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How can carbon policies impact unemployment?

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The ongoing financial crisis has hit Europe hard. The unemployment is skyrocketing, particularly in Southern Europe. At the same time, it is urgent for the EU to implement ambitious climate policy measures, to be able to meet its targets for the next few years. EU aims at reducing greenhouse gas emissions by 20% in 2020 compared to 1990, developing its EU Emissions Trading System (EU ETS), and setting binding targets for renewable energy sources and Carbon Capture and Storage. There is deep concern about the job loss and social costs of a stricter climate policy. Are climate policies compatible with Europe's pressing need for jobs?

Carbon policies have both positive and negative potentials on unemployment. The negative relate to the costs of putting a price on carbon or setting a regulation on greenhouse gases and, thereby, forcing abatement. Costs increase as more expensive energy sources or technologies will be used. This will potentially give loss of competitiveness if not all countries introduce climate policies. The result will inevitably be lower activity and higher unemployment, particularly in sectors exposed to competition from abroad.

However, climate policies also have positive effects as they correct environmental damages. For greenhouse gas abatement the benefits will come in the future. However, more immediate productivity effects can occur, as auxiliary abatement effects on sulphur, particulates etc. can have local health benefits. Further, as proposed by Porter and van der Linde [1], environmental regulation can induce innovative activities that create new jobs.

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An additional positive effect on employment can be attained by recycling the revenue from carbon taxation or emissions permit sales back to the economy in ways that stimulate employment. Most jurisdictions directly and indirectly tax labour through income, pay roll and value added taxation. By swapping these bases for greenhouse gas emissions, increased employment and welfare can result. However, the conditions for environmental policy to yield such employment dividends are restrictive [2,3], and empirical studies tend to find only small, if any, effects of shifting taxes from labour to the environment [4, 5, 6, 7, 8, 9]. The results depend, e.g., on factor endowments, including the composition of the labour force, the factor intensities of the various industries, the substitution possibilities, and the functioning of the labour market.

We have studied the Spanish potential for employment dividends. The country faces extraordinary high unemployment. This autumn, the rate reached a record high of 25.2%, with the rate among unskilled labour being more than the double of the skilled. Meanwhile, meeting the country's commitments in the ongoing Kyoto period 2008-2012, and beyond as part of the EU, is extremely challenging. In the Kyoto period Spain's emissions have been, on average, 27.9% higher than the 1990 level, which is well above its Kyoto commitment of 15% [10]. Moreover, the financial crisis limits the set of fiscal policies available. Thus, the combined emission, unemployment and public budget challenges make Spain special in the European context.

Crucial questions in this situation are whether and how a well-designed market for emissions permits can provide employment dividends, given that the government collects the revenue and recycles it back to the economy. Our answers are based on a general equilibrium model analysis [11] of an economy-wide permit market. We distinguish between the low and high skilled labour force.

Our first finding is surprisingly good news. Even when we do not count in the recycling effects, the loss of competitiveness associated with the permit system hardly reinforces Spanish unemployment. The reason is that the greenhouse gas intensive part of the Spanish economy is not particularly labour intensive. In fact, wage reductions take place and they have positive employment effects that more than offset the negative effects of carbon pricing. A carbon policy without recycling resembles the current practice within the EU ETS, where the major part of the permits is allocated for free. That leaves little revenue for strategic recycling. However, as these allocation arrangements gradually will be phased out for most industries, the possibility for recycling the revenue to create employment increases.

When revenue from carbon tax or auctioning of quotas is recycled, we find that unemployment can be reduced. A general lowering of pay-roll tax rates generates a small employment dividend in the Spanish economy. However, the employment dividend is sensitive to the design of the recycling scheme. Reducing the pay-roll tax only for workers with little education increases the aggregate unemployment rate. The beneficial effects for the low-skilled group are more than offset by increased unemployment among those with higher education.

We find that reducing pay-roll tax rates for the educated part of the labour force has the largest potential for employment dividends; the fall in the unemployment rate is three times larger than when all labour is targeted. A main explanation is that the tax cuts will be more substantial as the educated group is relatively small. Also, the supply elasticities are lower for this skill group, so that the employment effects are not significantly counteracted by increased supply. However, there is a serious

distributional trade-off: the larger and less educated part of the labour force will now face higher unemployment rates.

Though our results for Spain are more promising than the research literature tends to find for other countries, they clearly show that emissions permit auctioning is a blunt employment instrument. The employment dividends are indirect and small, and we have identified distributional trade-offs. Further, the short-term unemployment effects are more severe than long-term analyses like ours indicate. Employment creation through structural change takes time, and time is short for Spain to improve its job opportunities. Moreover, collecting and recycling carbon revenue are hard to do under the current European budget crisis. Increasing taxes will probably be difficult to justify unless they are used to reduce the public deficit. The high unemployment rates should, therefore, be addressed directly by policy instruments designed specifically for this target and not rely on carbon policies.

Climate concerns are naturally not on top of the agenda in the European countries at the moment. Having an economically and socially stable future is more important for Europeans than the future climate. But the European Union has quite demanding goals for greenhouse gas emissions and renewable energy for the next few years, which means that the countries will have to address it.

Small comfort can be found in the fact that the recession reduces the demand for fossil fuels, and thereby lowers greenhouse gas emissions and prices of emissions permits in the EU ETS [10, p 43-49]. This renders European greenhouse gas emission targets more feasible.

References:

[1] Porter M E, van der Linde C. Towards a New Conception of the Environment-Competitiveness Relationship. *Journal of Economic Perspectives* 9; 97-118 (1995).

[2] Wagner T. Environmental policy and the equilibrium rate of unemployment. *Journal of Environmental Economics and Management* 49; 132–156 (2005).

[3] Bovenberg AL, van der Ploeg F. Tax reform, structural unemployment and the environment. *Scandinavian Journal of Economics* 100, 593–610 (1998).

[4] Mors M. Employment, revenues and resource taxes: Genuine link or spurious coalition? *International Journal of Environment and Pollution* 5; 118–134 (1995).

[5] Majocchi A. Green fiscal reform and employment: A survey. *Environmental and Resource Economics* 8; 375–397 (1996).

[6] Bosquet B. Environmental tax reform: Does it work? A survey of the empirical evidence. *Ecological Economics* 34, 19–32 (2000).

[7] Patuelli R, Nijkamp P, Pels E. Environmental tax reform and the double dividend: A meta-analytical performance assessment. *Ecological Economics* 55; 564-583 (2005).

[8] Markandya A. Environmental implications of non-environmental policies. In: *Handbook of Environmental Economics Volume 3*, 1353-1401. Mäler KG, Vincent JR (Eds). North-Holland Elsevier, Amsterdam (2005).

[9] Lawn P. Ecological tax reform and the double dividend of ecological sustainability and low employment: An empirical assessment. *International Journal of Environment, Workplace and Employment* 2, 332-358 (2006).

[10] European Environment Agency. Greenhouse gas emission trends and projections in Europe 2012 - Tracking progress towards Kyoto and 2020 targets. EEA Report No 6/2012, Copenhagen.

[11] Fæhn T, Gomez-Plana AG, Kverndokk S. Can a carbon permit system reduce Spanish unemployment? *Energy Economics* 31, 595-604 (2009).