successful, in that their pay transparency regulations have had a notable impact on reducing the gender pay gap (and/or speeding the downward adjustment in the pay gap) relative to the benchmark of not legislating, and those that have been unsuccessful. Most of the European countries fall squarely within the successful group.

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## APPENDIX

All of the data used for this article was sourced from the OECD website. Specifically, it was downloaded from <https://data.oecd.org/earnwage/gender-wage-gap.htm>. The raw data for each country covers slightly different time-series years for some countries. Also, in order to iron out spurious and non-observed effects, and to consider a relevant period of time over which pay transparency has come into force, we have taken a linear regression of the time series for each country. The regressions for all countries are for 2010 up to the latest year of available data for each country. The slope of that regression is our “trend coefficient” (vertical coordinate in the scatter plots). The pay gap coordinate (horizontal coordinate in the scatter plots)

is the average of the pay gap data for each country over the regression time period.

The data on pay transparency legislation was generated from our own research of each country. The full study will soon be made available as a forthcoming ILO document.

The full data set used in the article is given in the following table (the blue cells are the data used in the scatter plots, and the red cells are the pay transparency legislation data).

The LCA analysis was carried out using the Flex-Mix algorithm. Full details of the algorithm used, along with worked examples, can be found at <https://cran.r-project.org/web/packages/flexmix/vignettes/flexmix-intro.pdf>.

Table A1  
Data Set

Country	Ave. pay gap	Slope	Penalty	Reports	Audits	Information	Firm size threshold
Australia	13.55	-0.17	Small penalty	1	0	0	>50
Austria	16.87	-0.50	No penalty	1	0	1	>50
Belgium	4.94	-0.65	Small penalty	1	1	0	50
Canada	18.50	-0.35	Penalty	1	1	0	>50
Chile	12.41	0.20	No penalty	0	0	0	Other
Denmark	6.37	-0.39	Penalty	1	0	0	<50
Estonia	21.23	-0.77	No penalty	0	0	0	Other
Finland	18.43	-0.21	No penalty	1	1	1	<50
France	10.27	-0.06	Penalty	1	0	0	50
Germany	15.72	-0.31	No penalty	1	1	1	>50
Iceland	14.40	-1.03	Penalty	1	1	0	<50
Italy	5.98	-0.60	Penalty	1	1	0	50
Lithuania	11.60	-0.28	Small penalty	1	0	1	50
Luxembourg	1.62	-1.02	No penalty	1	0	0	50
Netherlands	15.28	-0.17	No penalty	0	0	0	Other
Norway	5.97	-0.22	No penalty	1	1	1	50
Portugal	14.34	-0.45	Small penalty	1	0	1	Other
Spain	11.22	-0.48	Penalty	1	1	1	50
Sweden	8.39	-0.20	Small penalty	0	1	0	<50
Switzerland	17.24	-0.47	No penalty	1	0	1	>50
UK	16.84	-0.61	Penalty	1	0	0	>50
US	18.30	-0.51	No penalty	0	0	0	Other

Source: Authors' own compilation.