



Cohesion policy and inequality dynamics: Insights from a heterogeneous agents macroeconomic model

H. Dawid^{a,b,*}, P. Harting^a, M. Neugart^c

^a Department of Business Administration and Economics, Bielefeld University, PO Box 100131, Bielefeld 33501, Germany

^b Center for Mathematical Economics, Bielefeld University, Germany

^c Department of Law and Economics, Technische Universität Darmstadt, Germany

ARTICLE INFO

Article history:

Received 6 November 2015

Revised 11 January 2018

Accepted 22 March 2018

Available online 27 April 2018

JEL classification:

C63

O33

Keywords:

Cohesion policies

Technology adoption

Agent-based model

Inequality

Heterogeneity

ABSTRACT

Regions within the European Union differ substantially not only with respect to per capita GDP, but also with respect to income inequality within the regions. This paper studies the effects of different types of technology-oriented cohesion policies, aiming at the reduction of regional differences, on the convergence of regions and the dynamics of income inequality within regions. In particular, policies are analyzed using a two-region agent-based macroeconomic model – the Eurace@Unibi model – where firms in the lagging region receive subsidies for investment in physical capital. It is demonstrated that the short-, medium- and long-term effects of the policies on per-capita output and between- as well as within-regional inequality differ substantially. Effects depend on how successful the policy is in incentivizing firms to choose best available capital vintages and on how flexible labor markets are in the targeted region.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

There is considerable inequality in terms of per capita income between European Union members states. Countries from Central Eastern Europe and Southern Europe are facing substantially lower per capita incomes than those from Western and Northern Europe. Moreover, we do not only observe income gaps between countries but unequally distributed incomes within countries.¹ Inter- as well as intra-regional inequality contributed to a questioning of the European integration project and also has put governments of single countries under pressure. Policymakers are striving for measures to alleviate these problems and a major pillar for fostering convergence of regions has been the European Regional Development Funds (ERDF). Empirically, however, the effectiveness of cohesion policy measures is contested, with recent evidence pointing towards the important role of the institutional set-up of the recipients to make these policies work (Becker et al., 2013).

Since the eastern enlargement of the EU also the countries from Central Eastern Europe have access to these policy measures. These countries lag behind the Western European countries in terms of their per capita incomes. Moreover, in these countries income inequality seems to have increased since the fall of the iron curtain. Besides, Eastern European countries differ from the old member states in various other respects that may be important for the effectiveness of the

* Corresponding author at: Department of Business Administration and Economics, Bielefeld University, PO Box 100131, 33501 Bielefeld, Germany.

E-mail addresses: hdawid@wiwi.uni-bielefeld.de (H. Dawid), pharting@wiwi.uni-bielefeld.de (P. Harting), neugart@vwl.tu-darmstadt.de (M. Neugart).

¹ For more details, see our discussion in Section 3.

cohesion policies. In particular, with respect to their labor markets, it seems that a higher pressure is put on the unemployed to accept job offers² and higher efforts seem to go into the activation of the unemployed (OECD, 2007). Also, the absorptive capacity to turn the transfers in per capita growth may differ in these countries from the old European countries due to a lack of human capital in the workforce.

In this paper, we analyze to which extent technology-oriented cohesion policies can help fostering convergence of per-capita incomes between regions and how they affect intra-regional income inequality. We analyze the outcomes of the technology policies on convergence and income inequality with respect to the flexibility of the labor market in the region receiving the transfers and the targeted region's absorptive capacity. Furthermore, we examine how the effectiveness of a technology-oriented policy is affected by the actual design of the policy. In particular, we compare policies that are able to incentivize firms to purchase technologies on the frontier with such that support investments regardless of the chosen technology level.

The analysis is done within a multi-regional version of the Eurace@Unibi agent-based macroeconomic model. We believe that an agent-based macroeconomic model is the most appropriate tool to gain insights into the emergent dynamics of average per capita incomes and the income distributions in these regions. The focus on implications of the policy on income inequality requires an approach able to capture the evolution of heterogeneities within households and firms in a region. Recent empirical work highlights the importance of heterogeneity of firms for the explanation of income inequality in a region (Faggio et al., 2010). Moreover, existing empirical evidence on the effect of labor market institutions on income inequality has been contested, mainly for inappropriateness of econometric models and alternative approaches from artificial sciences have been called for (Freeman, 2008).

A crucial feature of the Eurace@Unibi model is that it captures the complementarity between the quality of physical capital and specific skills of the workforce in determining a firm's productivity. This feature in combination with the endogenous vintage choice of firms and the fact that workers' specific skills evolve through on-the-job-learning, which depends on the quality of the employer's physical capital, gives rise to endogenously emerging heterogeneity in productivity across firms within a region. It also leads to persistent differences in productivity distributions and growth rates between the two regions. The approach seems well able to capture the effect of different policies on income inequality (among workers) within regions and between regions, which is hard to do in dynamic equilibrium models based on assumptions of representative agents.

Within this framework we explore the implications of policies which resemble measures implemented within the European Regional Development Fund (ERDF). The ERDF aims at strengthening economic and social cohesion in the European Union.³ Technology policies are a major pillar of the ERDF that, by subsidizing firms' investments, try to move countries closer to the technological frontier. In particular, the program tries to foster investment of firms in advanced technologies in the target region, thereby improving the average quality of the physical capital stock.⁴ Empirical evidence for a success of the directed measures, in the sense of an improvement of the average quality of the firms' physical capital is, however, missing.

Taking a calibrated version of our model as a starting point, we apply technology-oriented policies to the lagging low-tech region under different scenarios of labor market flexibility. We are able to identify a set of results with respect to the convergence of regions and the effect on between and within regional income distribution. Moreover, the technology policies that are analyzed are differentiated along their effectiveness in incentivizing firms to actually purchase investment goods from the technological frontier. We refer to a policy as *non-directed* if it provides investing firms with subsidies, but does not influence their technology choice. We label policies as *directed* if they affect the decisions of a certain fraction of firms in a way that it increases their incentives to acquire vintages at the technological frontier. Our main findings are summarized in Table 1. They show that the technology policy needs to be directed in order to foster convergence. Furthermore, such directed policies are also able to reduce the inequality within the target region.

We will turn to an in-depth analysis of the economic mechanisms underlying these findings in Sections 5.3–5.5. The main intuition for the observed policy effects is that in the framework of our model the high-tech region is characterized by a concentration of the (endogenous) distribution of firm technologies in the vicinity of the technological frontier, whereas in the lagging region this distribution is further spread out reaching also well below that frontier. This stronger heterogeneity of firms in the lagging region does not only correspond to larger wage inequality but also to a stronger heterogeneity of workers' reservation wages making it difficult for firms in the lower part of the technology distribution to expand their labor force. Therefore, policies, like non-directed subsidies or demand-oriented measures, in the lagging region, which aim to foster investment and expansion of output of firms in the lagging region without incentivizing them to move their technology closer to the frontier, result in an increase of rationing of firms on the labor market and associated upward pressure

² New EU member states tend to have lower replacement rates than in Western European countries (van Vliet and Caminada, 2012).

³ In total the ERDF had a budget of Euro 201bn for the period between 2007 and 2013. As all these programs are matching funds the actual amount spent has to be doubled.

⁴ For illustrative purposes we sketch an example highlighting what we have in mind when analyzing policies in our agent-based macroeconomic model. Here, a Portuguese firm with about 500 employees received investment subsidies to improve on the quality of its capital stock. The firm extracts ore and produces copper, lead and zinc concentrates. With the funds it modernized its infrastructure to boost extraction of copper ore by constructing new galleries to expand access to the ore, and upgraded the plant's processing operations that included facilities to wash the rock, treat and recycle water, and process waste material. Source: http://ec.europa.eu/regional_policy/en/projects/portugal/turning-copper-to-gold

Download English Version:

<https://daneshyari.com/en/article/7242533>

Download Persian Version:

<https://daneshyari.com/article/7242533>

[Daneshyari.com](https://daneshyari.com)