Answer to first Referee Report dp 2015-21

First, let's start by thanking the referee for the comments. I think that the paper will benefit from addressing these comments and I hope to have the opportunity to submit a revision of the paper that takes into account the points made by the referee. In what follows, I rewrite what I interpret as the main referee's comments and try to provide a brief answer to them and to explain how a new version of the paper could deal with them.

1. In the view of the referee, it is not clear why the productivity of permanent contracts increase with job experience while it doesn't happen in temporary contracts. Since there is also job tenure in temporary contracts, it should also affect the labour productivity of this type of contracts.

There are some recent empirical studies that support these assumptions (see, for instance, Dolado and Cabrales, 2014, and European Commission, 2014). Using the Spanish micro data from the Programme for the International Assessment of Adult Competencies (PIAAC), Cabrales and Dolado (2014) document how the excessive gap in employment protection between permanent and temporary workers lead to large differentials in on-the-job training against the latter, and they also find that the lower specific training received by temporary workers is correlated with lower literacy and numeracy scores achieved in the PIAAC study, that is, with lower productivity growth.

According to Cabrales and Dolado (2014), the underlying mechanism leading to this productivity gap relies on the large turnover rate among temporary workers induced by the much less stringent employment protection legislation (EPL) they enjoy relative to permanent workers. Given this EPL differential firms prefer to use temporary contracts in sequence rather converting them into permanent contracts. By the same token, workers lack the right incentives to improve on their job performance by accumulating better productive capabilities. As a result, the expected job duration of temporary workers becomes too short, therefore making firms more reluctant to invest in their training. By contrast, the much more stringent EPL enjoyed by permanent workers increases their expected job duration, making firms more eager to invest in them.

There are some other related works focused on the Spanish case that examine the effects of segmentation in the labour market on productivity growth and training. One of the first papers addressing this issue is Sánchez and Toharia (2000) who, on the basis of the main implications of a standard efficiency wage model, use data from the Survey of Business Strategies (SBS) for the period 1991-1994 to estimate the relationship between the rate of temporary work and labour productivity growth. Specifically, they regress average labour productivity on the rate of temporary work at the firm level, plus other controls, finding a negative relationship between both variables. Similar results have been obtained by Alonso-Borrego (2010) and Gonzalez and Miles (2012) using the Firms' Balance Sheets of the Bank of Spain (CBBE) and the SBS, respectively.

Regarding the relationship between dualism and the incidence of occupational training in Spain, it is worth highlighting the work of Alba-Ramirez (1994) and De la Rica et al. (2008). In both cases, they document that firms invest less in training temporary workers given their high turnover rates. This result is also in line with the findings by Arulampalam et al. (2004) that Spain is one of the countries where being on a fixedterm contract is associated with lower training, in their cross-country study on the determinants of training using the European Community Household Panel over the period 1994-1999. 2. The referee says that it is difficult to understand why temporary and new permanent contracts receive the same subsidy.

I entirely agree with the referee and I think that the way I have presented the subsidy in Equations (2) and (3) is confusing. The referee is right in the sense that only new permanent contracts should receive the permanent employment promotion subsidy. Strictly speaking, the subsidy should only appear in Equation (3) and the penalty should disappear from these equations.

I have made some abuse of notation in the Model Section because I wanted to use these equations also for the first years under the "Enterpreneur's permanent contract" (EPC) introduced in the 2012 reform, although, strictly speaking, these equations should be modified because the superscript should be a "p" (to indicate a permanent contract) and not a "t" (which indicates a temporary contract). That is why, in the text I said "only if the firm qualifies to", a sentence that was implicitly referring to the particular case of an Enterpreneur's permanent contract.

To avoid this confusion, I will eliminate the subsidy from Equation (2) and also the penalty from Equations (2) and (3), and I will rewrite the appropriate equations in Section 3.3 when I explain the introduction of the "Enterpreneur's permanent contract", which involves a subsidy that is paid annually in the first three years of the contract and some penalties if the worker is dismissed before reaching a certain tenure. The equations for the first three periods will be very similar to Equation (2), except for the subsidy, the penalty and the superscripts that should be "p" to indicate that this is a permanent contract instead of a "t", which stands for temporary contract.

3. The referee does not understand why firms do not have the possibility to provide onthe job training to temporary workers and suggest endogeneizing on the job training, especially if the model results are sensitive to this assumption.

The answer to this comment is connected to the answer to the first one. As the referee also notes the empirical evidence for Spain strongly supports the argument that workers with permanent contracts receive higher on the job training than workers with temporary positions (see point 1 above).

Given that evidence and the fact that, even after the 2012 labour market reform, the gap in severance costs between permanent and temporary contracts remains relatively high, I do not think it is necessary to change the model assumption that firms only provide on the job training once the temporary contract is converted into a permanent one.

I also think that it would be very meaningful to endogeneize the human capital investment decision if a more drastic reform would be analyzed. For instance, a more drastic reduction in the gap in severance costs or the introduction of a unified or a single contract with indemnities growing with tenure in a smoother way. This type of reform would certainly eliminate the incentives to massively destroy jobs at the beginning of the period where the temporary contract has to be converted into a permanent contract and would surely make much more attractive to provide on the job training earlier. In fact, when García-Pérez and Osuna (2014) study the effects of the introduction of a single contract, they make the ad hoc assumption that firms bring forward their human capital investments to periods one and two, leading to an increase in productivity from those periods forward, based on the argument that the elimination of temporary contracts may induce firms to provide on the job training earlier. The results obtained in that scenario are quantitatively higher in terms of the reduction in

unemployment, the decrease in the job destruction rate and the smoothing effect on the tenure distribution.

For the question at hand, instead of endogeneizing the human capital investment decision, which is quite cumbersome in this framework, I could perform a sensitivity analysis concerning the timing of the human capital investment decision made by firms to provide a sense of the range of plausible results. Note that the results obtained so far should be considered as a lower bound of the changes in the variables of interest.

In the actual version of the paper, the robustness exercise concerning the value of the training cost parameter was performed because there are no good measurements of this parameter. Its calibration relies on the association of productivity and wages and its value needs to be calibrated using the simulated method of moments. In Section 4.5 I indicate that the results are quite robust for plausible values of this parameter. I also show in Table 7 how much would the quantitative predictions of the model change for the range of plausible values.

4. The referee indicates that the labour productivity should also be affected by the level of training provided by the firms. The referee suggests eliminating the training cost parameter from the model and just assume the presence of a productivity gap between temporary and permanent contracts.

I entirely agree with the referee regarding the first comment. That is why I assume that workers on temporary contracts are less productive than workers on permanent contracts. This assumption is introduced in the model through the productivity gap parameter. Again, the empirical evidence mentioned in the first point here supports this assumption. I also use my calibration sample to calibrate this parameter which I set to 14% based on the ratio between wages for permanent and temporary workers with equal experience.

Unfortunately, the suggestion of eliminating the training cost parameter from the model and just assume the presence of a productivity gap between temporary and permanent contracts, does not work. It is very difficult to eliminate the training cost and to simultaneously match the amount of job destruction in the status quo. Note that, as the value of the training costs gets lower the incentives to convert temporary contracts intro permanent contracts increase. In order to match the massive job destruction at the beginning of period four in the status quo, a very large and implausible productivity gap between temporary and permanent workers needs to be assumed.

5. Finally, the referee encourages the author to include other variables such as the job creation rate, job conversion as well as the share of temporary contracts in order to better understand the changes in the degree of duality.

I agree with the referee on the whole. In the next version of the paper these statistics will be provided.

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