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Deregulating labour markets: How robust is the analysis of recent IMF working papers?

Mariya Aleksynska

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IMF working papers?***

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Abstract

In a series of recent IMF papers, Bernal-Verdugo, Furceri and Guillaume (2012a, 2012b), Crivelli, Furceri and Toujas-Bernat  (2012), and Furceri (2012) report finding strong evidence that more flexible labour markets are negatively associated with unemployment and positively associated with employment elasticities, and that large-scale reforms of labour market institutions towards flexibility may help reduce unemployment. This paper examines the reliability of the data and of the methodology used in these papers. It reports serious flaws both in the data and in the way they are used, such as employing the suspended World Bank Employing Workers Indicators, or interpreting methodological breaks in series as reform processes. When these breaks in series are accounted for, the majority of reforms identified in Bernal-Verdugo, Furceri and Guillaume (2012a) cannot be replicated. Moreover, the methodology of identifying reforms from the data employed in the latter paper does not capture actual reform processes and ignores the scope and the size of the reforms. Taken together, our findings call into question most of the empirical results of these papers and policy advice based on them.

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1. Introduction¹

In a series of four recent IMF papers, Bernal-Verdugo, Furceri and Guillaume (2012a, 2012b),² Crivelli, Furceri and Toujas-Bernat  (2012), and Furceri (2012), report finding strong empirical evidence that more flexible labour markets are negatively associated with unemployment and positively associated with employment elasticities, and that large-scale reforms of labour market institutions towards flexibility may help reduce unemployment. Based on these findings, they draw policy recommendations on the nature of reforms that should be undertaken in order to reduce unemployment, and how these reforms should be articulated with other labour market institutions. As shown below, these conclusions go hand in hand with some of the IMF policy advice towards deregulation.

In light of the significance of these findings, this paper undertakes an assessment of the data and the methodology used for this analysis, and finds several significant flaws. First, most of the analysis is based on the Fraser 2010 composite indicator of labour market flexibility (or its components) which in turn is largely based on the World Bank Employing Workers Index. Although the World Bank suspended the use of this index because of major conceptual flaws (World Bank, 2009, 2013a), it is still used by Fraser.³ Second, the Fraser data contain important breaks in time series due to methodological changes in data collection and improper data aggregation. Bernal-Verdugo, Furceri and Guillaume (2012a) employ a method of identifying reform processes from changes in the data, rather than working with a set of actual reforms. When the breaks in data series are accounted for, the majority of their identified reforms cannot be replicated. Third, a number of true reform processes are not captured by the Fraser data, and the methodology used to identify reforms from the data (*ibid*) does not allow diagnosing the scope and the size of the true reforms. Finally, one can question the overall approach of assessing the “quality” of labour market institutions by equating it with “flexibility”, which is common across these papers. The findings presented in this paper call into question most of the empirical results of the four IMF papers, and hence the policy advice that may be based on them.

Specifically, Bernal-Verdugo, Furceri and Guillaume (2012a) find that “labour market reforms [towards flexibility] are associated with a decrease in unemployment of about 3/4 percentage points over the medium term, which is similar in absolute terms to the increase in unemployment associated with banking crises.” They further state that the “positive impact of labour market reforms is particularly pronounced for the young⁴.” In the same

¹ While preparing this article, I contacted one of the authors, Davide Furceri, who kindly provided me with the list of reforms identified in one of the IMF papers, as well with comments on this article. I am very grateful to Davide Furceri for his open discussion; his relevant remarks have helped to improve this article. Davide Furceri, and his co-authors, acknowledged that they were not aware of methodological breaks in the series, or of the sensitivity issues related to the World Bank Employing Workers Index. I also thank, without implicating, Janine Berg, David Kucera, Krzysztof Hagemeyer, Sangheon Lee, Patrick Belser, Angelika Muller, Juan de Laiglesia, Olena Havrylchyk and Craig Russon for valuable comments, as well as Philippe Marcadent, Janine Berg, and Sandrine Cazes for their encouragement and support in producing this paper. All remaining errors are mine.

² Also published in refereed academic journals (see references list for details).

³ Three out of four reviewed papers are based on the World Bank data reproduced by Fraser; while Crivelli, Furceri and Toujas-Bernat  (2012) use only one Fraser sub-component based on another data source.

⁴ Quotation based on the revised and published version of the working paper.

spirit, Bernal-Verdugo, Furceri and Guillaume (2012b) report that “increases in the flexibility of labour market regulations and institutions have a statistically significant negative impact both on the level and the change of unemployment outcomes”. Crivelli, Furceri and Toujas-Bernat  (2012) find that “structural policies aimed at increasing labour and product market flexibility [...] have a significant and positive impact on employment elasticities”. Furceri (2012) further concludes that “reforms aimed at improving labour market flexibility [in Algeria] may have important effects in reducing unemployment both in the short and in the medium term. In this context, reforms aimed at reducing search and hiring costs are particularly important to integrate young outsider workers into the labour market”.

These policy recommendations are highly topical at a time when unemployment stands at over 25% in Spain and Greece, and over 16% in Portugal, with the situation being even worse for youth, with rates over 50% in Spain and Greece, and nearly 40% in Portugal in 2013 (ILO, 2013; 2014). In these and other countries, labour market deregulation has been high on political agenda, and flexibilization has been a major feature of the IMF policy advice (Blanchard et al., 2013). Reforms towards labour market flexibility have also been systematically part of the IMF loan programmes. Examples include Greece, with loan conditions linked to increasing wage flexibility, reducing unit labour costs, reducing minimum wages, and making working hours more flexible (IMF, 2011a), and Portugal, with loan conditions linked to reducing severance pay and revising interpretation of fair dismissal definition (IMF, 2011b).

All four papers reviewed here contain a disclaimer stating that they do not represent the views of the IMF or the IMF policy. However, there is evidence that some of the IMF research and advice has been grounded on similar lines of reasoning as in the reviewed papers. For example, IMF (2012b) makes reference to analysis showing that because “structural reforms deliver their potential gradually, [...] labour market and pension changes, should be implemented without delay.” Bernal-Verdugo, Furceri, and Guillaume (2012a) feature similar findings, showing that labour market reforms may reduce unemployment in a medium term. Most recently, in a highly publicized publication, IMF (2014) advises reforms of employment protection legislation in the Balkans quoting, among others, Bernal-Verdugo, Furceri, and Guillaume (2012b). As to Algeria, IMF staff report for the 2011 Article IV consultation concludes that “reforms should aim at [...] making the labour market more flexible” (IMF, 2012a).

The rest of the paper is organized as follows. Section 2 describes the conceptual and technical aspects of the data used by Bernal-Verdugo, Furceri and Guillaume (2012a, 2012b), Crivelli, Furceri and Toujas-Bernat  (2012), and Furceri (2012). Section 3 reviews the methodological aspects of identifying reform processes from the data, as well the interpretations of the quality of labour market institutions. The last section concludes.

2. Understanding the data

2.1. General overview of the data used in the analysis

All four papers examined here are based on the Fraser Institute’s Economic Freedom of the World database. With some variation, they use the labour market flexibility composite index, and/or its sub-components.

Fraser Institute issues data updates every year. Thus, for researchers wishing to replicate the results based on the Fraser data, knowing the year of data edition is

paramount. However, among the four papers reviewed here, the year of Fraser data edition is properly documented only in Bernal-Verdugo, Furceri and Guillaume (2012a) – hereafter BFG (2012a). They report using the 2010 Fraser data edition (Gwartney and Lawson, 2010). Their analysis is based on 97 countries that were included in the sample from 1980 to 2008. The time period was reduced to 2000-2008 in the sub-section analysing the impact of labour market reforms on unemployment. BFG (2012a) have a smaller number of countries than provided in the Fraser 2010 dataset, due to the unavailability of data on some other variables in their analysis, such as unemployment.

As other papers do not report the year of data edition, we can only deduce that Bernal-Verdugo, Furceri and Guillaume (2012b) – hereafter BFG (2012b) – are based on the same 2010 data edition, because they report using the same sample of 97 countries from 1985 to 2008. Likewise, Furceri (2012) is also most probably based on the Fraser 2010 data, as it uses 1980-2008 period but a larger sample of countries. Based on this, it seems most appropriate to examine more closely the Fraser 2010 dataset, which is freely available online.⁵

Specifically, BFG (2012a, 2012b), and Furceri (2012) use a composite measure of labour market flexibility,⁶ and/or its six sub-components: (i) *minimum wage*, (ii) *hiring and firing regulation*, (iii) *centralized collective wage bargaining*, (iv) *mandated cost of hiring*, (v) *mandated cost of worker dismissal*, and (vi) *conscription* (see Appendix 1 for exact definitions).⁷ All sub-components are standardized on a 1-10 scale, with higher values indicating fewer restraints upon freedom in the labour market.

In contrast, Crivelli, Furceri, and Toujas-Bernat  (2012) have a sample that covers 1991-2009. They use only few of the sub-components of the composite indicator of labour market flexibility: *conscription*, coming from Fraser data, and *hiring and firing* and *collective bargaining*, which they take directly from World Economic Forum. Some arguments raised here thus partly apply to Crivelli, Furceri, and Toujas-Bernat  (2012).

2.2. Sensitive data issues

There are several technical issues that render the Fraser 2010 data less than suitable for empirical analysis of the impact of labour market institutions and their reforms on labour market outcomes.

Use of the suspended World Bank employing workers index

Most critical, three out of six of the sub-components of the composite Fraser index are based on the World Bank Employing Workers Index (EWI). These are the (i) *minimum wage*, (iv) *mandated cost of hiring*, and (v) *mandated cost of worker dismissal* sub-components.

In particular, the *minimum wage* sub-component, which is referred to as “Hiring regulations and minimum wages” in the Fraser Report 2010, is a replication of the World Bank’s Difficulty of Hiring index. The *mandated cost of hiring* sub-component actually does not exist in the Fraser Report 2010, though references are made to it by BFG

⁵ See http://www.freetheworld.com/datasets_efw.html . Last accessed: January 2014.

⁶ Note that Fraser Institute refers to it as composite measure of “labor market regulations”.

⁷ We report the components names as they are referred to in BFG (2012a, 2012b). Note that this is different from the names reported in Fraser 2010 Report (we explain this in more detail below, as well as in Appendix 1 and Appendix 2).

(2012a,b) and Furceri (2012). Instead, *mandated cost of hiring* can be found in earlier editions of Fraser data (2007-2009). In Fraser 2010 data edition, this sub-component is replaced by *Hours regulations*, which is based on the World Bank's Rigidity of Hours Index. Lastly, *Mandated cost of worker dismissal* is based on the World Bank's Doing Business data on the cost of the advance notice requirements, severance payments, and penalties due when dismissing a redundant worker (see Appendix 1 for detailed definitions).⁸

These sub-components of the World Bank EWI have been strongly criticized by academia, civil society, and other international organizations (see notably Berg and Cazes, 2008; Lee et al., 2008). This criticism pointed out that the EWI measures flexibility in employment regulations but excludes other key dimensions of employment policies, such as worker protection. It ignores institutional design features (Lee, 2012), and does not allow distinguishing economies that chose to have low level of formal protection while providing other adjustment mechanisms and overall protection from economies that have inadequate labour regulations.

Following up on this criticism, the World Bank suspended the use of EWI data in the calculation of the aggregate Ease of Doing Business indicator, cancelled the ranking of the EWI, and barred its use in formulating policy advice. The World Bank also advised its staff not to “include recommendations based on the EWI in Country Assistance Strategies / Country Partnership Strategies, Economic and Sector Work, Doing Business Reform memoranda, policy notes and other strategy or analytical work”. It further instructed its staff to “decline new requests for technical assistance on labour market reforms focusing on the EWI, as well as suspend ongoing policy discussions with client governments on labour reforms based on the EWI”, as well as not to “use the EWI as a target or performance monitoring indicator when designing development policy, investment and technical assistance loans, even where the relevant project documents refer to the EWI” (World Bank, 2009). The World Bank commissioned a series of independent evaluations (World Bank, 2011, 2013a), which acknowledged that the EWI contains “the problems inherent in measuring only the costs of labour-market regulation and not the benefits”, and approved the Bank's reasoning that “a comprehensive approach in advice on labour market policies is needed” (ibid).

As three out of four examined papers (with the exception of Crivelli, Furceri, and Toujas-Bernat , 2012) are based on the aggregate Fraser data that include previous editions of Employing Workers Index, they disregard the conclusions of the Bank regarding the EWI.

⁸ The World Bank Employing Workers Index is structured as follows. It contains an aggregate indicator *Rigidity of Employment*, which is based on three aggregate sub-indicators: *Difficulty of Hiring*, *Rigidity of Hours*, and *Difficulty of Redundancy*. It also contains a separately reported indicator *Redundancy Cost*. Thus, Fraser sub-components correspond to two EWI sub-indicators (*Difficulty of Hiring*, *Rigidity of Hours*), and the indicator *Redundancy Cost*. Fraser excludes the EWI *Difficulty of Redundancy* sub-indicator.

Other conceptual drawbacks of Fraser data

Apart from including the EWI into the Fraser data,⁹ there are several other problematic issues with the Fraser 2010 data for the analysis of labour market regulations.

First, the six components of the Fraser labour market regulations index feature a significant repetition: hiring and firing regulations are measured in various ways by three out of six variables. This means that these concepts are over-counted, and that the aggregate indicator is biased in the direction of these over-represented concepts, thus necessarily overestimating the impact of the over-represented sub-components in the degree of “rigidity” or “flexibility” attributed to a country.

Second, the Fraser composite indicator is an average of components that are a compilation of composite indices by themselves (*minimum wage*; *mandated cost of hiring*¹⁰), opinion survey questions (*hiring and firing regulations*, *centralized collective bargaining*), and hard data (*mandated cost of worker dismissals* and *conscription*). This different nature of the aggregated variables raises concerns, particularly because they are grouped together through a simple average. Averaging different types of data does not correct for correlations between individual components, and does not take into account the possible endogeneity among these types of information. Nor does it take into account the fact that some of the variables reflect outcomes (outputs) of the underlying processes measured by other variables (inputs) with which they are averaged. For example, perceived difficulty of hiring, measured by the *hiring and firing* regulations sub-component, may be a direct result of specific legal provisions measured by the *mandated cost of worker dismissals* sub-component. The strength of the relationship between these two variables would vary across countries, and depend on the coverage of legal provisions, their enforcement, but also the existence and strength of other forms of regulations, such as collective agreements. The latter would partly be reflected in the *centralized collective bargaining* sub-component. Likewise, a composite index constructed using only some of the subcomponents may suffer from similar drawbacks (Crivelli, Furceri and Toujas-Bernat , 2012).

Third, one of the subcomponents of the Fraser index – *conscription*, which measures the use and the duration of military conscription – has questionable relevance to the degree of labour market flexibility. In most of the theoretical work, it is usually not considered as a labour market institution or regulation (for taxonomy, see Nickell and Layard, 1999, and Boeri, 2011). Governments’ decisions on the design of conscription are also usually motivated by factors unrelated to labour market conditions. Nevertheless, this variable is systematically included into the analysis, either as an independent variable, or as part of the composite Fraser index. The only paper, among the four considered here, that provides intuition to why conscription would matter, is BFG (2012b)¹¹. These authors suggest that “employers would rather not to hire young workers who have a higher probability of being recruited for the military service and thus reduce the fixed costs associated with hiring new personnel (e.g. recruiting, training, administrative, etc.)”, p.9. While this argument has merits, it still remains to be shown theoretically how conscription would matter for overall

⁹ For example, Crivelli, Furceri and Toujas-Bernat  (2012) use only 3 Fraser sub-components, excluding those based on the World Bank data. They average the remaining components – hiring and firing, centralized collective bargaining, and conscription – to produce their own “composite indicator”. BFG (2012a,b) also report separately estimations based on individual Fraser sub-components, in addition to estimations based on the Fraser composite indicator.

¹⁰ See Appendix 1 for details.

¹¹ I am grateful to Davide Furceri for drawing my attention to this.

employment elasticities (Crivelli, Furceri, and Toujas-Bernat , 2012), overall unemployment, or long-term unemployment (BFG, 2012 a, b).

2.3. Use and interpretation of the data

In addition to these conceptual issues, the Fraser 2010 data edition contains serious data problems. While some are actually acknowledged by Fraser, they do not seem to be acknowledged or taken into account by either of the papers examined here.

Interpretation of methodological breaks in data series

In 2010, Fraser introduced some important methodological changes to its data, outlined in its accompanying report (Gwartney and Lawson, 2010). Notably, new components are introduced. Based on them, the database is revised back to 2002, with new components replacing the old ones. However, prior to 2002, data on old components is still reported in the 2010 edition of the Fraser database.

Thus, the *minimum wages* sub-component is a replication of the World Bank’s Difficulty of Hiring index, but only for the years 2002-2008. Prior to 2002, it is the series called “Impact of minimum wage” that is reported under the heading “Hiring regulations and minimum wages”. The Fraser Report 2003, which published the data for the year 2001 for the first time, explains that this previous series was based on the World Economic Forum Executives survey question, phrased as “The minimum wage set by law in your country is...1=never enforced, 7=strongly enforced”. This has little in common with the World Bank’s Difficulty of Hiring index. Stated differently, the Fraser Report 2010 sub-component *hiring regulations and minimum wages* represents a mixed data series, measuring the World Bank’s Difficulty of Hiring index from 2002 to 2008, and measuring responses to the World Economic Forum Executives survey question about the impact of minimum wages before 2001.

The same problematic issue can be observed for the *mandated cost of hiring* sub-component, which existed in the Fraser Reports 2007-2009, but which was replaced in the Fraser Report 2010 by “Hours regulation” sub-component.¹² A closer look reveals that, for 2002-2008, this variable is based on the World Bank’s Doing Business Rigidity of Hours Index, while prior to 2002, the reported data are based on the World Economic Forum Executive Survey question “The unemployment insurance program strikes a good balance between social protection and preserving work incentives”. Answers: 1=strongly disagree, 7=strongly agree”.

Likewise, the *centralized collective wage bargaining* component after 2001 reflects the question of the World Economic Forum Executive Survey “Wages in your country are set by a centralized bargaining process (= 1) or up to each individual company (= 7).” In 2001 and earlier, the same data series actually measure the “Share of labour force whose wages are set by centralized collective bargaining”.

These data changes can be clearly seen once one opens the Fraser 2010 files, as they are explicitly signalled by Fraser. In Appendix 2, we reproduce exactly how the Fraser Excel data sheets look upon download from the Fraser Institute website. The names of previous series do appear in the variables’ headings, in a crossed-out mode; and the new

¹² Data on “Mandated cost of hiring” are available up to 2007 only, if one uses Fraser data edition of 2009. Since BFG (2012a) report using Fraser data edition of 2010 with yearly data up to 2008 inclusive, they must be using the “Hours regulation” sub-component, not “Mandated cost of hiring”, even if this is unintentional.

series names follow in the same cell. It is thus surprising that the IMF papers based on these data ignore these obvious data series changes.

Given these changes, the year 2002 is an important break in series in the Fraser data. However, BFG (2012a) do not acknowledge this issue. They categorize as *large-scale* reforms the observations for those countries and years for which “the annual change in the composite labour market flexibility indicator exceeds by two standard deviations the average annual change over all observations.” Based on this, BFG (2012a) identify 52 episodes of large-scale reforms of labour markets towards flexibility in the period from 2000 to 2008. We have obtained a list of the reforms from the authors. It happens that, out of those reforms, 30 took place in 2002 (Table 1).

Since over half of the “reforms” are simply a reflection of the breaks in the data series, BFG (2012a) findings based on these problematic disaggregated sub-components, as well as on the composite index, are very likely to be questionable.

Inappropriate data aggregation

Another technical issue concerns the aggregation of the Fraser composite indicator, which is based on simple averaging of six sub-components. In numerous instances, the data on only some, but not all, sub-components of the index are available. However, the composite index is always computed as a simple average of the available components. From Appendix 2, it seems that the composite index is created when data on at least 4 out of 6 sub-components are available. However, sometimes just 3 sub-components are averaged, as shown below. Thus, some of the overall results are driven by data availability and by the values of available components, not necessarily by actual changes in these values.

Table 2 provides an example of Bahrain, in 2005 and 2006. The jump in the overall value of the composite indicator is big enough for BFG (2012a) to qualify Bahrain as a reformer between the two years. In reality, the change in the composite indicator is driven mainly by data availability of sub-components: data on three out of six sub-components were not available in 2005; they became available in 2006 and featured particularly high values, driving the overall index for Bahrain significantly upwards.

Furthermore, data on one of the six sub-components - *mandated dismissal costs* - are simply missing for all countries prior to 2002 (which is again evident by visual inspection of the data: Appendix 2). That is, the composite index for 2002 and onwards is based on six components, while the composite index for 2001 and earlier is based on five components.¹³

If we exclude all observations with missing data for any of the sub-components from the full Fraser sample,¹⁴ and apply the standard deviation approach to the annual change of the composite indicator with non-missing values, only 17 out of 53 BFG (2012a) reforms

¹³ Note that Fraser Report 2010 corrects for this, by applying a chain-linked methodology for its *overall economic freedom of the world* index. However, corrected data based on this methodology are not reported separately for *labour regulations indicator*, which is part of this overall index, in the 2010 data edition used by BFG. Even when such data start being reported in Fraser 2012 data edition, they are available only for 74 countries, not for 97, as in BFG (2012a, 2012b). Thus, these authors must be using the unadjusted data series.

¹⁴ Since the full series on the sub-component *mandated dismissal costs* is missing prior to 2002, this means that the sample is now restricted to 2002-2008.

can be replicated (Table 1, column 4).¹⁵ Notably, Bahrain is no longer featured among the reformers.

Finally, the theoretically questionable sub-component *conscription* is remarkable for the discrete values that it takes. These values include only 1, 3, 5, and 10, on a scale from 0 to 10, and some big jumps, such as from 3 to 10 from one year to another are not rare. Such jumps have an important impact on the jumps in the composite indicator. If we exclude this sub-component, and recalculate the composite index using only five sub-components, only 8 of the 53 reforms identified by BFG (2012a) can be replicated (Table 1, column 5).

To summarize, four out of six sub-components of the Fraser 2010 labour market regulations index used across the reviewed papers feature various flaws, such as being based on the conceptually problematic World Bank EWI or having methodological breaks. Given these problems, the dis-aggregated results based on these individual sub-components are likely to be questionable (BFG, 2012 a, b). As additionally there are important flaws in the Fraser data aggregation, the results based on the composite Fraser indicator (BFG, 2012 a, b; Furceri, 2012) are also likely to be problematic.

The two remaining sub-components used to measure the flexibility of labour markets are *conscription* and *hiring and firing* sub-components. They are used as alternative independent variables in BFG (2012 a, b) and Crivelli, Furceri and Toujas-Bernat  (2012). Both variables are found to have a statistically significant effect on various labour market outcomes across these papers – a finding in line with Feldmann (2009), who uses earlier versions of the Fraser data. Note, however, that these effects are not robust across all specifications. For example, *hiring and firing* has a significant impact on youth unemployment, but not on long-term unemployment; its impact on overall unemployment is significant at 10% (BFG, 2012b). Moreover, in all three papers, this variable, as well as other disaggregated Fraser sub-components, are included into regressions interchangeably, and never together. This risks producing an omitted variables bias if a relevant variable is excluded.

Interestingly, in their conclusions, the authors of the papers reviewed here never explicitly suggest reforming conscription. In contrast, they systematically draw advice in terms of designing employment protection. But clearly, conclusions based on not particularly robust *hiring and firing* indicator, which in addition reflects only the opinions of business executives, and misses the perspective of workers, government representatives, or researchers on the true state of these regulations, cannot be viewed as sufficient to neither design nor reform hiring and firing rules or other related labour market institutions. Further research is needed to properly understand the role of hiring and firing regulations, as well as the impact of their reforms on unemployment, particularly at times of crises.

¹⁵ We first reproduced the obtained list of reforms (which contained 53 reforms) by using the same 2010 edition of Fraser data. Following the BFG (2012a) methodology, we computed the average annual change in labour market flexibility (equal to 0.0989), and the standard deviation of the average annual change (equal to 0.439). Combining the two, countries with average annual change lying above the threshold of 0.9769 could be considered as the ones with reforms. As we worked with the full sample of 141 Fraser countries, while BFG worked only with 97 countries, we were able to reproduce 48 out of 53 reforms. The remaining 5 reforms could be easily identified as lying around this threshold (all of them have average annual change value between the threshold values of 0.9 and 0.9769, or less than 10% of the double standard deviation of the annual change).

3. Understanding regulations

3.1. Methodology for identifying “reforms”

One of the main conclusions of BFG (2012a) relate to their identification of *large-scale* reforms, which these authors detect by applying the standard deviation method to annual changes in the composite labour market flexibility indicator. BFG (2012a) also use an alternative approach, whereby they assess the impact of *gradual reforms*, defined as a simple year-to-year change in the labour market flexibility indicator. Their estimated impact of reforms on unemployment is robust to this alternative methodology.

The problem with both approaches (coupled with the problematic data) is that even if they identify changes in the data values – whether major or minor – they do not allow understanding what *specific* reforms might have led to these data changes. Neither they allow understanding the nature, the size, or the scope of such reforms. However, given the specificity of labour market reforms, as compared to, say, reforms of financial or product markets, size and scope determine whether the reforms are complete or partial, whether they create two-tier systems and apply to the whole labour market or only some of its segments, and whether they are incremental or discrete. These aspects of reforms have significant implications not only for labour market outcomes, but also for the way the impact of the reforms should be analysed (Boeri, 2011).

The authors do not explain identified reforms. We attempted to do so, by having a closer look both at the data and at the experiences of countries identified as reformers. For example, from Table 1, Georgia features as a reformer in 2005. Examination of the Fraser data suggests that, indeed, an important change occurred from year 2004 to 2005 in the *hours regulations* sub-component. However, if one refers to the World Bank Doing Business Reports¹⁶, that is, to the original source of data used by Fraser, one will find that no changes happened between 2004 and 2005. Georgia indeed had a very important reform, but it took place in 2006, not in 2005 (World Bank, 2006), and concerned numerous aspects of labour relationships, not just hours regulations. We could not identify where the Fraser data changes between 2004 and 2005 came from.

At the time, the World Bank qualified Georgia’s 2006 reform as “the most far-reaching reform of labour regulation”, named Georgia as a “top-performer”, and praised the reform for “help[ing] workers move to better jobs” (ibid). In reality, this reform provoked an outcry of both the national and international community, including the ILO and the European Union, as its adoption was imposed without tripartite social dialogue. The new Labour Code contravened International Labour Organisation conventions, which the country had ratified (Muller, 2012). As a result of collaboration between the ILO, the Government of Georgia and the social partners in the years that followed, Georgia substantially amended its Labour Code in 2013, bringing it to greater compliance with International Labour Standards. Notably, the Labour Code of 2013 contains new articles on the grounds and procedures for terminating employment legislation absent from the 2006 Labour Code.

The methods employed by BFG (2012a) also fail to identify actual reform processes – at least with the data at hand. For example, significant reforms towards flexibilization took place in Poland in 2003, in Croatia in 2004, and in Lithuania in 2003-2004. In Poland in 2003, a new Labour Code and accompanying provisions changed procedures for dismissing permanent workers, allowed for a wider use of temporary contracts, and

¹⁶ We closely reviewed World Bank Doing Business Reports 2005, 2006, and 2007, which, correspondingly, report data as of January 2004, 2005, and 2006.

substantially modified rules for collective dismissals. In Croatia, the Labour Code of 2004 modified notice periods, severance pay, and modalities of collective redundancies, considerably reducing separation costs borne by the employer. In Lithuania, the Labour Code of 2003, and a set of resolutions adopted in 2004, further liberalized the termination of an employment contract without any fault on the part of an employee (for details, see country-specific chapters in Cazes and Nesporova, 2007). None of these reforms appear in the reforms list of BFG (2012a) (Table 1), despite the inclusion of these countries and time periods in their analysis (the full list of covered countries and years is contained in BFG, 2012b).

Clearly, research aimed at assessing the impact of reforms should be based on data and methods that allow identifying the timing, content, and implementation modalities of such reforms.

3.2. Equating flexibility with institutional quality

Beyond data issues, one may also question the overall approach to understanding labour market regulations common to the reviewed papers. They interpret higher values of the Fraser labour market regulations index as regulations of “better quality”. Notably, BFG (2012a) suggest that “The higher the quality of the existing labour market institutions, the less likely a country is to implement such a reform [towards flexibility]. Presumably, an economy with already flexible labour markets would not be in need of implementing further reforms, and would therefore be less likely to go through such an episode”, p.14. Furceri (2012) further states that “improvements in the quality of labour market regulations that allow for a higher degree of flexibility have a statistically significant negative effect on unemployment”, p.9.

This view is surprising for three reasons. Firstly, by equating more “flexible” institutions with “better quality”, such approach confounds the analysis of quantity with the analysis of quality, and presumes that countries with non-existent labour market regulations have their best quality. Instead of being focused on “rigid” versus “flexible”, assessment of quality should focus on such aspects as the adequateness of labour regulations, their compliance with fundamental principles of civil rights (Sari and Kucera, 2011), minimum international standards (Berg and Cazes, 2008), degree of enforcement and enforceability (Bertola et al., 2000), extent of coverage and awareness among workers (Lee and McCann, 2011), or their relevance in the presence of large informal economies. All of these issues are particularly relevant for developing countries. Regrettably, these concepts seem to be absent both from the Fraser 2010 data, and from the analysis of the IMF papers.

Secondly, this view also presumes that the “initial state” is overly protective institutions which should be reduced. However, institutions and regulations emerged and developed progressively, from none at all to sophisticated systems that exist nowadays, and not the other way around (for a non-exhaustive but highly relevant list of overviews see Skedinger, 2010; Rodgers et al., 2009; Vaughan-Whitehead, forthcoming). Moreover, many of the regulations and institutions are explicitly aimed at improving worker-employer relationships (Berg and Kucera, 2008),¹⁷ with benefits for both employees and employers that include higher stability in employment relationships and lower transaction costs of screening and training new personnel (Cazes and Nesporova, 2007), improvements

¹⁷ For a review of explanations behind the reasons for which employment protection legislation exists, see Skedinger, 2010.

in job quality (Fenwick et al. 2007), lower absenteeism and better workers' effort (Jimeno and Toharia, 1996), and higher investment into job training (Almeida and Aterido, 2008).

Finally, this view assumes linearity of regulations' impact on labour market outcomes. However, research shows that both excessive and insufficient regulation is problematic for productivity, efficiency, and employment. In this light, a "high quality" regulation would not be the one with the lowest level, but the one which balances the need to provide fair treatment and income security to workers with the employment adjustment possibilities of firms (Cazes et al, 2013; World Bank, 2013b).

4. Concluding remarks

This paper provided a critical overview of the data and of the methodology for identifying labour market reforms used in a series of recent IMF papers.

It showed that four out of six sub-components of the Fraser 2010 labour market regulations index used in the analysis of four IMF paper feature various flaws, and in addition, there are important flaws in the Fraser data aggregation. Given these considerations, (BFG, 2012 a, b) based on dis-aggregated problematic sub-components, as well as (BFG, 2012 a, b; Furceri, 2012) based on the composite Fraser indicator do not provide a basis for understanding the link between labour market regulations, their reforms, and unemployment. Rather they risk encouraging policymakers to make hasty and ill-informed reforms on sensitive political issues with far-reaching economic and social consequences.

The only statistically less problematic Fraser 2010 sub-components are *conscription* and *hiring and firing* indicator. They are found to have a significant impact on some labour market outcomes (BFG, 2012 a, b; Crivelli, Furceri and Toujas-Bernat , 2012). As argued in this paper, conclusions based on these variables alone cannot be viewed as sufficient neither to design nor to reform hiring and firing rules or other related labour market institutions. Further research is needed to properly understand the role of hiring and firing regulations, as well as the impact of their reforms on unemployment, particularly at times of crises.

This paper has also shown that future research should interpret more carefully available data, apply more suitable methods for testing the impact of labour market reforms, and take a more adequate approach to understanding the quantity and quality of regulations. There is also a need for better data, which would allow a clearer understanding of the reform processes, what segments of labour markets they concern, and what specific reforms are truly beneficial.

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Table 1. Replicating reforms identified in BFG, 2012a (sorting by year)

Set of Reforms identified by BFG (2012a)	Year	Replications using authors methodology	Replications excluding missing values of sub-components	Replications excluding missing values of sub-components and conscription
(1)	(2)	(3)	(4)	(5)
Spain	2001	YES		
Australia	2002	YES		
Austria	2002	YES		
Belgium	2002	YES		
Bulgaria	2002	YES		
Canada	2002	YES		
Chile	2002	YES		
Ireland	2002	YES		
Italy	2002	YES		
Jamaica	2002	YES		
Japan	2002	YES		
Jordan	2002	YES		
Poland	2002	YES		
Russia	2002	YES		
Singapore	2002	YES		
Slovak Rep	2002	YES		
Colombia	2002	YES		
Czech Republic	2002	YES		
Denmark	2002	YES		
Egypt	2002	Almost		
Finland	2002	YES		
Mexico	2002	YES		
Netherlands	2002	YES		
New Zealand	2002	YES		
Sweden	2002	YES		
Switzerland	2002	YES		
Tunisia	2002	YES		
Ukraine	2002	YES		
United Kingdom	2002	YES		
United States	2002	YES		
Uruguay	2002	YES		
Slovenia	2003	YES	YES	
Mauritius	2003	YES		
Hungary	2004	YES	YES	
Portugal	2004	YES	YES	
Bolivia	2005	YES		
Chile	2005	YES	YES	
Georgia	2005	YES	YES	YES
Italy	2005	YES	YES	
Czech Republic	2005	YES	YES	
Mali	2005	Almost	YES	YES
Bahrain	2006	YES		
Latvia	2006	YES	YES	
Montenegro	2006	YES	YES	YES
Bulgaria	2007	YES	YES	

Burkina Faso	2007	YES	YES	YES
Malawi	2007	Almost	YES	YES
Romania	2007	YES	YES	
Cyprus	2007	YES		
Rwanda	2008	YES		
Macedonia	2008	YES	YES	YES
Montenegro	2008	Almost	YES	YES
Peru	2008	Almost	YES	YES
Total number of reforms:	53	48-53	17	8

Source: Own computations based on Fraser Database, 2010.

Note: See Sub-section 2.3 for more details. To replicate the reforms, we followed the BFG 2012a methodology, and computed the average annual change in labour market flexibility (equal to 0.0989), and the standard deviation of the average annual change (equal to 0.439). Combining the two, countries with average annual change lying above the threshold of 0.9769 could be considered as the ones with reforms. As we worked with the full sample of 141 Fraser countries, while BFG worked only with 97 countries, we were able to reproduce 48 out of 53 reforms. The remaining 5 reforms could be easily identified as lying around this threshold (all of them have average annual change value between the threshold values of 0.9 and 0.9769, or less than 10% of the double standard deviation of the annual change) – these are the ones highlighted as “Almost” replicated.

Table 2. Fraser 2010 Report: Comparing Selected Years for Bahrain

Year	5Bi Hiring regulations and minimum wage	5Bii Hiring and firing regulations	5Biii Centralized collective bargaining	5Biv Hours Regulations	5Bv Mandated cost of worker dismissal	5Bvi Conscriptation	5B Labour market regulations
2006	10	3.7	8.3	10	9.6	10	8.6
2005	.	3.2	7.9	.	.	10	7.0

Source: Fraser Database, 2010.

Annex 1. Definitions of sub-components, extracted from Fraser report 2010

(i) minimum wage: referred to as “Hiring and firing regulations and minimum wage” in Fraser 2010 report - This sub-component is based on the World Bank’s Doing Business, Difficulty of Hiring Index, which is described as follows: “The difficulty of hiring index measures (i) whether fixed-term contracts are prohibited for permanent tasks; (ii) the maximum cumulative duration of fixed-term contracts; and (iii) the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker. An economy is assigned a score of 1 if fixed-term contracts are prohibited for permanent tasks and a score of 0 if they can be used for any task. A score of 1 is assigned if the maximum cumulative duration of fixed-term contracts is less than 3 years; 0.5 if it is 3 years or more but less than 5 years; and 0 if fixed-term contracts can last 5 years or more. Finally, a score of 1 is assigned if the ratio of the minimum wage to the average value added per worker is 0.75 or more; 0.67 for a ratio of 0.50 or more but less than 0.75; 0.33 for a ratio of 0.25 or more but less than 0.50; and 0 for a ratio of less than 0.25.” Countries with higher difficulty of hiring are given lower ratings. Note: This component previously measured only the minimum wage sub-component of the Difficulty of Hiring Index. From 2010, the data have been revised back to 2002. Source World Bank, Doing Business (various issues).

(ii) hiring and firing regulations: This sub-component is based on the Global Competitiveness Report’s question: “The hiring and firing of workers is impeded by regulations (=1), flexibly determined by employers (=2)”. The questions’ wording has varied slightly over the years. Source: World Economic Forum, Global Competitiveness Report (various issues).

(iii) centralized collective bargaining: This sub-component is based on the Global Competitiveness Report’s question: “Wages in your country are set by a centralized bargaining process(=1) or up to each individual company (=7)”. The question’s wording has varied slightly over the years. Source: World Economic Forum, Global Competitiveness Report (various issues).

(iv) mandated cost of hiring: This sub-component does not exist in Fraser Report 2010. It can be found in earlier editions of Fraser data (2007-2009). In Fraser Report 2010, this sub-component is replaced by “Hours regulations”, though in the accompanying data file, the variable was not renamed explicitly (see Appendix 2). “Hours regulations” is based on the World Bank’s Doing Business, Rigidity of Hours Index, which is described as follows: “The rigidity of hours index has 5 components: (i) whether there are restrictions on night work; (ii) whether there are restrictions on weekly holiday work; (iii) whether the work-week can consist of 5.5 days; (iv) whether the work-week can extend to 50 hours or more (including overtime) for 2 months a year to respond to a seasonal increase in production; and (v) whether paid annual vacation is 21 working days or fewer. For questions (i) and (ii), when restrictions other than premiums apply, a score of 1 is given. If the only restriction is a premium for night work and weekly holiday work, a score of 0, 0.33, 0.66, or 1 is given according to the quartile in which the economy’s premium falls. If there are no restrictions, the economy receives a score of 0. For questions (iii), (iv) and (v), when the answer is no, a score of 1 is assigned; otherwise a score of 0 is assigned.” Countries with less rigid work rules receive better scores in this component. This component was previously named “Mandated cost of hiring a worker” and was based on the World Bank’s Doing Business data on the cost of all social security and payroll taxes and the cost of other mandated benefits, including those for retirement, sickness, health care, maternity leave, family allowance, and paid vacations and holidays, associated with hiring an employee. Because of the pressure from ILO this

indicator was dropped from Doing Business project. In order to maintain as much consistency over time as possible, the data have been revised back to 2002 with these data replacing the previous values. Source World Bank, Doing Business (various issues).

(v) mandated cost of worker dismissal: This sub-component is based on the World Bank's Doing Business data on the cost of the advance notice requirements, severance payments, and penalties due when dismissing a redundant worker [Redundancy Cost]. The formula used to calculate the zero-to-10 ratings was: $(V_{max} - V_i) / (V_{max} - V_{min})$ multiplied by 10. V_i represents the dismissal cost (measured in weeks of wages). The values for V_{max} and V_{min} were set at 108 weeks (1.5 standard deviations above average) and zero weeks, respectively. Countries with values outside of the V_{max} and V_{min} range received ratings of either zero or 10 accordingly. Source: World Bank, Doing Business (various issues)

(vi) conscription: Data on the use and duration of military conscription were used to construct rating intervals. Countries with longer conscription periods received lower ratings. A rating of 10 was signed to countries without military conscription. When length of conscription was six months or less, countries were given a rating of 5. When length of conscription was more than six months but not more than 12 months, countries were rated at 3. When length of conscription was more than 12 months but not more than 18 months, countries were assigned a rating of 1. When conscription periods exceeded 18 months, countries were rated zero. Source: International Institute for Strategic Studies, The Military Balance (various issues); War Resisters International, World Survey of Conscription and Conscientious Objection to Military Service.

Annex 2. Extracts from Fraser spread sheets

1) Fraser 2003 Data Edition, Sheet “2001”.

This is the first time Fraser reports data for 2001

	A	BF	BG	BH	BI	BJ	BK
1		AreaV-B(i)	AreaV-B(ii)	AreaV-B(iii)	AreaV-B(iv)	AreaV-B(v)	AreaV-B
2	Countries	5Bi Impact of minimum wage	5Bii Hiring and firing practices	5Biii Labor force share with wages set by centralized collective bargaining	5Biv Unemployment insurance	5Bv Use of conscripts	5B Labor Market Regulations
3	Albania					10	
4	Algeria					1	
5	Argentina	4.4	2.4	5.1	6.0	10	5.6
6	Australia	4.5	4.2	6.0	4.7	10	5.9
7	Austria	4.6	3.9	4.5	5.2	3	4.2
8	Bahamas					10	
9	Bahrain					10	
10	Bangladesh	4.6	5.0	6.8		10	6.6

2) Fraser 2010 Data Edition; Sheet “2001”.

As can be seen, this is the exact reproduction of previously reported data

	A	BB	BC	BD	BE	BF	BG	BH
1	Countries	5Bi Impact of minimum wage	5Bii Hiring and firing practices	5Biii Labor force share with wages set by centralized collective bargaining	5Biv Unemployment insurance Mandated hiring costs	5Bv Mandated dismissal costs	5Bvi Use of conscripts	5B Labor Market Regulations
2	Albania						10	
3	Algeria						1	
4	Angola							
5	Argentina	4.4	2.4	5.1	6.0		10	5.6
6	Armenia							
7	Australia	4.5	4.2	6.0	4.7		10	5.9
8	Austria	4.6	3.9	4.5	5.2		3	4.2
9	Azerbaijan							
10	Bahamas						10	

3) Fraser 2010 Data Edition; Sheet “2002”.

As can be seen, three variables are changed; one extra variable is added (Mandated Dismissal Cost). This creates an important break in the data series – both for three changed sub-components, and for the aggregate indicator of Labour Market Regulations (last column)

	A	BB	BC	BD	BE	BF	BG	BH
1	Countries	5Bi Hiring Regulations and Minimum Wage Minimum wage	5Bii Hiring and firing regulations	5Biii Centralized collective bargaining	5Biv Hours Regulations Unemployment insurance Mandated hiring costs	5Bv Mandated dismissal costs	5Bvi Use of conscripts	5B Labor Market Regulations
2	Albania	5.6	4.0	5.2	8.0	5.6	10	7.3
3	Algeria	4.4	4.0	5.2	6.0	8.4	1	4.8
4	Angola	1.1			4.0	4.6		
5	Argentina	6.7	1.5	5.7	8.0	0.0	10	5.3
6	Armenia	10.0			8.0	8.4		
7	Australia	8.9	4.7	6.2	6.0	9.6	10	7.6
8	Austria	8.9	4.0	2.8	6.7	9.8	3	5.9
9	Azerbaijan	6.7			8.0	8.0		
10	Bahamas						10	

Source: Fraser Database, 2003; 2010.

Note: reproduced data sheets are unaltered, as can be downloaded from the Fraser Institute website http://www.freetheworld.com/datasets_efw.html (Link last accessed in January 2014). Crossed-out words are originally contained in Fraser 2010 data. To preserve space, only first ten countries are reported; there are more countries in the 2010 Fraser database than in the 2003 database.