

Undermining the principle of concentration? EU development policies and the socio-economic disadvantage of European regions

Crescenzi, Riccardo

Postprint / Postprint

Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:

www.peerproject.eu

Empfohlene Zitierung / Suggested Citation:

Crescenzi, R. (2009). Undermining the principle of concentration? EU development policies and the socio-economic disadvantage of European regions. *Regional Studies*, 43(1), 111-133. <https://doi.org/10.1080/00343400801932276>

Nutzungsbedingungen:

Dieser Text wird unter dem "PEER Licence Agreement zur Verfügung" gestellt. Nähere Auskünfte zum PEER-Projekt finden Sie hier: <http://www.peerproject.eu> Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

gesis
Leibniz-Institut
für Sozialwissenschaften

Terms of use:

This document is made available under the "PEER Licence Agreement". For more information regarding the PEER-project see: <http://www.peerproject.eu> This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Mitglied der

Leibniz-Gemeinschaft



Undermining the principle of concentration? EU development policies and the socio-economic disadvantage of European regions

Journal:	<i>Regional Studies</i>
Manuscript ID:	CRES-2006-0221.R2
Manuscript Type:	Policy Debates
JEL codes:	O18 - Regional, Urban, and Rural Analyses < O1 - Economic Development < O - Economic Development, Technological Change, and Growth, R11 - Regional Economic Activity: Growth, Development, and Changes < R1 - General Regional Economics < R - Urban, Rural, and Regional Economics, R58 - Regional Development Policy < R5 - Regional Government Analysis < R - Urban, Rural, and Regional Economics
Keywords:	Regional Policy, Regional development, Socio-economic factors

SCHOLARONE™
Manuscripts

Undermining the principle of concentration? EU regional policy and the socio-economic disadvantage of European regions

RICCARDO CRESCENZI

Robert Schuman Centre for Advanced Studies, European University Institute, Via delle Fontanelle 19, 50024 San Domenico di Fiesole, Italy; and Dipartimento di Economia, Università degli Studi Roma Tre, Via Silvio d'Amico 77, 00145 Rome, Italy

E-mail: rcrescen@uniroma3.it

First received: September 2006

Accepted: October 2007

Abstract

This paper sets out to analyse the regional policy of the European Union by assessing whether the actual distribution of funds to the regions undermines the principle of territorial concentration. The empirical analysis shows that, due to either political equilibriums or inaccurate assumptions about the most cost-effective allocation of the funds, the sources of structural disadvantage are more spatially concentrated than the funds devoted to compensating this disadvantage and reveals a weak association between socio-economic disadvantage and EU funding. Corrections in allocation mechanisms are recommended in order to increase fund concentration and more adequately earmark resources to disadvantaged regions.

Keywords: Regional Policy, Regional development, socio-economic factors, European Union, Regions, Economic Growth

JEL Classifications: C24, O18, R11, R58

Saper le principe de la concentration? la politique régionale de l'Union Européenne et le désavantage socio-économique des régions européennes

RICCARDO CRESCENZI

Résumé

1
2 L'auteur analyse la politique régionale de l'Union Européenne en cherchant à savoir si la répartition
3 actuelle des crédits pour les régions s'appuie sur le principe de la concentration territoriale. L'analyse
4 empirique montre que du fait des équilibres politiques ou d'hypothèses inexactes concernant
5 l'affectation la plus rentable des fonds, les sources de désavantage structurel sont plus concentrées,
6 dans l'espace, que les fonds consacrés à compenser ce désavantage ; elle révèle également une
7 association faible entre le désavantage socio-économique et le financement de l'UE. L'auteur
8 recommande de corriger les mécanismes d'affectation afin d'augmenter la concentration des
9 financements et de mieux réserver les ressources pour les régions désavantagées.
10
11

12
13
14
15
16
17
18 Mots-clés : politique régionale, développement régional, facteurs socio-économiques, Union
19 Européenne, régions, croissance économique.
20

21 **Classement JEL** : C24, O18, R11, R58
22
23
24

25 **Ein Verstoß gegen das Prinzip der Konzentration? Die Regionalpolitik der EU und** 26 **der sozioökonomische Nachteil europäischer Regionen** 27

28 RICCARDO CRESCENZI
29
30
31

32 Abstract

33 In diesem Beitrag wird die Regionalpolitik der Europäischen Union im Hinblick auf die
34 Frage bewertet, ob die tatsächliche Verteilung von Finanzmitteln unter den Regionen
35 gegen das Prinzip der territorialen Konzentration verstößt. Aus der empirischen Analyse
36 geht hervor, dass aufgrund von politischen Gleichgewichten oder unzutreffenden
37 Annahmen über die kosteneffektivste Zuteilung von Mitteln die Quellen struktureller
38 Nachteile räumlich stärker konzentriert sind als die zum Ausgleich dieses Nachteils
39 aufgewendeten Mittel; ebenso zeigt sich eine schwache Verknüpfung zwischen
40 sozioökonomischen Nachteilen und einer EU-Finanzierung. Es werden Korrekturen an den
41 Zuweisungsmechanismen empfohlen, um die Konzentration der Finanzmittel zu erhöhen
42 und Ressourcen für benachteiligte Regionen adäquater zuzuweisen.
43
44
45

46 Keywords:

47 Regionalpolitik
48 Regionalentwicklung
49 Sozioökonomische Faktoren
50 Europäische Union
51 Regionen
52 Wirtschaftswachstum
53
54
55

56 JEL Classifications: C24, O18, R11, R58
57

58 ¿Socavando el principio de concentración? Política regional de la UE y la desventaja
59 socioeconómica de las regiones europeas
60

RICCARDO CRESCENZI

Abstract

En este artículo analizo la política regional de la Unión Europea evaluando si la distribución actual de los fondos para las regiones socava el principio de la concentración territorial. Los análisis empíricos demuestran que, debido a equilibrios políticos o suposiciones inadecuadas sobre la asignación de fondos más rentables, las fuentes de desventajas estructurales están más concentradas espacialmente que los fondos destinados a compensar esta desventaja e indica una endeble asociación entre la desventaja socioeconómica y la financiación de la UE. Se recomiendan correcciones en los mecanismos de asignación para aumentar la concentración de fondos y más adecuadamente para asignar recursos a regiones desfavorecidas.

Keywords:

Política regional

Desarrollo regional

Factores socioeconómicos

Unión Europea

Regiones

Crecimiento económico

JEL Classifications: C24, O18, R11, R58

1.0 Introduction

The debate over the EU budget 2007-2013 made clear the need for an in-depth understanding of the structure and the impact of EU development funds. A more effective targeting of the scarce regional resources in response to the real needs of EU countries and regions would deliver greater results – and justify this use of public money – especially at a time when the eastward enlargement of the EU is, on the one hand, reducing the available resources in comparison to the target areas and, on the other, increasing economic disparities across member states. The urgency for a highly cost/effective EU regional policy has stimulated a significant amount of scientific work aiming at assessing the structure, implementation and impact of the policy and identifying potential room for further improvement. As suggested by Batchler and Wren (2006): “During the past 15 years, the Cohesion Policy of the European Union has become one of the most intensively evaluated policies in Europe” (p.143). However, notwithstanding this activity, major methodological barriers have prevented the literature from reaching a consensus on the magnitude of the impact of structural funds on territorial cohesion (Bradley, 2006). In particular what makes it conceptually hard for “macro-models” to extract the pure impact of structural expenditure from the “background of all the other domestic and external shocks that affect the economy at the same time” (Bradley p.189), is the lack of an appropriate counterfactual scenario (“what would have happened without an active regional policy? Could even more inequalities have possibly arisen?”). Such counterfactual analysis while crucial for any policy assessment (Colin and Wren, 1999; Wren, 2005), is hard to construct and heavily dependent upon the assumptions that underlie it. In addition there are also major difficulties associated with the quality of the data available for any evaluation exercise (Baslé, 2006; Martin and Tyler 2006).

On the basis of these considerations this paper has approached the assessment of the EU structural policy from a different standpoint i.e. by focusing its attention upon the *à priori* structure of the policy rather than upon its impact. In so doing, the paper focuses its attention on one of the “core

1
2 principles” of the structural funds since the 1989 reform: concentration and, in particular, territorial
3
4 concentration. In 2004 the publication of the Third Cohesion Report (CEC 2004) presented
5
6 concentration, together with programming and partnership as the “core principles” FOR improving
7
8 the effectiveness of structural expenditure. However, the same report concluded that, as concerns
9
10 concentration, “in the sense of focusing funds on the areas most in need, (...) evaluations suggest
11
12 that resources are still sometimes spread too widely and thinly” (CEC 2004 p.xxii). In this
13
14 perspective this paper sets out to test the existence of an *à priori* bias in the geographical allocation
15
16 of the funds that undermines the principle of concentration and prevents intervention from fully
17
18 targeting the real sources of competitive disadvantage of the EU regions. In line with this objective
19
20 the paper analyses the regional allocation of the EU funds in order to assess whether (and to what
21
22 extent) it is consistent with the factors that have been shown to hamper the local economy’s
23
24 capability to grow and develop at an adequate pace. In order to reach this objective the paper aims
25
26 at bringing together two separate strands of literature: the literature on the analysis of the regional
27
28 policies of the EU and that on the role of underling socio-economic conditions in explaining
29
30 differential regional growth performance. While the results of some of the former are biased by the
31
32 counterfactual problem discussed above, the latter has rarely been fully exploited for the purpose of
33
34 drawing direct economic policy implications.
35
36
37
38
39
40
41

42 This paper aims at filling the gap between these two strands of literature by directly comparing the
43
44 socio-economic preconditions for successful regional development with the correlated allocation of
45
46 structural funds. On the basis of the evidence provided by the literature and in order to maximise its
47
48 chance of success, EU regional funds should be allocated according to the geography of such
49
50 sources of competitive disadvantage. In other words, given that a set of socio-economic conditions
51
52 have been shown to be factors hampering the economic success of many EU regions, the EU funds
53
54 should be allocated in order to “compensate” the structural disadvantage of the assisted areas.
55
56
57
58
59
60

1
2 This paper aims at assessing precisely this potential bias in the geographical allocation of the
3 structural funds (Objective 1 and 2) in both the 1994-1999 and 2000-2006 programming periods¹ in
4 order to shed some light on the coherence of the policy hitherto pursued and draw some
5 implications for the future evolution of European regional policy.
6
7
8
9

10
11 More specifically, in this paper:

- 12
13 a) the spatial concentration of structural expenditure is analysed. A low degree of spatial
14 concentration of regional funds would contradict the principle of territorial concentration
15 introduced in the 1989 reform of the funds as an important prerequisite for their
16 effectiveness;
17
18 b) the spatial concentration of EU funds is contrasted with an indicator of the socio-economic
19 disadvantage of the EU regions. This analysis will allow us to investigate the coherence of
20 the EU regional policies in terms of the structural disadvantage of EU regions thus
21 uncovering a potential inconsistency between policy objectives (favouring disadvantaged
22 areas) and the beneficiaries of the funds;
23
24 c) an empirical model to assess to what extent regional funds are, in fact, associated (in a
25 statistically significant way) with the above-mentioned sources of competitive disadvantage
26 is developed;
27
28 d) a simple convergence analysis is pursued in order to show that increasing the concentration
29 of the funds and investing in the most disadvantaged areas could be the best strategy to
30 promote cohesion.
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

49 A weak territorial concentration and a reduced correlation between the geographical allocation of
50 the funds and the structural disadvantage would suggest that even before their operational
51 translation into actual development policies, the impact of the funds may have been reduced by the
52 inability to correctly select their targets i.e. the regions where socio-economic disadvantage is more
53 severe.
54
55
56
57
58
59
60

¹ As will be discussed when presenting the dataset, major data limitations prevented us from including the 1989-93 programming period.

1
2
3
4 This paper is organized into five further sections. In the first section the approach adopted in the
5 paper will be placed in the context of the academic literature on EU regional policy thus showing
6 how the analysis of the spatial allocation of the funds can highlight inconsistencies in the structure
7 of the policy that existing analyses have overlooked. In addition, the sources of regional socio-
8 economic disadvantage identified by the literature on regional growth in the EU are briefly
9 reviewed thus allowing us to single out some simple indicators to be used as a benchmark for the
10 assessment of the correlation between structural funds and needs of the regions. In the second
11 section the methodology followed to assess the spatial structure of both funds and socio-economic
12 disadvantage is presented and an empirical model to measure the correlation between regional funds
13 and socio-economic disadvantage outlined. In the third section the empirical results are discussed.
14 The fourth section discusses some implications for the design of regional policies. The final section
15 sets out some conclusions.
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

2.0 Regional policy and structural disadvantage

2.1 The EU regional policy, its objectives and the inconsistencies potentially reducing its impact

The European Community Treaty states that “(...) the Community shall aim at reducing the disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas” (Article 158). The same objective is included in the EU draft Constitution (article III-220).

The financial resources devoted to the pursuit of this objective have grown substantially over the years: from ECU 68 billion (at 1997 prices) allocated by the Brussels European Council in 1988 for the 1989-1993 period to the Euro 195 billion (at 1999 prices) of the 2000-2006 programming period² (European Commission website). Altogether the expenditure for regional policy is particularly significant when assessed as a percentage of the GDP of many lagging regions: 2.7% (of national GDP) in Greece, 2.8% in Portugal, 1% in Spain, 0.7% in Ireland in the year 2000 (E.C. 2000).

However, even if the amount of resources devoted to the objective of promoting an “overall harmonious development” of the Union has not been negligible, the empirical literature has been unable to reach a consensus on the influence that the expenditure of such resources has had on the actual level of territorial cohesion of the EU. Although a comprehensive review of the terms of this debate lies outside the scope of this paper, we shall, nevertheless, refer to some of these empirical analyses - irrespective of their final conclusions on actual policy impact – in order to highlight the factors that may have prevented the policy from maximising its impact on territorial cohesion.

While Leonardi (2006) finds that the policy has “favoured the convergence of less developed regions toward the EU mean in terms of annual economic growth, employment level and unemployment between 1988 and 1999 and thereafter” (p.164) with a general trend towards convergence both at the national and at the regional level, Martin and Tyler (2006) – where

² In addition the Cohesion Fund distributes resources for about €2.5 billion per year from 2000 to 2006, for a total of €18 billion (at 1999 prices).

1
2 assessing the possible effect of the policy on cumulative regional employment by explicitly
3
4 addressing the counterfactual problem - conclude that “at the very worst, the Structural Funds may
5
6 have helped to prevent a further widening of employment gap between the Objective 1 regions and
7
8 the prosperous regions” (p.209). Conversely, other authors have emphasized both the lack of
9
10 upward mobility of Objective 1 regions (which remained almost the same between 1989 and 2005
11
12 with a few exceptions³) and the absence of convergence across EU regions in contrast with the
13
14 convergence observed across the member states that dominated the past twenty-five years of
15
16 European growth (Boldrin and Canova, 2001; Magrini, 1999; Puga, 2002): a process of “club
17
18 convergence” would seem to be in place across the EU regions, leading to the formation of clusters
19
20 of regions with persistently different income levels (Canova, 2004; Quah, 1996 and 1997).
21
22
23
24

25
26 In the light of this debate, some empirical studies have attempted to explicitly address the different
27
28 factors that may influence the capacity of regional policy to deliver its intended benefits, by
29
30 providing an important tool for the improvement of actual policies. Midelfart-Knarvik and Overman
31
32 (2002)’s analysis highlights the potential distortion generated by structural funds on the location
33
34 decisions of R&D intensive firms. Structural funds provide an incentive for firms to locate in
35
36 assisted regions with a poor endowment of human capital, producing an inefficient outcome for
37
38 both firms (that cannot benefit from an adequate labour pool in the local area) and workers (who do
39
40 not benefit from an increase in labour demand due to the skill mismatch). Thus, EU aid should be
41
42 focused “on helping regions change their endowments and specialize according to the resulting
43
44 comparative advantage” (p.352). Albeit produced using different theoretical frameworks⁴, this
45
46 evidence is not far removed from the results of Cappelen et al. (2003), who conclude that the impact
47
48 of structural funds is positive but “crucially dependent on the receptiveness of the receiving
49
50 environment” (p.640). In line with these results, Bondonio and Greenbaum (2006) find that
51
52
53
54
55
56
57

58
59
60 ³ Abruzzo (Italy) lost its Objective 1 status in 1997. A few regions and areas lost their Objective 1 status with the 2000-2006 programming period but received transitional support under Objective 1 of the Structural Funds for the period from 1 January 2000 to 31 December 2005 or 2006 (Commission Decision 1999/502/EC).

⁴ While Midelfart-Knarvik and Overman (2002) focus on the determinants of firms’ location, Cappelen et al. (2003) develop a “new growth theory” model with a Schumpeterian perspective.

1
2 Objective 2 programmes have proven more effective where pre-policy disadvantage is less
3
4 accentuated. These findings emphasize the role of relatively more favourable contextual
5
6 conditions/endowments, which in turn, lead to a paradoxical situation whereby EU funds fail to
7
8 work precisely where they are most needed.
9

10
11 Rodríguez-Pose and Fratesi (2004) by more directly assessing the impact of structural funds on
12
13 regional growth performance, find that such an impact crucially depends on the distribution of
14
15 resources across development axes. The closer fund allocation addresses contextual conditions, i.e.
16
17 by being channelled towards human capital enhancement, the more its effects tend to be positive
18
19 and significant while this is not the case when other objectives are pursued (i.e. infrastructure
20
21 development).
22
23
24

25
26 The evidence briefly reviewed above suggests the potential efficiency-loss caused by any
27
28 “operational” mismatch between policy targets and the real needs of the lagging regions when
29
30 financial resources are divided among the different axes and then translated into concrete actions. In
31
32 this paper we aim to contribute to this debate by, instead, analysing the potential “spatial”
33
34 mismatches between areas where the factors of disadvantage are concentrated and areas where the
35
36 resources are being channelled by a policy design which may *à priori* reduce the funds’ capability
37
38 of delivering the expected benefits and tackling the “structural deficiencies in key factors of
39
40 competitiveness” (CEC 2004). As a consequence, the paper will follow the existing literature and
41
42 contribute to the ongoing debate by assessing a specific potential weakness of the EU regional
43
44 policy and suggesting how potential improvements can be made. This will be done from a
45
46 perspective that tends to be overlooked by the existing literature i.e. by focusing on the *à priori*
47
48 allocation of the funds rather than on their ex-post impact. The empirical analysis of the
49
50 convergence process of the EU regions will bring to light the importance of an allocation of funds
51
52 that really reflects the actual socio-economic disadvantage (or “structural deficiencies” in
53
54 Commission’s words) of the EU regions.
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

2.2 Territorial concentration and correlation with structural disadvantage: a necessary pre-condition for policy impact.

Structural funds are designed to foster economic and social cohesion in the EU by promoting the economic development of lagging regions (Objective 1) and assisting economic and social restructuring in areas experiencing structural difficulties (Objective 2). However, “since 1994 the connection between poor nations and structural spending has been greatly diluted (as) large parts of Finland and Sweden were designated as eligible, and even some Austrian regions, together with all of the former East Germany” (Baldwin and Wyplosz, 2006, p.242). This process may be the result of the tendency of spatially targeted policy to spread and lose focus over time (Greenbaum and Bondonio, 2004), thus suggesting that “while making territorial discriminations, EU cohesion policy (...) has essentially been a policy for economic and social development for much of the last 30 years” (Bachtler and Polverari, 2007, p. 107). It was the pressure for setting aside budget resources aimed at financing the eastward enlargement of the EU that forced a reduction in both the areas eligible for assistance and community initiatives in the Agenda 2000 reform of the structural funds (Armstrong, 2001). Such a reduction was explicitly inspired by the principle of territorial and financial concentration: i.e. the relatively scarce resources for the EU regional policies should be channelled more specifically to where they are most needed in order to maximise their effectiveness. Over time the need for an increase in the geographical concentration of the structural funds expenditure has become progressively more apparent and “concentration” has been re-asserted, within the “framework for cohesion policy 2007-2013”, among the key leading principles for the new programming period⁵.

But why is geographical concentration so important for the impact of the policy? Intuitively a smaller number of beneficiaries may allow a larger amount of resources to flow in selected regions.

⁵ COMMUNICATION FROM THE COMMISSION, Brussels, 05.07.2005 COM(2005) 0299, “Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013”, p.8.

1
2 However, not only is the level of expenditure in the objective region relevant in itself but also that
3
4 in its neighbouring regions (Dall'Erba, 2005). By this we mean that the spatial externalities
5
6 produced by the implementation of regional development programmes of whatever nature need to
7
8 be taken into account because an insufficient spatial "concentration" of the funds may decrease their
9
10 impact by reducing the amount of such externalities "flowing" within the assisted areas. In this
11
12 respect Bradley (2006) highlights that without such external effects there is no evidence of long
13
14 term benefits from the structural funds: Structural Funds (SFs) externalities boost the impact of the
15
16 SFs programmes while "benefits from structural funds *in isolation* are modest thus drawing
17
18 attention to the fact that the real, long-term benefits of the SFs are more likely to be associated with
19
20 the way in which each of the lagging economies responds to opportunities arising in the rest of the
21
22 EU" (p.197).
23
24
25
26

27
28 In addition, the importance of the "capacity to respond" to external opportunities suggest that the
29
30 spatial structure of the funds needs to be assessed in combination with the underlying socio-
31
32 economic conditions of the assisted regions. In order to maximise their impact the funds should be
33
34 directed where persistent factors of disadvantage prevent the local economy from fully expressing
35
36 its potential (Mairate 2006) i.e. the geography of the funds should reflect as much as possible the
37
38 geography of the structural disadvantage of the EU regions.
39
40
41
42

43 44 **2.3 Where are the funds most needed? Evidence from the literature.**

45
46 A specific set of factors has been shown by the literature to act as structural sources of competitive
47
48 disadvantage for the local economy. Lagging regions in the EU, notwithstanding their, in many
49
50 respects, profound differences, share a common set of analogous social conditions whose role is
51
52 emphasized by the economic restructuring accelerated by the process of European integration
53
54 (Rodríguez-Pose, 1998a). While some economic factors (such as capital and technology) seem more
55
56 able to adjust to the challenges of the EU integration (by virtue of their relatively higher mobility),
57
58 social structures tend to be much less flexible. Consequently, it is possible to identify a specific set
59
60

1
2 of “structural” conditions that are persistently associated with poor economic performance and
3
4 which are very slow to adjust themselves endogenously. These factors concern, to different extents,
5
6 features of the labour force, the employment of local resources, demographic structure and change,
7
8 and the accumulation and quality of human capital (Rodríguez-Pose, 1998b).
9

10
11 However, the distinctive role of underlying socio-economic conditions must be assessed in a
12
13 theoretical framework where, in line with the Lisbon Agenda⁶, innovation is explicitly considered
14
15 the driving force for growth. The objective of an innovation-based growth model for the Union has
16
17 guided the implementation of the EU structural policies and the assessment of their results since the
18
19 year 2000. With the drawing up of the Community Strategic Guidelines “Cohesion Policy in
20
21 Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013” - which set out a
22
23 framework for new programmes for the current programming period - “knowledge, innovation and
24
25 the optimisation of human capital” are explicitly assumed as means whereby Europe can “renew the
26
27 basis of its competitiveness, increase its growth potential and its productivity and strengthen social
28
29 cohesion” (Presidency conclusions, European Council, March 2005 and incipit of the above-
30
31 mentioned Community Strategic Guidelines). In addition the role played by the cohesion policy in
32
33 pursuing the Lisbon agenda has increased in 2007-2013 programming period Financial Perspective,
34
35 which concentrated expenditure on the Lisbon objectives (Presidency conclusions, European
36
37 Council, December 2005).
38
39
40
41
42
43

44 In this political framework a variety of contributions have reformulated Romer’s endogenous
45
46 growth model in order to explicitly recognise growth as a multivariate process where human capital
47
48 accumulation but also sectoral specialisation of the labour force, migration, university education
49
50
51
52
53
54

55
56 ⁶ The European Council, which met in Lisbon in 2000, set the goal of making the EU “the most competitive and
57
58 dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs
59
60 and greater social cohesion” (Presidency Conclusions, par. 5). The regional dimension of social cohesion is, together
with full employment, explicitly mentioned as the ultimate expected outcome of the strategy. Crucially, the Lisbon
strategy relies on the capability of knowledge to be translated into growth in order to deliver economic development.
Furthermore, by focusing policy efforts on the creation and diffusion of knowledge, growth is not only supposed to be
increased but also qualitatively improved in terms of sustainability, quality of employment, and (social and regional)
cohesion.

1
2 and geographical location emerge as relevant factors for economic performance (Fagerberg et al.
3
4 1997; Cheshire and Magrini, 2000).

5
6 More generally, the role of socio-economic conditions in the translation of innovation into regional
7
8 growth has been treated in a systematic way by the introduction of the concept of the “social filter”
9
10 (Rodríguez-Pose, 1999): the interaction of a complex set of economic, social, political and
11
12 institutional features that makes some regions “prone” and others “averse” to innovation.
13

14
15 In line with the evidence produced by this strand of literature, the multifaceted socio-economic
16
17 conditions of the EU regions are introduced in our analysis by means of a set of variables describing
18
19 the local socio-economic realm. Innovation averse socio-economic conditions, by persistently
20
21 hampering the growth capabilities of some areas, trace out the geography of the structural
22
23 disadvantage of the EU territories (Rodríguez-Pose and Crescenzi 2008; and Crescenzi, Rodríguez-
24
25 Pose and Storper 2007 for an EU-US comparative analysis). As a consequence, it seems reasonable
26
27 that in terms of both equity and efficiency, the geographical allocation of regional funds should
28
29 follow the spatial structure of these factors. Thus, regarding equity, such a distribution of resources
30
31 across regions should compensate the residents of “disadvantaged” regions for unfavourable
32
33 starting conditions (Bachtler and Polverari, 2007). And in terms of efficiency, giving adequate
34
35 attention to the structural sources of competitive disadvantage of assisted regions seems the most
36
37 effective way of promoting the full employment of local resources.
38
39

40
41 Altogether spatial concentration and correlation with the factors of disadvantage are necessary –
42
43 though not sufficient - conditions for “ensuring that the impact of Structural Funds is not dissipated
44
45 through resources being spread too thinly (...) geographically (...), while at the same time making
46
47 sure that all regions with serious structural problems receive assistance” (CEC 2004, p. 164).
48
49
50
51
52

53
54
55
56 **3.0 Where do the funds actually go? Assessing their territorial concentration and the**
57
58 **coherence of their geographical allocation.**
59
60

1
2 In the previous section we discussed the importance of the territorial concentration and
3
4 geographical distribution of the funds in relation to the structural disadvantage of the EU regions for
5
6 the success of any EU policy aimed at promoting regional convergence. This section sets out to
7
8 outline an empirical strategy to investigate the spatial structure of the allocation of the EU structural
9
10 funds and their relationship with the sources of structural disadvantage discussed in the previous
11
12 section. The descriptive spatial analysis of both phenomena will be followed by an empirical
13
14 analytic model that singles out the importance (statistical significance) of the socio-economic
15
16 factors in driving the distribution of the EU structural funds (Objective 1 and 2) under both the
17
18 1994-1999 and 2000-2006 programming periods, in order to shed some light on the coherence of
19
20 the policy hitherto pursued.
21
22
23
24

25
26 In this section the methodology followed in the analysis is briefly presented together with the
27
28 corresponding dataset. The empirical results are discussed in the fourth section.
29
30
31
32

33 **3.1 A measure for socio-economic conditions: the “Socio-Economic Factors” variable**

34
35 The variables that the existing literature has shown to be more relevant for describing the socio-
36
37 economic disadvantage of a regional space – as discussed above - are those related to three main
38
39 domains: educational achievements (Lundvall, 1992; Malecki, 1997), the productive employment of
40
41 human resources and its demographic structure (Fagerberg et al. 1997). From the first domain,
42
43 tertiary educational attainment (of both the population and the labour force) and participation in
44
45 lifelong learning programmes are assumed as a measure for the accumulation of skills at the local
46
47 level. In the second domain, the percentage of labour force employed in agriculture and the long-
48
49 term component of unemployment are included in the analysis in order to capture the amount of
50
51 human resources excluded from productive employment. Long term unemployment represents the
52
53 incidence of people whose possibilities of being productively involved in the labour market are
54
55 persistently hampered by inadequate skills (Gordon, 2001). Agricultural employment is frequently
56
57
58
59
60

1
2 synonymous with “hidden unemployment”⁷ and a backward structure of the local economy
3
4 (Federico, 2006). For the third domain, the percentage of population aged between 15 and 24 is
5
6 assumed as a proxy for the flow of new resources entering the labour force, thus “renewing” the
7
8 existing stock of knowledge and skills (European Commission 2006) (see Appendix A for a
9
10 detailed description of the variables). These factors are autonomously introduced into the analysis
11
12 in order to assess their individual weight. However, in order to assess their “global” relationship
13
14 with the allocation of structural funds, while minimising the problems of multicollinearity⁸, the
15
16 socio-economic variables are combined by means of Principal Component (PC) Analysis (Jolliffe,
17
18 1986). Consequently, the set of variables discussed above is “reduced” to an individual variable that
19
20 is able to preserve as much as possible of the initial information (variability) (see Appendix B for
21
22 the results of the PC analysis and technicalities). Such procedure allows to handle an individual
23
24 variable that “summarizes” the multifaceted nature of the socio-economic conditions of each region.
25
26 In the remaining part of the paper, this variable will be referred to as the “Socio-Economic Factors”
27
28 variable.
29
30
31
32
33
34
35
36
37

3.2 The empirical model for the allocation of funds across regions

38
39 The empirical model aims at estimating a “hidden” decision function of the European policy maker
40
41 in the allocation of the structural funds across regions. Such a “decision function” would reflect the
42
43 “rationale” of the policy, uncovering the coherence of the policy design with the identified sources
44
45 of structural disadvantage. The final decision on the allocation of the funds is the result of a
46
47 complex set of interactions between the Commission, the Council and the member states (also
48
49 members of the Council) which may dilute the policy objectives originally set out in the strategic
50
51 policy guidelines. Once the specific objectives and fields of intervention of the regional policy are
52
53 translated into the necessary regulatory framework (Council Regulation) and general budget
54
55
56
57
58
59
60

⁷ Where long term unemployment tends to be persistently high and labour mobility low, less skilled workers tend to move to the countryside to be employed, with a very low marginal productivity, in (frequently family owned) small farms thus allowing an easier access to primary goods.

⁸ Which prevents their simultaneous introduction into the regression equation.

1
2 allocations (in their turn the result of complex multi-level bargaining process, see e.g. Bachtler and
3
4 Wislade, 2005 for a reconstruction of the 2007-2013 negotiation round) decided, the breakdown
5
6 by member state of the commitment appropriation are calculated, for Objective 1, on the basis of a
7
8 formula that takes into account the overall development of the country (national prosperity), the gap
9
10 between the GDP per capita of the country's eligible regions and the Community average (regional
11
12 prosperity) and the level of unemployment. This formula yields the "per capita aid" which is then
13
14 applied to the population of the Member State's eligible regions (those with a GDP per capita,
15
16 measured in purchasing power parities, below 75% of average Community GDP) thus providing the
17
18 commitment appropriations for each member state. Once the national amounts are defined, the
19
20 magnitude of each region's financial commitment is the result of the interaction between the
21
22 Commission and the national and regional plans and priorities.
23
24
25
26
27

28 These complex institutional procedures, leading to the actual allocation of the funds to the regions
29
30 often result in a final outcome not necessarily coherent with the principle of concentration evoked
31
32 in the general framework of the policy. As a consequence, the assessment of the territorial
33
34 concentration of the funds should not be limited to the designation of eligible areas but must also
35
36 take into account the actual financial allocations to the regions.
37
38
39

40 Coherently, our empirical model, by regressing the per capita regional commitments of the
41
42 structural funds on the sources of socio-economic disadvantage identified above, will allow us to
43
44 "measure" the role of these factors in the actual allocation of the funds. The reduced weight of these
45
46 factors in both the eligibility and the allocation decisions, which contradicts the principle of
47
48 territorial concentration, can reflect:
49
50

- 51 a) the predominant role of "power" factors in the design of the policy where the present
52
53 allocation of the funds might be the result of the political equilibrium reached in the
54
55 bargaining process between the Commission, the Council, the national governments, the
56
57 local governments and the various pressure groups (Lehman, 1994 suggests a "historical"
58
59 tendency of spatially targeted policy to be "diluted" over time. See also Bachtler and
60

1
2 Wishdale, 2005 and Bachtler and Mendez, 2007 for a comprehensive analysis of these
3
4 political dynamics in the negotiations for the various programming periods);
5

- 6
7 b) the willingness of the European policy-maker to privilege, in the distribution of the funds,
8
9 the relatively more advantaged regions on the basis of the (questionable, as we will discuss
10
11 later) assumption that this category of regions would show a better potential for growth and
12
13 development.
14

15
16 Two models will be estimated in the empirical analysis. A first model analyses the allocation of
17
18 Objective 1 and Objective 2 funds separately, while a second model considers the overall regional
19
20 distribution of the structural funds. Our methodology will, up to a certain extent, follow Greenbaum
21
22 and Bondonio (2004) who assess the territorial focus of spatially targeted policies in the US
23
24 (Federal Empowerment Zones) and in the EU (Objective 2 programmes). Greenbaum and Bondonio
25
26 develop an empirical model that estimates the probability that an area may become eligible for
27
28 policy support as a function of that area's pre-designation characteristics. However, in accordance
29
30 with our previous consideration, we have developed a more comprehensive model that assesses the
31
32 territorial focus of the policy by simultaneously taking into account the eligibility criteria and the
33
34 amount of funds allocated to this areas. Consequently, the first part of the empirical analysis is
35
36 based on a two-stage Heckman selection model (Heckman, 1979; Green, 2003). The first stage
37
38 determines "eligibility" as an Objective 1 (Objective 2) area. Such a decision is based on specific
39
40 criteria that should improve the territorial concentration of the funds and, *à priori*, select the most
41
42 disadvantaged areas according to each objective's "mission". However, such a decision can, in fact,
43
44 be biased for the reasons discussed above. Consequently, the first step of the Heckman selection
45
46 model aims at assessing, through a probit model, how the factors of socio-economic disadvantage in
47
48 fact influence the probability of a region of being assisted (or not). The model is estimated
49
50 separately for Obj1 regions and for Obj2 regions in both the programming periods considered.
51
52

53
54
55
56
57
58
59 The estimated model is the following:
60

$$w_i = Z_i' \gamma + \varepsilon_i \quad (1)$$

1
2 where

3
4 $w_i=1$ if the region i is an assisted region and $w_i=0$ if the region is not assisted;

5
6 and

7
8
9 $\Pr(w_i = 1) = \Phi(\gamma' Z_i)$ and $\Pr(w_i = 0) = 1 - \Phi(\gamma' Z_i)$;

10
11 where: $\Phi(x)$ is the normal cumulative distribution function; Z_i is a set of socio-economic
12 explanatory variables: the Socio-Economic Factors variable computed by means of Principal
13 Components Analysis, some of its individual components and a set of national dummy variables;
14
15 γ is a vector of parameters; and ε_i is the error term.

16
17 In a second step the level of support is regressed on its potential determinants while taking into
18 account the selection bias introduced in the sample by the *à priori* selection of eligible areas.

19
20 Consequently, the following second-step H-C OLS model is estimated:

21
22
23
24
25
26
27
28
29
30
$$y_i = \alpha' X_i + \varepsilon_i \quad (2)$$

31
32 Where $y_i (>0)$ is the level of per capita commitment in region i , α is a parameter vector, X are the
33 explanatory variables and ε_i is the error term. The set of explanatory variables includes: the socio-
34 economic conditions, a set of national dummy variables (to estimate a potential “national” bias in
35 the distribution of the funds) and the Inverse Mills Ratio (IMR). The IMR is calculated from the
36 first stage probit model and is used in the second step as an instrument for the latent variable that
37 determines whether an area is eligible or not. In other words the IMR links the participation of the
38 regions to the distributions of the funds (1st step) with the amount of funds received (2nd step).

39
40 The second part of the empirical analysis will focus on how socioeconomic factors drive the
41 observed level of total regional expenditure per capita (under both Objective 1 and Objective 2): the
42 “composition effect” generated by interaction of Objective 1 and Objective 2 expenditure might
43 even further “dilute” the policy targets.

44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
Consequently, we will estimate an OLS model regressing the commitment level per capita under
both Objective 1 and 2 on the socioeconomic variables and a set of national dummy variables:

$$y_i = \alpha' X_i + \varepsilon_i \quad (3)$$

Where y_i (that this time includes all the regions included in the sample) is the level of per capita commitments in region i , α is a parameter vector, X are the explanatory variables (socio-economic factors + national dummies) and ε_i is the error term.

3.3 The dataset

Since the objective of the analysis is to assess the coherence of the spatial allocation of structural funds with the sources of competitive disadvantage of the EU regions it is necessary to identify the most appropriate spatial scale of analysis in order to consider homogeneous and (to the extent possible) functionally “self contained” units in terms of both their capacity to receive funds (and exert political pressure for this purpose) and their socio-economic structure. Where funds are allocated to areas without any corresponding governance level and a reduced functional self-consistency, a leakage effect seems to prevail (due to the functional links of the area with the rest of the region) thus forcing us to assume that the entire region is a beneficiary of the funds. Consequently, given the constraint of data availability, but also for reasons of homogeneity and coherence in terms of the relevant institutional level discussed above, the analysis is based upon NUTS1 regions for Germany, Belgium and the UK and NUTS2 for all other countries⁹ (Spain, France, Italy, the Netherlands, Greece, Austria, Portugal, Finland). This choice for the unit of analysis, while coherent with the objective of focusing the attention on “self-contained” functional regions of institutional relevance, may seem in contrast with the areas actually eligible for Objective 2 funds: designated areas are groups of contiguous cities or towns. The adoption of such a fine geographical level has proven problematic for the empirical analysis of both the structure and the

⁹ Countries without a relevant regional structure (Denmark, Ireland, Luxemburg) were necessarily excluded from the analysis. In addition, regional data on many variables are not available for Sweden. As far as specific regions are concerned, no data are available for the French Départements d’Outre-Mer (Fr9). Uusimaa (Fi16) and Etela-Suomi (Fi17) were excluded from the analysis due to the lack of data on socio-economic variables. Etela-Suomi (Fi17) and Trentino-Alto Adige (IT31) were excluded from the analysis as they have no correspondent in the NUTS2003 classification, thus preventing us from matching data available only in the new NUTS classification. Islands (PT2 Açores, PT3 Madeira, FR9 Departments d’Outre-Mer, ES7 Canarias) and Ceuta y Melilla (ES 63) were excluded from the analysis as time-distance information, necessary for the computation of spatial weights (Appendix C), is not available.

1
2 impact of Objective 2 policies. The development of socio-economic indicators for actual Objective
3
4 2 designated areas would imply aggregating data from the appropriate NUTS5 level however - as
5
6 highlighted in almost all similar existing research on structural funds - comprehensive data for the
7
8 EU regions are only provided by Eurostat at the NUTS2 level (and, in some cases, not even at this
9
10 level). Consequently, all the “macro” analyses of structural policy have been forced to rely on a
11
12 larger (inevitably sub-optimal and partially arbitrary) scale of analysis (see Martin and Tyler 2006,
13
14 p.204; Baslé 2006 p.226; Armstrong and Wells 2006 p. 270; CEC 2004 p.168). While, in this
15
16 respect, our empirical analysis shares the limitation of all other empirical exercises on this same
17
18 topic, this constraint does not fundamentally bias the results of the analysis. Viewing a map of
19
20 Objective 2 areas it is immediately apparent that they cover a large part of the non-Objective 1 areas
21
22 thus making the average per capita commitment at the NUTS 2 level, a reasonably good proxy for
23
24 the actual commitment at the provincial or sub-provincial level. This idea is explicitly tested and
25
26 empirically confirmed by Greenbaum and Bondonio (2004) who analyse the correlation of
27
28 Objective 2 funds with their intended target in both NUTS3 level regions for the entire EU and in
29
30 NUTS5 regions for the case of Italy (for which they find appropriate data from national sources).
31
32 The results of the analysis are similar in the two cases but “at a finer geographical level it became
33
34 much more difficult to distinguish treated from untreated areas” (p.331) i.e. finding a correlation
35
36 between economic distress and Objective 2 eligibility. This evidence suggests that, when moving
37
38 the focus of the analysis from larger areas to small geographic units (without any functional
39
40 economic meaning) the level of correlation between funds and economic distress tends to decrease.
41
42 As a consequence, our analysis, by considering large institutionally relevant units of observation
43
44 may, at worst, overestimate the actual level of correlation. This potential upward bias of our results
45
46 further reinforces the claim for increasing concentration that we will put forth in the subsequent
47
48 analysis.
49
50
51
52
53
54
55
56
57
58
59
60

1
2 The data on the regional distribution of commitments¹⁰ for structural fund expenditure stems from
3
4 the European Commission website (Inforegio) and takes into account all structural funds¹¹. In
5
6 addition, the analysis relies upon an Annex of the EC report “The impact of structural policies on
7
8 economic and social cohesion 1989-99”. For the sake of comparability between programming
9
10 periods, Objective 1 and Objective 6 data, on the one hand, and Objective 2 and Objective 5b, on
11
12 the other, are combined together for the 1994-1999 commitments.
13

14
15 The Operational Programmes (OP) and Single Programming Documents (SPD) for both
16
17 programming periods have been associated to the appropriate NUTS region, providing the total
18
19 committed expenditure in each region. The total commitment has been divided by the average
20
21 population of the region during the respective programming period in order to obtain per capita
22
23 expenditure. Unfortunately the analysis could not cover the first cycle of regional policy (1989-
24
25 1993) since data on commitments provided by the European Commission (1997) do not include
26
27 regional information for Greece, preventing any *à priori* comparability with the analysis pursued
28
29 for the subsequent programming periods. Furthermore data on the socio-economic indicators for the
30
31 1988-89 reference year are only available for a few regions.
32
33

34
35 The data source for the socio-economic conditions of the EU regions is Eurostat’s REGIO databank
36
37 (see Appendix A for a detailed description of the variables). The year 1994 is assumed as reference
38
39 year for the socio-economic conditions variables in order to minimize any potential endogeneity
40
41 between higher (lower) funds and better (worse) socio-economic conditions.
42
43
44
45
46
47
48

49 **4.0 Empirical results**

50 **4.1 Spatial concentration: structural funds vs. socio-economic disadvantage**

51
52
53
54
55
56
57
58
59 ¹⁰ Only data for commitments rather than expenditure are available. However the use of commitments data is
60 coherent with our theoretical framework, as we aim at analysing the *à priori* structure of the policy rather than
estimating the impact of actual expenditure.

¹¹ The European Regional Development Fund (ERDF), the European Social Fund (ESF), the Guidance section of
the European Agricultural Guidance and Guarantee Fund (EAGGF-Guidance) and the Financial Instrument for fisheries
guidance (FIGS).

1
2 The analysis of the spatial distribution of the variables is pursued by calculating the value of
3
4 Moran's I (see appendix C for technicalities). Moran's I is a measure of the global spatial
5
6 autocorrelation of the variables (Cliff and Ord, 1981). When Moran's I is significantly different
7
8 from zero the variable of interest exhibits a systematic spatial pattern. A positive value of this index
9
10 from zero the variable of interest exhibits a systematic spatial pattern. A positive value of this index
11
12 means that areas with a high (low) level of per capita structural expenditure tend to cluster close to
13
14 other areas with high (low) expenditure. The same line of reasoning is valid for the factors of socio-
15
16 economic disadvantage, where a positive value of the index means a pattern of clustering of regions
17
18 with similar high/low values. The magnitude of the indicator provides a measure of the strength of
19
20 the spatial pattern i.e. the extent of the clustering process of similarly high/low values.
21
22

23 **[Insert Table 1 around here]**
24

25
26 Table 1 shows the value of Moran's I for regional expenditure under Objective 1 and 2 and for total
27
28 structural fund expenditure. The table shows that a clear spatial pattern is identifiable in the
29
30 distribution of both funds and indicators of socio-economic disadvantage. Moran's I is positive and
31
32 significant in all cases, thus showing a positive spatial autocorrelation: regions with a high (low)
33
34 level of expenditure (socio-economic disadvantage) tend to be clustered together. This result is in
35
36 line with the principle of concentration of funds repeatedly claimed by the European Commission.
37
38 However, if the results are examined in greater detail by considering the magnitude of the index, it
39
40 is possible to note, as was expected, that Objective 1 tends to be more concentrated than Objective 2
41
42 expenditure which seems to respond more weakly to this principle of concentration (in both the
43
44 programming periods). It must be noted, though, that the overall territorial concentration of
45
46 expenditure has increased after the Agenda 2000 reform of the structural funds: Moran's I for
47
48 Objective 1, Objective 2 and total expenditure has increased from one programming period to the
49
50 other thus confirming the capacity of this reform to impact upon the final outcome of the bargaining
51
52 process leading to the regional allocations of the funds. However, as we discussed in the previous
53
54 sections, the territorial concentration of the funds should be compared with that of the socio-
55
56 economic sources of competitive disadvantage. This benchmark is provided, in the last line of table
57
58
59
60

1
2 1, by the Moran's I for the Socio-Economic Factors variable which is calculated through the
3
4 Principal Component Analysis from the whole set of socio-economic variables previously
5
6 discussed. The comparison between the magnitude of Moran's I of the "Socio-Economic Factors"
7
8 and that of structural expenditure shows that socio-economic factors are more spatially concentrated
9
10 than structural funding. Thus, even if the territorial concentration of expenditure increased with
11
12 successive reforms of the structural funds it seems to be still insufficient when compared to the
13
14 spatial pattern of the sources of structural disadvantage. This provides the first evidence in support
15
16 of our hypothesis of there being a "spatial mismatch" between the factor of structural disadvantage
17
18 and regional funds, encouraging further analysis of the geographical allocation of the funds, and it
19
20 also confirms the possibility of achieving greater spatial concentration while allowing for the
21
22 regional allocation of the funds to be driven by the bargaining process between the Commission and
23
24 the national and regional governments. However, as argued in the previous section, the existence of
25
26 a clear spatial pattern in the allocation of the funds per se might not be sufficient for the policy to
27
28 deliver the expected benefits; closer adherence to the regional sources of structural disadvantage
29
30 might also be necessary.
31
32
33
34
35
36
37
38
39

40 **4.2 The drivers of the regional allocation of structural funds**

41
42 Following the specification presented in par. 3.2 we estimate a two-stage Heckman selection model
43
44 for the allocation of Objective 1 (Tab.2) and Objective 2 (Tab.3) funds, highlighting the weight of
45
46 the observed socio-economic factors in the "implicit" decision function for the regional allocation
47
48 of structural funds. The tables show the estimations results for the programming periods 1994-1999
49
50 (on the left hand side of the table) and 2000-2006 (right hand side). For each programming period
51
52 equations (1) and (2) are estimated by regressing the funds on the "Socio-Economic Factors"
53
54 variable (column a) and on some of its individual components¹² (column b).
55
56
57
58
59
60

¹² As noted previously multicollinearity prevents the simultaneous inclusion of all these variables into the regression.

1
2 When looking at the results for the Probit Selection Model (lower part of the tables), which analyses
3
4 the probability for a region of being eligible for Objective 1 (or Objective 2 in Tab.3) support, it
5
6 should be borne in mind that the magnitude of the parameters estimated by the probit technique
7
8 does not have a direct meaning in terms of the extent of the corresponding effect. However, the
9
10 parameters are informative as far as their signs and significance are concerned and provide
11
12 information on how the factors of socio-economic disadvantage in fact influence the probability of a
13
14 region of being assisted (or not)
15
16

17
18 **[Insert Table 2 around here]**
19

20
21 As regards Objective 1 funds (Tab.2), the Socio-Economic Factors variable shows a negative sign
22
23 and a high significance level in both the programming periods thus implying that favourable socio
24
25 economic conditions (i.e. a high value of the social factors variable) reduce, as expected, the
26
27 probability of being considered an eligible area (column a). This seems to confirm that the actual
28
29 eligibility criterion, based on per capita income, is a good proxy for weak socio-economic
30
31 conditions. However, if the factors influencing the probability of becoming an eligible region are
32
33 considered in greater detail (column b), we shall notice that the “traditional” sources of
34
35 disadvantage are more “rewarded” by this system: the “percentage of labour force concentrated in
36
37 agriculture” and “long term unemployment” significantly increase the chances of being under the
38
39 75% of the EU average per capita income (thus becoming an Objective 1 region). On the contrary,
40
41 other factors are less accurately proxied by the actual income-based eligibility criteria. The
42
43 “percentage of the young population” is not significant while “tertiary education attainments”
44
45 shows a positive sign meaning that in many cases the regions selected for assistance are not those
46
47 with a relatively poorer human capital endowment.
48
49
50
51
52

53
54 In the second step of the model, the amount of funds received (by eligible areas) is analysed
55
56 (Equation 2), assessing whether (and to what extent) the amount of funds allocated to each eligible
57
58 regions is correlated with the magnitude of the regional socio-economic disadvantage. The
59
60 empirical results show that, while significant for the acquisition of the status of assisted region, the

1
2 socio-economic factors are not significant for determining the level of the funds received by
3
4 assisted regions (column a). In other words, the distribution of funds across the eligible areas does
5
6 not seem to reflect their actual differentiated socio-economic status i.e. more disadvantaged regions
7
8 do not receive more funds than regions with relatively more favourable conditions. When
9
10 considering specific socio-economic factors (column b) we notice that only the education level
11
12 variable shows a high level of significance in 2000-2006: a relatively higher percentage of tertiary
13
14 educational achievements seems to reduce the amount of funds received in favour of less well
15
16 endowed regions. The national dummies highlight a certain degree of national bias in the allocation
17
18 of the funds in favour of some member states (in particular Germany and Spain in 1994-1999 and
19
20 Spain in 2000-2006), but this bias seems to disappear when the socio-economic conditions are fully
21
22 accounted for by the Social Factors variable. Such national bias can be considered the result of the
23
24 systematically higher disadvantage of the regions of these countries (which the distribution of the
25
26 funds is able to reflect), rather than the result of a more favourable treatment in favour of these
27
28 countries.

29
30 Such evidence supports the idea that even if the present eligibility criterion is able to pursue a
31
32 (rough) discrimination in favour of the relatively more disadvantaged regions, the amount of funds
33
34 transferred to assisted regions is not correlated to the extent of their actual socio-economic
35
36 disadvantage. This lack of correlation undermines the principle of concentration which, is regarded
37
38 by the European Commission as a key pre-condition for maximising the impact of structural funds
39
40 expenditure (CEC 2004).

41
42
43
44
45
46
47
48
49 **[Insert Table 3 around here]**

50
51 Table 3 presents, in the same way as in the previous table, the results for the estimation of the two-
52
53 step Heckman selection model for Objective 2 funds. The results for the probit selection model
54
55 (column a) show, as expected, that Objective 2 regions have relatively more favourable socio-
56
57 economic conditions: the socio-economic factors variable is positive and significant. In addition, as
58
59
60

1
2 expected, Objective 2 regions are mainly industrial regions¹³ (a high % agriculture labour force
3
4 tends to reduce the probability of being “selected”), suggesting that Objective 2 actions are still very
5
6 much focused on industrial areas even after the merger with the former rural-area-oriented
7
8 Objective 5b (column b). Furthermore the population of selected Objective 2 regions is relatively
9
10 older in comparison with other areas (a high percentage of young people reduces the probability of
11
12 eligibility) in accordance with the aim of providing support to less dynamic areas where ageing is a
13
14 significant source of disadvantage. However, the present eligibility criteria seem unable to fully
15
16 discriminate the areas with a relative scarcity of skilled labour, as shown by the non-significance of
17
18 the education variable in 2000-2006 and, in particular, those where the long-term component of
19
20 unemployment is higher (negative and significant signs in both programming periods). When we
21
22 move on to the analysis of the determinants of the amount of funds allocated to the regions
23
24 (Equation 2), we find no sign of any correlation with the underlying socio-economic conditions of
25
26 the assisted areas (except for the education variable in 2000-2006). This evidence supports the idea
27
28 of an overall weakening of the coherence between the structural funds and their ideal targets
29
30 operated by means of the expenditure under the Objective 2. On the contrary, where aiming at
31
32 favouring the socio-economic “restructuring” of declining regions, Objective 2 funds should follow
33
34 the geography of socio-economic disadvantage. If the existing eligibility criteria – being explicitly
35
36 based upon a set of structural indicators – have been able to target the funds coherently with at least
37
38 some of the sources of socio-economic disadvantage, the subsequent distribution of the funds to the
39
40 eligible regions seems to be markedly in contrast with the principle of concentration. The
41
42 bargaining process for the allocation of the funds seems again able to significantly dilute the policy
43
44 objectives (in line with the conclusions of Greenbaum and Bondonio 2004 for Objective 2).
45
46
47
48
49
50
51
52
53

54 **[Insert Table 4 around here]**
55

56 In table 4 the overall allocation of structural funds under both Objective 1 and 2 is assessed, thus
57
58 focusing upon their interactions and “composition effect” as parts of a single EU policy action.
59
60

¹³ For 1994-1999 Objective 5b funds, targeted towards rural areas, are combined with the Objective 2 funds, targeted towards “urban and industrial” areas, for sake of comparability with the 2000-2006 programming period when the two areas are put together under Objective 2.

1
2 The results for the regression of the level of total (Obj.1 + Obj.2) structural funds per capita on the
3 socio-economic conditions (Equation 3) are presented. The overall amount of funds allocated to the
4 EU regions partially reflects their underlying socio-economic conditions (column a), even if the
5 percentage of the overall variability explained by such factors is relatively small. This suggests that,
6 when the distribution of Objective 1 and Objective 2 funds is assessed jointly and in a systematic
7 way, the focus of the financial resources on structural factors of disadvantage tends to be rather low.
8 However, it is worth noticing that the R-squared shows an increase from 1994-1999 to 2000-2006
9 thus confirming that Agenda 2000 succeeded in increasing the level of territorial concentration and
10 the overall correlation between the amount of funds and the magnitude of regional structural
11 disadvantage. In this dynamic perspective, the EU regional policy seems potentially able to escape
12 the “spatially targeted policy trap”, as warned by Lehman (1994) and highlighted by Greenbaum
13 and Bondonio (2004) for the case of Objective 2 funds i.e. the tendency towards losing focus and
14 diluting the territorial concentration of the funds over time. While the territorial concentration of the
15 funds still seems sub-optimal, this trend towards increasing concentration over time in response to
16 the emphasis placed by the European Commission on this objective suggest that the claim for an
17 increase in territorial concentration is a realistic achievement. When considering the specific socio-
18 economic factors that influence the distribution of the funds (column b), we notice that the
19 agricultural labour force, as a “traditional” source of disadvantage, still seems to be the main driver
20 of the funds at the expense, for example, of the level of human capital accumulation which, instead,
21 has been shown to be particularly relevant in the context of a knowledge based economy. The
22 national dummies, while minimising the problem of spatial autocorrelation, highlight a certain
23 degree of national bias in the distribution of the funds in favour of the “cohesion countries.” A bias
24 for which, in the 1994-1999 period, Germany also received particular benefit.
25
26 Overall this analysis of the “hidden” determinants of the allocation of the structural funds confirms
27 a weak association between the funds and the structural disadvantage of the EU territories. While
28 the reinforcement of the principle of territorial concentration has not only increased the spatial
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2 concentration of the funds but also improved their adherence to these factors of disadvantage, the
3
4 analysis highlights that there is still much more room for further improvement in both respects. In
5
6 addition, while the general socio-economic structure of each regions should be taken into account
7
8 by the allocation mechanism of the funds, some specific factors deserve greater attention in the
9
10 context of the knowledge based economy. This is especially true for human capital accumulation,
11
12 whose deficiency has been shown insignificant to determine the amount of resources received by
13
14 the regions but which has become a key source of competitive advantage for both the development
15
16 of Objective 1 and the restructuring of Objective 2 regions.
17
18
19
20
21
22

23 **4.3 Socio-economic disadvantage and regional convergence**

24
25 In the previous section it was argued that a potential explanation for the lack of correlation observed
26
27 between the factors of socio-economic disadvantage and the amount of funds received by the EU
28
29 regions might be explained in terms of the desire to privilege, in the distribution of funds, the
30
31 relatively better endowed regions. This choice could find its theoretical justification in the emphasis
32
33 on the receptiveness of the local economy as a prerequisite for successful regional policies. This
34
35 standpoint, developed in the framework of the neo-Schumpeterian literature, regards relatively more
36
37 favourable socio-economic conditions as necessary for the investment to deliver (Cappellen et.
38
39 2003) and, consequently, the policymaker may find it more cost-effective to channel funds towards
40
41 relatively better-off regions (those supposed to show the better development potential) in order to
42
43 maximise their impact. However, the empirical evidence on the economic performance of the
44
45 Objective 1 regions over the 1994-2003 period (i.e. from the first year of implementation of the
46
47 1994-1999 programming to the most recent year for which regional GDP data are currently
48
49 available) explicitly contradicts this assumption. When sigma-convergence is considered, by
50
51 assessing the change in the total variance of the regional income per capita from 1994 to 2003, the
52
53 lack of convergence for both the whole Europe and the subset of Objective 1 regions is apparent
54
55
56
57
58
59
60 (Table 5).

[Insert Table 5 around here]

However, the comparison between the T_1 statistic¹⁴ (i.e. the initial year variance/final year variance ratios) for all the EU regions and that for the Objective 1 only shows that dispersion of regional per capita income increased more significantly in the EU as a whole than in the Objective 1 regions, thus supporting the idea of there being a variety of “clubs” developing at different rates. The lack of a trend towards generalised (unconditional) convergence in the EU regions is confirmed by the simple beta-convergence analysis *à la* Barro-Sala-i-Martin (1992) presented in table 6.

[Insert Table 6 around here]

The regression shows a negative coefficient for the log of the initial level of the GDP per capita (Eq.1). However the evidence of unconditional convergence becomes much weaker and almost insignificant when a set of national dummies is introduced into the analysis (Eq.2) thus both controlling for the “national growth” effect and minimising the extent of spatial autocorrelation. The picture changes when the sub-sample of Objective 1 regions is considered separately: the degree of convergence is not only stronger (Eq.3) but it also remains significant after the introduction of the national dummy variables (Eq.4). This confirms the idea of a process of “club convergence” (Quah, 1996) among the Objective 1 regions which explicitly contradicts the idea of a better growth potential of the relatively more well-off regions (in line with Rodríguez-Pose and Fratesi 2004). On the contrary, the initially more disadvantaged Objective 1 regions seem to grow faster than other potentially better endowed areas in line with the evidence provided by Martin and Tyler (2006) on the capacity of structural funds to at least prevent a further widening of existing gaps. The catching up of the former with the latter uncovers the growth potential of the poorest Objective 1 regions, a potential that would have been more effectively emphasized by a higher degree of concentration of the structural funds thus allowing the maximisation of those externalities that Bradley (2006) has shown to be necessary if any long term impact is to be achieved. In

¹⁴ The T_1 statistics is : $T_1 = \frac{\hat{\sigma}_1^2}{\hat{\sigma}_T^2}$. Where $\hat{\sigma}_1^2$ is the variance of regional income per capita at time 1; $\hat{\sigma}_T^2$ is the variance at time t. This statistic is distributed as a F with (n-1; n-1) degrees of freedom (Lichtenberg, 1994).

1
2 addition, as shown above, such reduced concentration has been coupled with a lack of correlation
3
4 between the funds and the factors of structural disadvantage. The growth potential of more
5
6 disadvantaged regions is confirmed when disadvantage is assessed in terms of socio-economic
7
8 factors and becomes very apparent when considering the Objective 1 subset alone (compare Fig.1
9
10 and Fig.2 where regional growth rates are scattered against socio-economic factors for all the EU15
11
12 regions and for the Objective 1 regions only).
13
14

15
16 **[Insert Fig.1 and 2 around here]**
17

18
19 However, when convergence is assessed on the basis of socio-economic factors (Tab.6; equations 5-
20
21 8), the evidence suggests that, when national effects are controlled, many socio-economically
22
23 disadvantaged regions are not able to catch-up with the EU as whole (Eq.7) and with the Objective
24
25 1 “club” (Eq.8). In other words, in line with the literature on the socio-economic preconditions for
26
27 regional growth, we find that such factors have hampered the capacity of Objective 1 regions to
28
29 converge. Consequently, while there is no evidence to encourage the targeting of resources towards
30
31 relatively better endowed regions (the contrary is in fact true), there is plenty of evidence to support
32
33 the necessity for the EU regional funds to tackle structural disadvantage. In consequence, the
34
35 geographical correlation between such disadvantage and the allocation of the funds is confirmed to
36
37 be a necessary condition for their effectiveness.
38
39
40
41
42
43

44 **5.0 Some policy implications: how socio-economic factors could complement GDP per capita** 45 46 **for a more effective allocation of the funds.** 47

48
49 As extensively discussed in the previous sections the present allocation mechanism relies heavily on
50
51 GDP per capita (at Purchasing Power Standard, PPS) to drive the allocation of regional funds: GDP
52
53 per capita is not only the key determinant of the breakdown by member state of the commitment
54
55 appropriation¹⁵ but it is also used to grant eligibility to Objective 1 regions. However, where the
56
57
58
59

60

¹⁵ It should be born in mind that, as discussed in details in section 3.2 the allocation of the funds at the country level are calculated on the basis of a funding formula, while the actual commitments at the regional level are based on the Operational Programmes which are the result of a bargaining process between the Commission, the national and the regional governments.

1
2 actual correlation between GDP per capita (at PPS) and the structural funds per capita allocated to
3
4 the regions is assessed - as in table 7 – it becomes immediately apparent that the final outcome of
5
6 the process of allocation of the resources to the regions is only a weak reflection of the underlying
7
8 GDP conditions. Table 7 shows that the correlation between GDP per capita (at PPS) at the
9
10 beginning of the programming period and total funds per capita (Obj1 + Obj2), though statistically
11
12 significant, is far from perfect: the correlation coefficient is -0.65 for 1994-1999 and -0.59 for the
13
14 2000-2006 programming period. Furthermore this correlation sharply decreases when the sub-
15
16 sample of Objective 1 regions is considered separately, the correlation between Objective 1 funds
17
18 per capita and GDP per capita (at PPS) falls to -0.46 for 1994-1999 and -0.28 for 2000-2006
19
20 programming period.
21
22
23
24

25
26 **[Insert Table 7 around here]**
27
28
29

30
31 On the basis of this evidence it might be tempting to suggest improving territorial concentration and
32
33 resource targeting by reinforcing this relationship between low GDP per capita (at PPS) and the
34
35 amount of funds available, thus relying even more on this simple and readily available indicator.
36
37 However, while our convergence analysis highlighted - in line with a significant body of literature -
38
39 that socio-economic disadvantage should be the target of EU regional policy in order to promote
40
41 convergence, the regression analysis of the regional allocation of the funds revealed that the present
42
43 GDP-based allocation mechanism is ineffective in channelling funds towards structural socio-
44
45 economic disadvantage, suggesting that a low level of GDP per capita per se would be a misleading
46
47 driver for regional funds (lower level of GDP does not necessarily mean lack of convergence
48
49 capabilities). In addition, table 7 also shows that the correlation between GDP per capita (PPS) and
50
51 our measure of Socio-Economic disadvantage is rather low (slightly above 0.4): GDP per capita
52
53 would also be a poor proxy for the underlying socio-economic disadvantage. This is confirmed
54
55 when looking at Fig.3, where Objective 1 regions' GDP per capita is scattered against the Socio-
56
57 Economic factors variables.
58
59
60

[Insert Fig.3 around here]

The scatter clearly shows that despite similar per capita GDP (at PPS) values there are extremely differentiated regional socio-economic conditions. Figure 3 is also helpful for the detection of the imbalances allowed by the current allocation mechanism, which becomes immediately apparent when regions are differentiated on the basis of their structural disadvantage. The graph combines information on GDP per capita (at PPS) (x-axis), Socio-Economic environment (y-axis) and the corresponding 2000-2006 Objective 1 funds per capita (the area of the symbols in the graph is proportional to the funds per capita allocated to each region) in Objective 1 regions. It provides us with visual confirmation of the lack of a systematic relationship between the support's magnitude and both GDP per capita and endogenous socio-economic conditions thus allowing us to identify the inconsistencies produced by the present allocation mechanism. Some regions show a similar level of GDP per capita and benefit from a comparable level of support, however, when their socio-economic environment is more carefully assessed (i.e. by means of our Socio-Economic factors indicator), marked differences become apparent. This is – for example - the case of the regions Campania (Italy) and Thüringen (Thuringia, Germany). In figure 3 both regions are close to each other on the x-axis (i.e. they have a similar GDP per capita in PPS) and are represented on the graph by a symbol of a similar size (i.e. in the 2000-2006 programming period benefited from a similar amount of resources per capita). However, their different y-coordinates (i.e. the value of the Socio-Economic factors variable) uncover intrinsic structural differences in terms of their capacity to converge: while Campania shows critical socio-economic conditions, Thüringen shows a relatively more favorable situation thus probably needing comparatively fewer resources to tackle its economic backwardness. Symmetrically, figure 3 allows the detection of regions benefiting from a significantly different level of support per capita while showing similarly unfavorable socio-economic conditions, as in the case, for example, of Alentejo (Spain) and Kriti (Crete, Greece). Even though these regions show a similar value in terms of their Socio-Economic factors variable (y-axis) a significantly higher amount of resources was committed to Alentejo .

1
2
3
4 The observed allocation of the EU funds is, as extensively discussed in this paper, the result of a
5
6 complex bargaining process between the Commission, the member states and the regions in which
7
8 power equilibriums and the differentiated capability of each region to “attract” (and lobby for)
9
10 additional resources play a significant role. While this mechanism is to be preserved, as it provides
11
12 an incentive for the capability of the regions to design and plan the policy measures to be actually
13
14 implemented, the present analysis calls for a corrective mechanism able to increase territorial
15
16 concentration and channel more resources towards relatively more socio-economically
17
18 disadvantaged regions. Precisely the most disadvantaged (and institutionally weak) regions might
19
20 be less able to effectively compete for the EU funds. The analysis pursued in this section has also
21
22 highlighted the unsuitability of GDP per capita - where regional policy is seen as a tool to promote
23
24 convergence - as a “driver” for an effective allocation of the EU regional funds. In the light of all
25
26 this, how might the current mechanism be improved in order to achieve an allocation of the funds
27
28 which is more in line with the regional sources of structural disadvantage? Of course, any change in
29
30 the present allocation mechanism has to be balanced against the significant difficulties arising when
31
32 any reform is to be negotiated among 27 Member States. However, our results suggest that – even
33
34 while preserving the actual institutional procedure for the allocation of the funds and keeping
35
36 largely unaffected the current allocation mechanism - significantly better targeting of the available
37
38 resources could be achieved by combining GDP per capita with further information on the socio-
39
40 economic conditions of the target areas. As shown in the empirical analysis, ‘75% of the EU’s
41
42 average per capita income (at PPS)’ threshold for Objective 1 eligibility has guaranteed a certain
43
44 degree of territorial concentration of the funds. However, the eligibility criteria based upon the level
45
46 of GDP per capita provides only a rough assessment of the highly differentiated development
47
48 capabilities of the local economies. Consequently, once eligibility is granted on the basis of this
49
50 rule, areas (and the associated funds) should be further differentiated on the basis of a wider set of
51
52 socio-economic indicators by “reserving” to the most socio-economically disadvantaged regions a
53
54
55
56
57
58
59
60

1
2 larger share of the available “convergence” (Objective 1 in the “old” terminology) resources. By
3
4 differentiating the available resources into various “segments” made available to the regions
5
6 according to their degree of structural disadvantage, the “fit” between the spatial distribution of the
7
8 fund and the sources of socio-economic disadvantage would be improved.
9

10
11 This mechanism would help reduce the endogeneity of the actual allocation mechanism, which
12
13 inevitably tends to favour actors with a better institutional endowment but, at the same time, it
14
15 would maintain the final level of financing related to the planning capabilities of each region. The
16
17 final commitments would still depend upon the plans presented by the assisted areas even though
18
19 the pool of resources made available to the regions would vary according to their socio-economic
20
21 conditions.
22
23

24
25 An example of the subdivision of total available resources into different “pools” made available to
26
27 different “categories” of areas – though still “categorised” on the basis of their GDP per capita – has
28
29 been already introduced in the 2007-2013 General Regulation for the structural funds¹⁶. A specific
30
31 amount of the resources devoted to the Convergence Objective, remains earmarked to the 16
32
33 regions whose GDP per capita is 75% below the EU 15 average but greater than 75% of the per
34
35 capita income of the EU 25 average (i.e. the regions losing their eligibility due to the “statistical
36
37 effect”). This subdivision in the allocation of the convergence funds aims at reducing the resources
38
39 devoted to these regions considered, on the basis of their GDP, more advantaged than other
40
41 convergence regions. However, in this case, the application of the GDP criteria has granted
42
43 “automatic” eligibility to a very heterogeneous set of regions, thus allowing funds to flow towards
44
45 relatively more advantaged areas at the expense of others where, although the GDP per capita is
46
47 above 75% of the EU average, the socioeconomic conditions are more critical than in some of the
48
49 other 86 convergence regions. The same is true for the complex of the 86 convergence regions,
50
51 which includes, without any differentiation almost the entire territory of the new member states,
52
53
54
55
56
57
58

59
60

¹⁶ COUNCIL REGULATION (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999

1
2 although a vast amount of literature has highlighted an astonishing variety in the socio-economic
3
4 situations within these countries. Conversely, the application of a wider set of socio-economic
5
6 indicators to further differentiate among these convergence regions, would have allowed for a finer
7
8 *à priori* targeting of the resources.
9

10
11 The mechanism designed for the 2007-2013 programming period suggests that an agreement among
12
13 the member states on “gradual” changes of the allocation mechanism is actually feasible. Our
14
15 results suggest that a significant improvement in the present allocation mechanism would be
16
17 achieved by integrating GDP with additional indicators able to take into account the differences
18
19 that the literature and the convergence analysis have shown to be crucial for regional convergence
20
21 capability, and which remain outside the scope of GDP per capita (PPS).
22
23
24
25
26
27

28 **6.0 Conclusions**

29
30 This paper sets out to investigate the coherence of the allocation of the structural fund to the regions
31
32 with the principle of territorial concentration. While some contributions have suggested that the
33
34 nature of the policies implemented within the EU regional policy framework might have curbed the
35
36 impact of the structural expenditure at the level of territorial cohesion, this paper suggests that
37
38 potential inconsistencies in the policy as regards the objective of territorial cohesion might have
39
40 arisen at a more upstream phase i.e. in the allocation mechanism of the funds to the regions. This
41
42 mechanism might not only have led to an insufficient territorial concentration of the expenditure but
43
44 also to an insufficient correlation between the funds and the set of socio-economic conditions that
45
46 shown to be responsible for hampering the economic success of many EU regions.
47
48
49

50
51 Our empirical analysis investigated both these issues in order to test this possibility which, where
52
53 violating the principle of territorial concentration, might have prevented the structural funds from
54
55 maximising their cost-effectiveness in terms of territorial cohesion. The results reveal that the
56
57 regional distribution of the structural funds shows a degree of spatial concentration in compliance
58
59 with the principle of concentration. However, while the theoretical discussion supported the idea
60

1
2 that the EU funds should be allocated in order to “compensate” for the structural disadvantage of
3
4 the assisted areas (thus maximising their effectiveness), empirical results suggest that the
5
6 disadvantage is more spatially concentrated than the associated funds: in this perspective the present
7
8 level of concentration of the funds can be judged insufficient. Furthermore, the empirical model
9
10 uncovered a weak association between the amounts of regional funds and the above-mentioned
11
12 sources of competitive disadvantage, especially as far as the problem of human capital
13
14 accumulation is concerned.
15
16

17
18 Such an inconsistent spatial allocation of the EU funds is likely to have reduced their capability to
19
20 impact upon the regional growth performance of assisted regions and has inevitably produced a bias
21
22 in the allocation of national resources as well, due to the co-financing mechanism¹⁷, which forced
23
24 the national co-financing of community funds.
25
26

27
28 The policy analysis suggests that such a geographical allocation of funds may be either the result of
29
30 the political dilution of the policy objectives (required by EU political equilibriums) or the effect of
31
32 an intentional focus on relatively better endowed regions. However, the empirical evidence casts
33
34 doubt on the rationale of such a bias in favour of the areas believed to represent a more favourable
35
36 condition of receptiveness for the funds.
37
38

39
40 Consequently, every effort should be produced not only to promote the spatial concentration of the
41
42 expenditure (which is a necessary but not sufficient condition for increased effectiveness) but also
43
44 to increase its capability to target the factors of socio-economic disadvantage. Furthermore, while
45
46 not undermining the robustness of the analysis discussed so far, it is necessary to bear in mind that
47
48 the analysis is based on Structural Funds data on financial commitments rather than on actual
49
50 spending (the latter are not available until well after the programme periods have ended). As a
51
52 consequence, actual expenditure, given the differentiated spending capacity of the various regions,
53
54 might further accentuate the bias in the geographical distribution of the funds given that the more
55
56
57
58

59
60

¹⁷ “Each euro spent at the EU level by cohesion policy leads to further expenditure, averaging 0.9 euros, in less developed regions (current Objective 1) and 3 euros in regions undergoing restructuring (current Objective 2)” COMMUNICATION FROM THE COMMISSION, Brussels, 05.07.2005 COM(2005) 0299, “Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013”, p.7.

1
2 socio-economically disadvantaged regions are also more likely to record a relatively worse
3 performance in terms of their capacity to translate commitments into actual expenditure.
4

5
6 The analysis has allowed the identification of simple improvements in the mechanism of allocation
7 of the funds to the regions which, if implemented, would significantly increase territorial
8 concentration and help channel more resources towards the most socio-economically disadvantaged
9 areas. In the 2007-2013 programming period the “Convergence Objective” funds have been sub-
10 divided into two different “pools”, in order to further differentiate the resources devoted to eligible
11 areas on the basis of their GDP per capita conditions. Our analysis suggested that the introduction
12 of a similar differentiation of the resources available made to the eligible regions - where based
13 instead on a proxy for socio-economic structural disadvantage – would provide an allocation of the
14 funds more in line with the EU’s regional policy objectives. It must be acknowledged that these
15 critical issues (and geographical concentration in particular) have been explicitly considered by the
16 European Commission when assessing the weaknesses of the past programming periods. However,
17 when the Commission’s analysis has to be balanced against not only the claims of individual
18 countries in terms of budget equilibriums but also inaccurate diagnoses on where investment is
19 more worthwhile, implementing concrete corrective measures turns out to be a very gradual
20 process.
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

44 In conclusion, the discussion of the implication of the potential benefits of a more effective
45 operationalisation of the principle of territorial concentration should not hide the crucial importance
46 of the regional policy implemented. An increase in the territorial focus of the financial resources, by
47 channelling more resources to the most disadvantaged regions does not per se necessarily imply an
48 increase in their capability to converge (as the standard neo-classical framework would suggest). An
49 increase in the Structural funds’ focus on more socio-economic disadvantaged areas needs to be
50 matched by appropriate actions for the reinforcement of their local governance and translated into
51
52
53
54
55
56
57
58
59
60

1
2 tailor-made local policies able to tackle the sources of structural disadvantage of each individual
3
4 region in particular with respect to the challenges posed by the knowledge-based economy.
5
6
7
8

9 **Acknowledgements**

10
11 The author would like to thank Harvey Armstrong, Roberta Capello, Fabrizio De Filippis, Andrés
12 Rodríguez-Pose, Carlo Pietrobelli and the participants at the seminars in Pisa, Rome and Volos for
13 their comments to earlier drafts of this paper. The comments from two anonymous referees, which
14 helped to substantially improve the manuscript, are gratefully acknowledged. The author is also
15 grateful to the Robert Schuman Centre for Advanced Studies, European University Institute for the
16 support during the process of revision of this paper. The author remains solely responsible for any
17 errors contained in the paper.
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

References

- 1
2
3
4 Armstrong H.W. (2001) European Union Regional Policy in A.M. El-Agraa (ed.), *The European*
5 *Union*, 6th Edition. Prentice Hall, Harlow.
- 6 Armstrong H.W. and Taylor, J. (2000) *Regional Economics and Policy*. Blackwell, Oxford.
- 7 Armstrong H.W. and Wells P. (2006) Structural funds and the Evaluation of Community Economic
8 Development Initiatives in the UK: A critical perspective, *Regional Studies*, **40**(2): 259-272.
- 9 Baldwin R. and Wyplosz C. (2006) *The Economics of European Integration 2nd edition*. McGraw-
10 Hill, London
- 11 Barro R. J. and Sala-i-Martin X. (1992) Convergence, *J. Pol. Econ.* **100**, 223–51
- 12 Batchtler J. and Méndez C. (2007) Who governs EU cohesion policy? Deconstructing the reforms
13 of the structural funds, *Journal of Common Market Studies*, **45** (forthcoming).
- 14 Batchtler J. and Polverari L. (2007) Delivering territorial cohesion and the European Model of
15 society in Faludi A. (Ed.) *Territorial Cohesion and the European Model of Society*, Lincoln
16 Institute of Land Policy, Cambridge (Ms)
- 17 Batchtler J. and Wren C. (2006) Evaluation of European Union Cohesion Policy: Research
18 Questions and Policy Challenges, *Regional Studies*, **40**(2): 143-153
- 19 Batchtler J. and Wishdale F. (2005) From building blocks to negotiating boxes: the reform of Eu
20 cohesion policy, *EPRC European Policy Research Paper n.57*
- 21 Boldrin M. and Canova, F. (2001) Inequality and convergence in Europe's regions: reconsidering
22 European regional policies. *Economic Policy* **16**: 207-253.
- 23 Bondonio D. and Greenbaum R.T. (2006) Do business investment incentives promote employment
24 in declining areas? Evidence from EU Objective-2 regions, *European Urban and Regional*
25 *Studies*, **13**(3): 225-244.
- 26 Bradley J. (2006) Evaluating the impact of European Union Cohesion Policy in less-developed
27 countries and regions, *Regional Studies*, **40**(2): 189-199
- 28 Canova F. (2004) Testing for convergence clubs: a predictive density approach, *International*
29 *Economic Review* **45**, 49-78.
- 30 Cappelen A., Castellaci F., Fagerberg J. and Verspagen B. (2003) The impact of EU regional
31 support on growth and convergence in the European Union, *Journal of Common Market Studies*
32 **41**: 621-644
- 33 Cheshire P. and Magrini S. (2000) Endogenous processes in European regional growth:
34 Convergence and policy, *Growth and Change* **31**: 455-479.
- 35 Cheshire P. (2002) The distinctive determinants of European urban growth: Does one size fit all?,
36 *Research Papers in Environmental and Spatial Analysis* N. 73, Department of Geography and
37 Environment, London School of Economics.
- 38 Cliff A. D. and Ord J.K. (1981) *Spatial processes: models and applications*. Pion, London.
- 39 Commission of the European Communities (2004) 'A new partnership for cohesion: convergence,
40 competitiveness, cooperation', Third Report on Economic and Social Cohesion, Office for
41 Official Publications of the European Communities, Luxembourg.
- 42 Crescenzi R. (2005) Innovation and regional growth in the enlarged Europe: the role of local
43 innovative capabilities, peripherality and education, *Growth and Change* **36** 4:471-507
- 44 Crescenzi, R., Rodríguez-Pose, A., Storper, M. (2007) The territorial dynamics of innovation: a
45 Europe–United States comparative analysis, *Journal of Economic Geography*, **7**(6): 673-709.
- 46 Dall'erba S. (2005) Distribution of Regional Income and Regional Funds in Europe 1989-1999: an
47 Exploratory Spatial Data Analysis., *Annals of Regional Science*, **39**:121-148.
- 48 Dall'erba S. and Hewings G.J.D. (2003) European Regional Development policies: the trade-off
49 between efficiency-equity revisited. *Discussion Paper REAL 03-T-02*, University of Illinois at
50 Urbana Champaign.
- 51 De la Fuente A. and Doménech R. (2001) The redistributive effects of the EU budget, *Journal of*
52 *Common Market Studies*, **39**: 307-330.
- 53 Duntenam G.H. (1989) *Principal Component Analysis*, Sage Publications, London.
- 54
55
56
57
58
59
60

- 1
2 European Commission (2000) Real convergence and catching-up in the EU, *EUROPEAN*
3 *ECONOMY* **71**. Office for Official Publications of the EC, Luxembourg.
4
5 European Commission (2006) *The demographic future of Europe – from challenge to opportunity*,
6 *COM(2006) 571 final*, Brussels
7 Fagerberg J., Verspagen B. and Caniels M. (1997) Technology, growth and unemployment across
8 European Regions, *Regional Studies*, **31**, 5: 457-466
9 Federico G. (2005) *Feeding the World: An Economic History of World Agriculture, 1800-2000*,
10 Princeton University Press, Princeton
11 Gordon I.R. (2001) Unemployment and spatial labour markets: strong adjustment and persistent
12 concentration in R. Martin and P. Morrison (eds.) *Geographies of Labour Market Inequality*,
13 Routledge, London.
14
15 Green W.H. (2003) *Econometric Analysis*. Prentice Hall, Upper Saddle River
16 Greenbaum R.T. and Bondonio D. (2004) Losing focus: A comparative evaluation of spatially
17 targeted economic revitalisation programmes in the US and the EU, *Regional Studies*, **38**(3): 319-
18 334.
19
20 Heckman J. (1979) Sample selection bias as a specification error, *Econometrica* **47**:153-161.
21 IRPUD (2000) *European Peripherality Indicators (E.P.I.)*. IRPUD GIS database, Institute of
22 Spatial Planning, Dortmund.
23 Jolliffe I. T. (1986) *Principal Component Analysis*. Springer-Verlag, New York
24 Leonardi R. (2006) Cohesion in the European Union, *Regional Studies*, **40**(2): 155-166.
25 Lehman J. S. (1994) Updating urban policy, in Sheldon H., Danziger G., Sandefur D. and Weinberg
26 D. H. (Eds) *Confronting Poverty: Prescriptions for Change*, pp. 226–52. Russell Sage
27 Foundation, New York/Harvard University Press, Cambridge, MA.
28 Lichtenberg F.R.(1994) Testing the convergence hypothesis, *The Review of Economics and*
29 *Statistics* **76**(3): 576-579.
30
31 Lundvall B.Å. (1992) *National systems of innovation: Towards a theory of innovation and*
32 *interactive learning*. Pinter, London.
33
34 Magrini S. (1999) The evolution of income disparities among the regions of the European Union,
35 *Regional Science and Urban Economics* **29**, 257-281.
36 Mairate A. The ‘Added Value’ of European Union Cohesion Policy, *Regional Studies*, **40**(2): 167-
37 177.
38
39 Malecki E. (1997), *Technology and Economic Development: The Dynamics of Local, Regional and*
40 *National Competitiveness*, 2nd edition Addison Wesley Longman, London.
41 Martin P. (1998) Can regional policies affect growth and geography in Europe?, *World Economy*
42 **21**: 757-774.
43
44 Martin P. (1999) Are European regional policies delivering? *EIB Papers* **4**, 2, 10-23.
45 Martin R. and Tyler P. (2006) Evaluating the impact of the structural funds on Objective 1 regions:
46 an explanatory discussion, *Regional Studies*, **40**(2): 201-210.
47 Puga D. (2002) European regional policy in the light of recent location theories, *Journal of*
48 *Economic Geography*, **2**, 373-406.
49
50 Midelfart-Knarvik H. and Overman H.G. (2002) Delocation and European integration: is structural
51 spending justified?, *Economic Policy* **17**, 35: 322-359
52 Psaltopoulos D., Thomson K. J., Efstratoglou S., Kola J. and Daouli A. (2004) Regional social
53 accounting matrices for structural policy analysis in lagging EU rural regions. *European Review*
54 *of Agricultural Economics* **31**: 149–178.
55
56 Quah, D. (1996) Regional convergence clusters across Europe, *European Economic Review*, **40**,
57 951-58
58
59 Quah, D. (1997) Empirics for growth and distribution: stratification, polarisation and convergence
60 clubs, *Journal of Economic Growth*, **2**.
Rodríguez-Pose A. (1998a) *The dynamics of regional growth in Europe: Social and political*
factors. Oxford University Press, New York.

- 1
2 Rodríguez-Pose A. (1998b) Social conditions and economic performance: The bond between social
3 structure and regional growth in Western Europe. *International Journal of Urban and Regional*
4 *Research* 22:443–459.
5
6 Rodríguez-Pose, A. (1999) Innovation prone and innovation averse societies: Economic
7 performance in Europe, *Growth and Change* 30: 75–105.
8
9 Rodríguez-Pose A. and Fratesi U. (2004) Between development and social policies: the impact of
10 structural funds in Objective 1 regions, *Regional Studies*, **38**,1:97-114
11
12 Rodríguez-Pose A. and Crescenzi R. (2008) R&D, spillovers, innovation systems and the genesis of
13 regional growth in Europe, *Regional Studies* ,**41** (forthcoming)
14
15 Wren C. (2005) Regional Grants: are they worth it?, *Fiscal Studies*, **26**(2): 245-275
16
17 Wren C. and Taylor J. (1999) Industrial restructuring and regional policy, *Oxford Economic Papers*,
18 **51**(3):487-516
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60**APPENDIX A - Description of the variables**

Variable	Definition
<i>Structural Funds</i>	
Objective 1 / Objective 2 Funds per capita	Total committed expenditure under Objective 1/Objective 2 in each region divided by the average population of the region during the programming period (1994-1999 or 2000-2006).
<i>Socio-Economic Factors</i>	
Life-Long Learning	Rate of involvement in Life-long learning - % of Adults (25-64 years) involved in education and training
Education Labour Force	% of employed persons with tertiary education (levels 5-6 ISCED 1997).
Education Population	% of total population with tertiary education (levels 5-6 ISCED 1997).
Agricultural Labour Force	Agricultural employment as % of total employment
Long Term Unemployment	Long term unemployed as % of total unemployment.
Young People	People aged 15-24 as % of total population
Socio-Economic Factors	The index combines, by means of Principal Component Analysis, the variables describing the socio-economic realm of the region (listed above).
<i>Convergence Analysis</i>	
Regional Growth Rate	Annual growth rate of real regional GDP (1994-2003).
Ln GDP 94	Natural logarithm of regional GDP per capita in 1994

APPENDIX B – The results for the Principal Component Analysis: the “Socio-Economic Factors” variable.

The principal component analysis (PCA) is “a statistical technique that linearly transforms an original set of variables into a substantially smaller set of uncorrelated variables that represents most of the information in the original set of variables: (...) a smaller set of uncorrelated variables is much easier to understand and use in further analysis than a larger set of correlated variables” (Duntenam, 1989 p.9). Through the PCA the original variables (in the case of our analysis the variables shown in literature as representative of the socio-economic disadvantage of the EU regions) are linearly combined by means of a set of “weights” (a_1, a_2, \dots, a_k) calculated in order to maximise (under the constraint of that the sum of the squared weights is equal to one) the variability of the resulting indicator, i.e of the principal component (our Social Factors variable).

Consequently the i -th principal component is:

$$y_i = a_{i1}x_1 + a_{i2}x_2 + \dots + a_{ip}x_p$$

where ($a_{i1}, a_{i2}, \dots, a_{ip}$) are the weights and x_1, x_2, \dots, x_k are the k variables.

It is possible to calculate as many PCs as the original variables under the constraint of non-correlation with the previous ones. Anyway the PCs are able to account for a progressively decreasing amount of the total variance of the original variables. Consequently, the procedure allows us to concentrate our attention on the first and limited number of PCs, which are the most representative of the phenomenon under analysis.

Table B-1 shows the Eigenanalysis of the Correlation Matrix. The first PC alone accounts for around 43% of the total variance with an Eigenvalue significantly larger than 1, the second PC accounts for an additional 22% of the total variability with an Eigenvalue still larger than 1. The first two principal components therefore explain a significant part of total variability (65%).

Tab. B-1 - Eigenanalysis of the Correlation Matrix

Eigenvalue	2.566	1.3311	0.8847	0.6542	0.5381	0.0259
Proportion	0.428	0.222	0.147	0.109	0.09	0.004
Cumulative	0.428	0.65	0.797	0.906	0.996	1

The coefficients of the first PC (Table B-2) assigns a large weight to the educational achievements of the population (0.576) and the labour force (0.551) and to the participation in Life Long Learning Programmes (0.383). A negative weight is, as expected, assigned to the agricultural labour force (-0.446) and, with a smaller coefficient, long-term unemployment (-0.139). The weight of the young population (0.006) is much smaller but positive. This first principal component provides us with the “joint measure” for each region’s socio-economic conditions. Consequently, the first principal

component's scores are computed from the standardised¹⁸ value of the original variables by using the coefficients listed under PC1 in table B-2.

Tab. B-2 - Principal Component Analysis: Principal Components's Coefficients

<i>Variables</i>	<i>PC1</i>	<i>PC2</i>	<i>PC3</i>
Education Population	0.576	-0.218	-0.043
Education Labour Force	0.551	-0.318	0.05
Life-Long Learning	0.383	0.326	0.355
Agricultural Labour Force	-0.446	-0.227	0.068
Long Term Unemployment	-0.139	-0.505	0.802
Young People	0.006	0.662	0.471

¹⁸ Standardised in order to range from zero to 1

APPENDIX C - The weight matrix and the Moran's I

The Moran's I is calculated on the basis of the following formula:

$$I = \frac{\sum_{i=1}^n \sum_{j=1}^n (x_i - \bar{x}) w_{ij} (x_j - \bar{x})}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

Where w_{ij} is a sequence of normalised weights that relate observation i to all the other observations j in the data. Values of I larger (smaller) than the expected value $E(I)=-1/(n-1)$ signal the presence of positive (negative) spatial autocorrelation.

In our empirical application the element w_{ij} of the matrix of the normalised weights is:

$$w_{ij} = \frac{1/d_{ij}}{\sum_j 1/d_{ij}}$$

where d_{ij} is the average trip-length (in minutes) between region i and j calculated by the IRPUD (2000) for the computation of their *European Peripherality Indicators (E.P.I.)*, and made available by the European Commission.

Tab.1 – Moran's I for Objective 1 and Objective 2 Funds per capita and Socio-Economic Factors.

Variables	I	E(I)	sd(I)	z	p-value*
<i>Programming Period 1994-1999</i>					
Objective1	0.102	-0.008	0.009	11.649	0
Objective 2	0.039	-0.008	0.009	5.061	0
Total expenditure	0.095	-0.008	0.009	10.929	0
<i>Programming Period 2000-2006</i>					
Objective1	0.142	-0.008	0.009	15.911	0
Objective 2	0.094	-0.008	0.009	10.781	0
Total expenditure	0.149	-0.008	0.009	16.658	0
<i>Social Factors</i>					
Socio-Economic Factors§	0.223	-0.008	0.009	24.329	0

* 1-tail test

§ This variable is the linear combination of the socio-economic variables described in the text and is calculated through the Principal Component Analysis (Appendix B)

Tab.2 - Heckman Selection model, Objective 1 Funds per capita, 1994-1999 and 2000-2006.

Programming Period	1994-1999		2000-2006	
	Equation (2)			
Variables	Coef.	Coef.	Coef.	Coef.
	(a)	(b)	(a)	(b)
Socio-Economic Factors§	3622.424 (21602.14)		1218.957 (10951.03)	
Education Population		-4988.11* (2562.976)		-1913.78*** (456.1678)
Agricultural Labour Force		-1348.16 (1043.342)		-312.165 (222.0423)
Long Term Unemployment		-574.539 (588.8321)		-89.498 (110.8817)
Young Population		-3218.96 (2456.867)		-1067.57** (503.5399)
<i>National Dummies</i>				
de	1286.602 (3153.09)	1044.413*** (362.087)	264.6077 (1293.069)	291.6251 (68.56178)
it	10.02819 (2446.981)	-119.275 (215.7996)	83.11813 (1066.923)	49.53745 (46.58662)
at	198.3732 (3683.407)	309.7738 (279.0372)	142.7548 (1579.302)	180.4558*** (60.11469)
be	498.6349 (3469.236)	281.757 (304.0943)	100.9242 (1514.511)	95.4871 (62.36345)
pt	-248.376 (2651.336)	-362.557* (186.396)	157.058 (1134.62)	123.3903*** (38.62917)
nl	512.8831 (3378.771)	369.2325 (316.798)	122.9396 (1487.263)	134.3599*** (66.7445)
uk	745.6835 (3216.694)	398.8849* (227.0967)	193.8667 (1310.763)	129.0245*** (43.20416)
es	621.0167 (2306.694)	634.0799** (288.4948)	252.0606 (997.5152)	319.0792*** (59.05076)
gr	192.1769 (2456.519)	224.2701 (187.8398)	-21.8073 (1054.395)	-1.55839 (39.39773)
fi	534.0902 (2926.159)	233.248 (286.6558)	0.204899 (1271.065)	-32.9576 (57.13414)
Constant	3561.73 (14885.26)	2025.47*** (659.4408)	1614.26 (11007.22)	574.4937*** (137.1147)
<i>Probit Selection Model (Equation 1)</i>				
Socio-Economic Factors §	-1.4158*** (0.348857)		-1.0370*** (0.329578)	
Education Population		5.044067* (2.89385)		5.754955*** (2.826307)
Agricultural Labour Force		17.32992*** (3.535073)		15.12283*** (3.218646)
Long Term Unemployment		3.435833*** (1.171702)		2.609007*** (1.091462)
Young Population		5.912144 (4.973609)		6.068956 (4.78766)
Constant	0.265963 (0.17737)	-4.737*** (1.13581)	0.16692 (0.172587)	-4.25439*** (1.07249)
rho	-1	-1	-1	-0.94973
sigma	4846.965	358.7948	2111.375	69.35247
lambda	-4846.97 (23328.48)	-358.795 (178.5998)	-2111.37 (15897.1)	-65.866* (41.52635)

*, ** and *** denote significance at a 10%, 5% and 1% level respectively. SE in parentheses

§This variable is the linear combination of the socio-economic variables described in the text and is calculated through the Principal Component Analysis (Appendix B)

Tab.3 - Heckman Selection model, Objective 2 Funds per capita, 1994-1999 and 2000-2006.

Programming Period	1994-1999		2000-2006	
	Equation (2)			
Variables	Coef.	Coef.	Coef.	Coef.
	(a)	(b)	(a)	(b)
Socio-Economic Factors §	41.24806 (979.3314)		15.24312 (360.1518)	
Education Population		-1473.4 (2604.039)		-219.959** (86.8514)
Agricultural Labour Force		-2313.08 (5708.642)		146.9052 (213.0774)
Long Term Unemployment		-292.403 (1097.94)		45.70872 (53.61375)
Young Population		-2649.94 (4296.254)		-95.0998 (299.439)
<i>National Dummies</i>				
de	-14.1343 (61.11901)	-21.8045 (131.9588)	-15.2183 (25.85857)	-16.5432*** (5.622292)
it	13.79382 (83.21526)	18.6619 (147.3966)	-41.2794 (38.36847)	-43.8702 (7.736061)
at	-31.6908 (69.25755)	42.80739 (211.879)	-20.1437 (27.39351)	-5.56321 (9.046899)
be	-4.40015 (124.5079)	-54.1565 (220.7587)	-6.2263 (61.19157)	-17.4202 (11.50549)
nl	74.98787 (81.38781)	116.1177 (221.6512)	1.86291 (43.41586)	-1.35525 (12.65517)
uk	51.9274 (82.03706)	46.94875 (139.8897)	15.96409 (35.93839)	6.896866 (6.055499)
es	151.6018** (72.02708)	123.0932 (218.1189)	25.25797 (30.96621)	20.99423** (10.78373)
fi	77.1801 (113.6932)	70.01067 (235.5529)	-28.5619 (49.59434)	-33.2919*** (11.58116)
Constant	-66.0253 (1528.65)	726.9151 (1291.69)	-34.9188 (511.2596)	52.246 (67.34726)
<i>Probit Selection Model (Equation 1)</i>				
Socio-Economic Factors §	1.121132*** (0.330526)		1.331961*** (0.343357)	
Education Population		-7.02116** (2.844077)		-3.15919 (2.750046)
Agricultural Labour Force		-16.0497*** (3.350845)		-14.7694*** (3.387493)
Long Term Unemployment		-3.23574*** (1.131636)		-3.56761*** (1.134586)
Young Population		-10.283*** (4.739716)		-19.6541*** (5.100463)
Constant	-0.22104 (0.173643)	5.339909*** (1.114868)	-0.38479*** (0.178404)	6.028806*** (1.164758)
rho	1	1	1	0.11154
sigma	214.6384	363.2897	96.03772	13.05521
lambda	214.6384 (1720.033)	363.2897 (714.9973)	96.03772 (517.8416)	1.456141 (28.80728)
*, ** and *** denote significance at a 10%, 5% and 1% level respectively. SE in parentheses				

§This variable is the linear combination of the socio-economic variables described in the text and is calculated through the Principal Component Analysis (Appendix B)

1
2 **Tab.4 - Heteroskedasticity-Consistent OLS model, Objective 1 and Objective 2 Funds per capita, 1994-1999 and**
3 **2000-2006.**
4

Variables	1994-1999		2000-2006	
	Coef.	Coef.	Coef.	Coef.
	(a)	(b)	(a)	(b)
Socio-Economic Factors §	-327.894*** (129.8615)		-162.214*** (42.01456)	
Education Population		771.8936 (863.6608)		-10.0642 (231.26)
Agricultural Labour Force		1846.892*** (566.4197)		703.0175*** (195.4019)
Long Term Unemployment		363.4748 (264.9683)		119.7216 (81.18214)
Young Population		3029.142** (1395.854)		1200.057*** (494.6487)
<i>National Dummies</i>				
de	294.7922*** (111.1332)	205.139** (81.83613)	65.45534** (27.4801)	35.56319* (20.35761)
it	57.38723 (80.60264)	46.11072 (96.23988)	-9.09578 (27.36722)	-22.1725 (26.60234)
at	-37.8744 (63.17935)	-71.8916 (99.93928)	-17.1091 (25.62074)	-40.7265 (37.53585)
be	153.1352 (100.7441)	-15.7337 (119.9024)	54.42931* (26.19563)	-2.24039 (30.53526)
pt	-58.9707 (73.48608)	-69.3652 (93.02556)	179.3968*** (42.1867)	167.1739*** (52.87925)
nl	91.98157 (61.66183)	-194.286* (107.3449)	20.23761 (19.88387)	-95.4172*** (36.32245)
uk	214.5534*** (83.53881)	60.30519 (56.59665)	102.6423*** (27.09222)	33.96666 (22.9845)
es	460.8256 (87.2242)	130.3368 (130.6492)	173.652*** (36.87841)	50.1997 (47.33312)
gr	348.8422 (96.97734)	61.27249 (152.8804)	-9.13357 (25.41967)	-114.086** (52.04321)
fi	233.367*** (83.44499)	82.88095 (102.4067)	-15.2933 (10.75426)	-78.7236*** (27.42229)
Constant	247.3297 (60.25865)	-596.29* (307.5034)	111.9031*** (18.47053)	-178.189** (89.55031)
R-squared	0.37	0.46	0.46	0.56
F-stat	8.71***	5.47***	17.38***	7.62***

*, ** and *** denote significance at a 10%, 5% and 1% level respectively. SE in parentheses

§This variable is the linear combination of the socio-economic variables described in the text and is calculated through the Principal Component Analysis (Appendix B)

1
2
3 **Tab.5 – Testing sigma-convergence of regional GPD per capita, 1994-2003**
4

5

Test for sigma convergence				
	1994	2003	T_1	p
	<i>All regions</i>			
Sigma ²	33376383.85	43887527.32	0.760498	0.94
	<i>Objective 1 regions</i>			
Sigma ²	9532911.765	11726050.54	0.812969	0.77

6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Tab.6 – Regression analysis for beta-convergence

Dependent Variable: growth rate of regional GDP per capita, 1994-2003

	1	2	3	4	5	6	7	8
Constant	0.1207*** (0.0133)	0.0702*** (0.0202)	0.1582 (0.0267)	0.1368** (0.054)	0.017575*** (0.00066)	0.01273*** (0.00144)	0.02049*** (0.00101)	0.1323** (0.0645)
LnGDP'94	-0.0108*** (0.00140)	-0.00406* (0.00208)	-0.01494*** (0.00292)	-0.0128** (0.00565)				
Socio-Economic Factors					-0.000966** (0.00041)	6.88E-05 (0.00056)	-0.001790*** (0.00052)	-0.00017 (0.00129)
National Dummies	no	yes	no	yes	no	yes	no	yes
Regions	All	All	Obj.1	Obj.1	All	All	Obj.1	Obj.1
R-Sq	31.60%	59.5%	33.9%	60.5%	4.00%	58.20%	18.4%	60.5%
R-Sq (adj)	31.10%	55.7%	32.6%	49.9%	3.30%	54.30%	16.8%	48.7%
F-stat	59.63***	15.86***	26.18***	5.71***	5.44**	15.04***	11.51***	5.11***

*, ** and *** denote significance at a 10%, 5% and 1% level respectively. SE in parentheses

Table 7 - Correlation analysis, GDP per capita (pps), Socio-Economic Factors and Regional Funds

	GDP per capita (pps) 1993	GDP per capita (pps) 1999	Socio-Economic Factors	GDP per capita (pps) 1993	GDP per capita (pps) 1999	Socio-Economic Factors
	Correlation coefficient			Spearman Rank Correlation (Rho)		
<u>All regions</u>						
Socio-Economic Factors	0.4221*	0.4557*		0.3786*	0.4107*	
	0.0000	0.0000		0.0000	0.0000	
Total Funds per capita 94-99	-0.6460*		-0.2816*	-0.7782*		-0.3229*
	0.0000		0.0011	0.0000		0.0002
Total Funds per capita 00-06		-0.5892*	-0.3369*		-0.7700*	-0.3524*
		0.0000	0.0001		0.0000	0.0000
<u>Objective 1 Regions - 1994-1999</u>						
Obj.1 Funds per capita 94-99	-0.4624*		-0.0210	-0.4204*		-0.0043
	0.0006		0.8838	0.0021		0.9764
<u>Objective 1 Regions - 2000-2006</u>						
Obj.1 Funds per capita 00-06		-0.2849*	-0.2705		-0.1923	-0.2047
		0.0386	0.0501		0.1677	0.1414

* correlation coefficients significant at the 5% level or better

Fig. 1 – Regional growth rate (94-03) vs. socio-economic factors, all regions

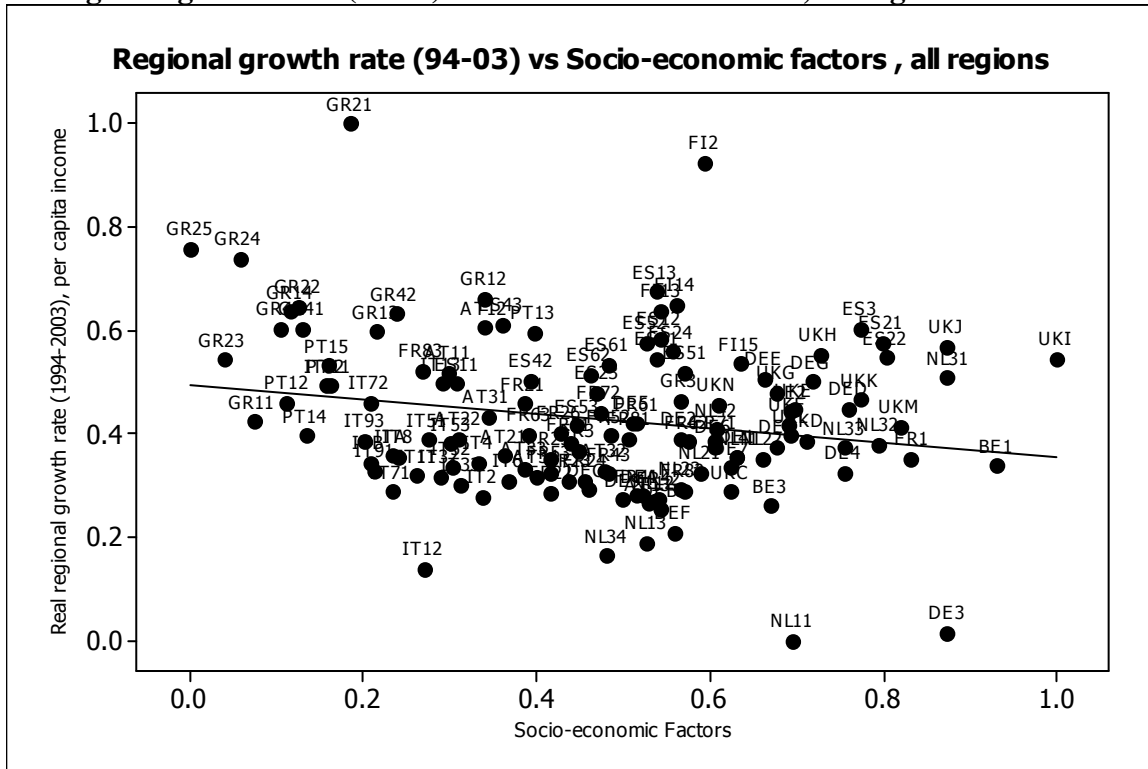
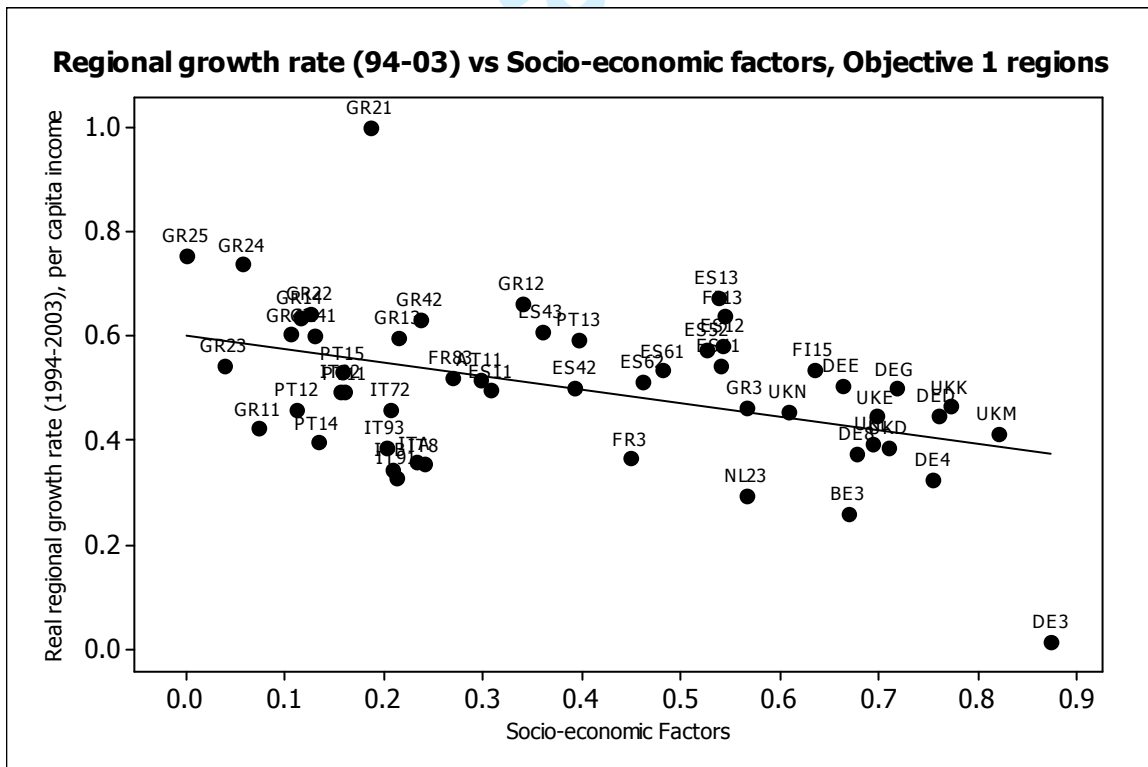
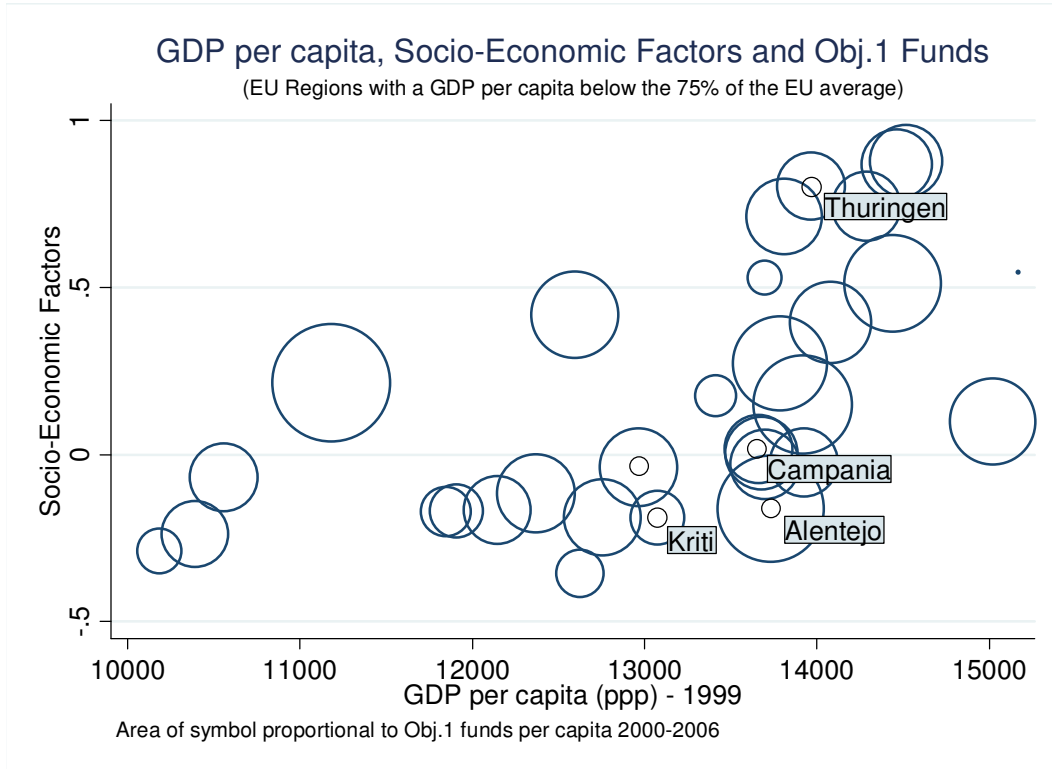


Fig. 2 – Regional growth rate (94-03) vs. socio-economic factors, Objective 1 regions



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Fig. 3 – GDP per capita, Socio-Economic Factors and Obj.1 Funds



Review Only