# Urbanisation, a Determinant Factor for European Regional Development Funding in the

Netherlands



European Institute

ANONYMISED USER Course Paper

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# 1 Introduction

The European Regional Development Fund (ERDF) has the objective to converge regional economic output within European member-states. For the Netherlands, there likely is no major advantage from the funding channelling through the European Commission, other than ERDF equipping the Netherlands with a possibility to attach an "EU" branding to these investments to gain national support for the European-project. As this course paper will highlight, the restrictions the European Commission imposes on the use of ERDF, generally match those purposes the Netherlands would invest into in absence of EU-wide coordination. Yet, flexibility of the European Commission on the distribution and use of ERDF is encouraged by this text.

The course paper questions whether more urbanised areas receive more ERDF and finds the amount of funding to be positively correlated with population size, but negatively with population density and commercial activity. In municipalities hosting a large population, the first effect strongly outweighed the latter two.

Given the presence of an economic and political cleavage between more and less urbanised areas, it is argued to be fruitful to put stronger emphasis on the ultimate beneficiaries of innovation-projects in the ERDF-application procedure.

The course paper will first provide an overview of ERDF and the strategy of the Netherlands, then it will review relevant literature and outline a linkage between: ERDF, urbanisation and an economic and political cleavage. Consecutively, a data-section and analysis-section will focus on the role of urbanisation in the allocation of ERDF. Finally, the conclusion will summarize the research and discuss the implications of its findings.

#### 2 ERDF in the Netherlands

The ERDF scheme as outlined by the European Commission (2013) has the objective to stimulate innovation in economically disadvantaged regions within European member-states. The intention of the fund's capital injections is to create snowball-effects, attracting additional and increasingly much private sector investment, to eventually create employment and GDP growth in the disadvantaged regions.

The Commission's funding requirements dictate that the Netherlands must spend at least 80% of its budget on two of the following guiding-themes: innovation & research, the digital agenda, the competitiveness of SME and the low-carbon economy. Moreover, it should spend at least 20% of its budget on the low-carbon economy and at least 5% on sustainable urban development. Finally, the scheme requires disadvantaged regions, such as for instance sparsely populated areas, to receive a preferential treatment in the allocation of funding (European Commission, 2020).

The Netherlands received 510 million euro for the period 2014-2020 and decided to prioritise innovation & research and the low-carbon economy, while aiming to particularly fund projects from the SME (Rijksoverheid, 2020). This strategy connects to the Netherlands' national policies<sup>1</sup> and is consistent with the national priorities outlined by Dijksma (2013b) to focus on green growth, innovation & research, reducing inactivity on the labour market and increasing social inclusion. Moreover, the Netherlands topped-up the initial amount by 91 million euro and acknowledged the need for economic convergence between regions (Dijksma, 2013b).

Dijksma (2013b) further informs that funding is distributed proportional to the 2007-2013 period, which results in respectively the northern, eastern, southern and western innovation-region, receiving: 20.41%, 19.77%, 22.40% and 37.42% of the budget. This strategy is approved by European Commission but seems inconsistent with the objective to focus on economically disadvantaged regions: The western region which hosts most of the population, but is also must urbanised and arguably most economically developed, receives almost twice the budget of the other regions. This course paper therefore questions whether the

allocation of funding is consistent with the objective of the ERDF to target economically disadvantaged regions.

## 3 Literature Review

The four innovation-regions are individually responsible for implementing the innovation strategy in their respective region. Funding is therefore transferred from these regional administrators onto the individual projects. However, as suggested by the distribution of funding, it might be that projects located in more urban areas have a larger likelihood of receiving ERDF. Such an imbalance could be explained by an application bias or structural difference in firm productivity and might lead to an increased economic and political cleavage. This section will explain the rationale behind this claim but will start with generically reviewing the literature on the effectiveness of ERDF in stimulating employment and GDP growth.

The literature on public funding-schemes targeting SME and aiming to boost innovation outcomes, GDP growth and employment rates, is too extensive to discuss in this course paper. However, based on the empirical findings of Ederveen et al. (2006), Dall'Erba & Fang (2017) and Benkovskis et al. (2018), ERDF seems at least in the more developed member-states, to exert the desired policy-effects. Dam (2017) conducts a case study on the eastern part of the Netherlands and finds the programme to be well targeted. This observation in combination with the match between the Netherlands' general policy-priorities (Dijksma, 2013b) and the Netherlands' strategy on ERDF as outlined in the previous section, gives little reason to doubt the appropriateness of ERDF for the Netherlands.

The funding imbalances between the four innovation-regions and between areas within these regions, might result for three reasons. First, most (innovating) firms are expected to be located in the western innovation-region. Second, firms might have been subject to an unequal amount of promotion of ERDF or assistance in applying for ERDF. Third, firms in more urban environments may be more productive hence can submit higher quality applications and yield larger (social) returns from ERDF-investments.

Rooij (2002) show that larger municipalities in the Netherlands make more use of EU funds. A finding Rooij explains by the relatively large administrative resources of these municipalities. Benkovskis et al. (2018) shows that in the case of Latvia, larger, more capital intensive and more productive firms were more likely to participate in ERDF. A finding the authors ascribe to sunk-costs associated with participating in ERDF. Tsvetkova et al. (2020) explain that firms from urban environments have a stronger ability to attract human capital, have more access to financing opportunities, a better developed infrastructure and are subject to a tougher market discipline. Kondo (2016) further emphasises the importance of agglomeration economics and the presence of positive spill-overs between firms. Yet, Harris et al. (2019) indicate that it might only be

larger firms that benefit from such spill-overs. Nevertheless, all firms located in urban environments seem to receive some competitive advantage from their location.

A structural political cleavage between regions in the Netherlands is observed when considering voting patterns (Kiesraad, 2020). Similar geographical divides in policy-preferences are, for instance, observed in the United Kingdom and Greece [see: Jennings & Stoker (2018); Walks (2005); Rontos et al. (2016)]. Marcinkiewicz (2018) shows that for the case of Poland, urbanisation has more explanatory power in describing policy-preferences than historical legacies and economic variables. McGrane et al. (2016) show that in the case of Canada, the divide is most prominently expressed in preferences over taxation, moral policies, and social assistance, while economic issues and the welfare state are less polarised.

Although the above two works find economic issues to matter less, this is unlikely to be the case in the Netherlands. A large share of the burden of creating a low-carbon economy is faced by the natural gas and agricultural sectors, and both these sectors have been struggling to cope with the increased pressure for sustainability. Ways in which this has been embodied are the widely supported farmers' protest of 2019-2020 (van der Ploeg, 2020) and protests to reduce natural gas extraction in Groningen of 2018-2019 (Trip & Romein, 2019). These conflicts have been in addition to the already fierce debates about the placement of windmills and solar parks, and the willingness to pay for sustainability in general. Moreover, the protests might be in line with a broader European trend in which less-urbanised communities feel increasingly detached from governments. Analysing the support for the 2018-2019 "yellow vests" movement (The Wall Street Journal, 2018) and geographically mapping the result of the 2016 Brexit referendum (BBC News, 2016) are examples of these. Yet, this latter divide might not be caused by urbanisation (Johnston et al., 2018). Nevertheless, it might prove fruitful to increase support to SME in less-urbanised areas or to ensure innovation-outcomes are particularly beneficial to struggling communities to limit geographic discrepancies.

#### 4 Data

Given the funding distribution across innovation-regions and the economic rationale for biasing the allocation of funding towards more urbanised areas, this section will introduce the data used in this paper and provide descriptive statistics on the relation between ERDF and urbanisation. The next section will conduct a formal analysis on the question whether projects located in more urban areas tend to receive more funding, as well as verify whether ERDF indeed led to employment and GDP growth. If indication is found that ERDF led to the desired policy-effects and is biased towards more urban areas, then this might indicate an inefficient outcome in which economic and political discrepancies between regions are stimulated.

Firm-level data on projects funded with ERDF-subsidies is collected from Europa om de Hoek, a public agency that functions as a platform to facilitate transparency in the investment of European funding. These projects were aggregated to a municipal-level and combined with municipality-level data from Waarstaatjegemeente.nl, a dataset administered by the Society of Dutch Municipalities (De Vereniging van Nederlandse Gemeenten).

Several municipalities merged over the course of the analysis. It is unclear how this is accounted for by the Society of Dutch Municipalities. Moreover, the analysis lacks data on the 91 million euro the Netherlands spent in addition to the ERDF allocated by the European Union.

Table 3 shows that a total of 773 projects were (partially) funded with ERDF between the years 2014 and 2020. Projects were hosted in 171 of the 355 municipalities but clustered in the eastern part of the Netherlands. The eastern innovation-region hosted 393 of the projects in 63 different municipalities, 83% of its total number of municipalities. Table 3 further illustrates that the western region received  $62\%^2$  of the ERDF, much more than the initial and already unbalanced 37%. Projects in this region were also relatively heavily funded by ERDF and of much larger scale. Table 5 illustrates that each innovation-region primarily spends ERDF in municipalities with large populations.

The descriptive statistics thus indicate that the bulk of ERDF is allocated to larger projects in more urbanised (western) areas, but that the number of projects in the western innovation-region is not substantially higher than in other innovation-regions. Moreover, projects in the western innovation-region are most geographically clustered (Table 4).

# 5 Analysis

Table 1 presents the results of a multivariate regression. The first model aims to identify the effect of urbanisation on the amount of ERDF a municipality received. Because no appropriate instrumental variable was found, it was decided to compensate a potential "omitted variable bias" by measuring urbanisation in various ways: the number of inhabitants per square kilometer is statistically significantly and negatively related to the amount of ERDF. Densely populated municipalities thus received less ERDF. The function mix captures the proportion of jobs relative to homes. A value of 50 indicates that a municipality has equally many jobs as homes. An (unrealistic) value of 100 would indicate that a municipality is solely centred around employment and has no population. The coefficient on the function mix is negative, statistically significant and large in magnitude. Municipalities that are relatively centred around the production of goods and services thus received less ERDF. These two findings seem unintuitive from the story told thus far, but are consistent with the objective to support economically disadvantaged regions. Yet, when considering the size of a municipality, as measured by its population, the effects are offset in large municipalities.

The statistically significantly and positive coefficient on labour market conditions, as measured by the net labour participation<sup>3</sup>, indicates that municipalities with in 2013 crowded labour markets were likely to receive more ERDF. Moreover, the coefficient on the amount of employment in 2013 is positive but not statistically significant. Both might indicate that ERDF is spent in those municipalities where employment growth is needed most.

The solvency-ratio, a proxy for the municipality's ability to engage in fiscal policies such as active labour market policies, is positive, statistically significant and fairly large in magnitude, indicating that financially better positioned municipalities typically receive more ERDF.

The coefficients on the number of higher educated citizens living in a municipality and a municipality's renewable energy usage do have the expected sign but are not statistically significant.

Model two and three estimate the (non-instrumented) effect of ERDF on employment and GDP growth. The latter statistic is not measured on a municipal level and therefore proxied by the amount of tax revenue a municipality receives on average per citizen from economic affairs. The measurement of this variable is not very transparent, the estimates of model III should therefore be interpreted with caution. Nevertheless, the models indicate a positive relation between the amount of ERDF a municipality receives and its employment and GDP growth. Yet, the coefficient in model II is not statistically significant and in both models the coefficient is of a low magnitude, indicating irrelevancy of ERDF on employment and GDP growth.

# 6 Conclusion

ERDF has the objective to financially support SME and municipal-government investments in innovation & research and the low-carbon economy. A preferential status is hereby intended to projects investing in more economically disadvantaged regions to foster employment and GDP growth in those regions.

Four innovation-regions in respectively the north, east, south and west of the Netherlands were responsible for implementation of the programme and received respectively 9%, 14%, 15% and 62% of the 510-million-euro budget. Given that the western innovation-region is most urbanised and hosts the bulk of national production, the funding distribution seems counter-intuitive to the intention of ERDF to focus on economically disadvantaged areas. Moreover, investing much in relatively developed regions might stimulate existing economic and political cleavages between more and less urbanised areas.

To explore the question whether the current distribution of ERDF over the four innovation-regions is efficient, firm-level data was aggregated to a municipal level and combined with municipal characteristics. It was found that the eventual distribution of funds was biased towards the western innovation-region. that projects is this region were of much larger scale and relatively heavily funded by the ERDF. The number of projects hosted by the western region did not substantially differ from other innovation-regions, but projects in this region were relatively clustered in few municipalities. A consecutive multivariate regression analysis illustrated that the role of urbanisation in the amount of ERDF a municipality receives is more complex than then descriptive statistics suggest: Population density and the amount of commercial activity are both found to exert a negative impact on the amount of ERDF and are therefore consistent with the existence of a preferential treatment of economically disadvantaged regions. However, population size is positively related to the amount of ERDF. In municipalities with large populations, the latter effect outweighs the preferential treatment. Finally, ERDF is found to have a neglectable impact on employment and GDP growth in both the full sample and a subsample only considering municipalities that received ERDF.

This course paper thus illustrated that although the western innovation-region captured 62% of the ERDF-budget, some negative effects from urbanisation were excreted but evaporated when municipal populations were large. Therefore, the allocation of funding is only partially consistent with the ERDF objectives.

On the other hand, as has been outlined in the literature review, investments into innovation are generally most efficiently made in large urbanised areas. Moreover, it should be noted that the less urbanised areas are, compared to many other member-states, relatively well connected to more urbanised areas, lowering the need to spend large amounts on regional development. Furthermore, the analysis assumed the municipality in which firms are located to be identical to the municipality in which the innovation-project was conducted. This assumption is likely to be violated in many instances, making the size of the estimates on employment and GDP growth downward biased, which po-

tentially led to an underestimation of the benefit less-urbanised areas received from ERDF. For these three reasons, it cannot be concluded that the ERDF-programme failed in the Netherlands.

Nevertheless, considering the economic and political cleavages in the Netherlands, it might be fruitful to target and support those groups facing long-term difficulties, for instance in the transition towards the low-carbon economy. Therefore, it might be interesting to explore the option to strengthen the emphasis put on the ultimate beneficiaries of ERDF innovation-projects, when reviewing funding applications. Furthermore, it would be useful to delve deeper into the characteristics of projects. It can for instance be analysed what proportions of projects focussed on what type of innovations, how projects interact with each other, whether some of the projects received ERDF previously, what type of projects tend to succeed or what type tends to increase GDP and employment most, and how all these characteristics are structured geographically, both within as well as across European member-states.

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# Appendix

#### Notes

<sup>1</sup> As related to the Energieakkoord and Samenhang in het Innovatie-instrumentarium van Rijk en Regio voor het MKB (Dijksma, 2013a).

<sup>&</sup>lt;sup>2</sup> Reasons for the growth in the imbalance could be an absence of applications or appropriate projects in the other three innovation-regions. It could also be that applications in the western innovation-region were of an unanticipated high quality, making the authorities to decide to leverage funds to the western innovation-region. Evidence for this is that projects in the western region tend to be substantially larger and clustered in a relatively small share of municipalities.

<sup>&</sup>lt;sup>3</sup> Ratio: number of employed citizens to number of working-age citizens.

#### **Data Sources**

The few missing observations in the control variables were replaced by the sample average of the respective variable. An Excel-file containing the data used for analysis can be retrieved HERE. (The submission portal did not allow to upload two documents / the data along with the course paper).

**Project characteristics** Europa om de Hoek - Projects 2014-2020, accessed May 10 2020: https://www.europaomdehoek.nl/

Municipality characteristics waarstaatjegemeente.nl - Vereniging van Nederlandse Gemeeten (VNG), accessed May 10 2020: https://www.waarstaatjegemeente.nl/jive

Tables

	I	II	III
Dependent variable:	ERDF in 10 <sup>5</sup>	$\Delta$ number of jobs	$\Delta$ tax revenue from
		per 1000 citizens	economic affairs
		aged 15-74	per citizen
		(2013-2019)	(2017-2019)
ERDF in 10 <sup>5</sup>		0.069	0.434*
		(0.11)	(0.25)
Population per KM^2	-0.004***	-0.005	0.000
	(0.00)	(0.00)	(0.01)
Function mix [0,100]	-1.051**	-2.417**	-0.056
	(0.53)	(1.12)	(2.43)
Population in 10 <sup>3</sup>	0.391***	0.076	-0.230
	(0.02)	(0.06)	(0.14)
Net labour participation 2013 [0,1]	117.114**	494.300***	412.900*
	(48.53)	(103.2)	(224.00)
Jobs per 1000 citizens aged 15-74 in	0.025	0.087*	0.068
2013	(0.02)	(0.04)	(0.10)
Higher educated per 1000 citizen aged	0.009	-0.083**	-0.040
15-74 in 2013	(0.02)	(0.04)	(0.09)
Solvency ratio, municipality 2013	10.397**	-6.519	-30.90
[0,1]	(4.58)	(9.73)	(21.13)
Renewable energy usage, municipality	9.454	-6.486	41.990
2013 [0,1]	(9.89)	(20.9)	(45.34)
Project cost in 10^6	2.039***	-0.099	-0.705
	(0.05)	(0.26)	(0.56)
Intercept	-56.197**	-219.700***	-248.300**
	(27.3)	(57.86)	(125.6)
Region dummies	YES	YES	YES
Model	OLS	OLS	OLS
N	355	355	355
Adjusted R <sup>2</sup>	0.9409	0.0656	0.0057

\*\*\* if p<0.01, \*\* if p<0.05 and \* if p<0.10

Note: The median municipal population is 29,775

Table 1: Full Sample

	I	II	III
Dependent variable:	ERDF in 10 <sup>5</sup>	Δ number of jobs	Δ tax revenue from
		per 1000 citizens	economic affairs
		aged 15-74	per citizen
		(2013-2019)	(2017-2019)
ERDF in 10 <sup>5</sup>		0.074	0.508*
		(0.12)	(0.30)
Population per KM^2	-0.008***	0.001	0.010
	(0.00)	(0.00)	(0.01)
Function mix [0,100]	-2.426*	0.641	6.497
	(1.46)	(2.149)	(5.44)
Population in 10 <sup>3</sup>	0.453***	0.096	-0.284
	(0.03)	(0.07)	(0.19)
Net labour participation 2013 [0,1]	226.763**	311.400*	520.800
	(109.95)	(162.700)	(412.300)
Jobs per 1000 citizens aged 15-74 in	0.070	-0.006	-0.170
2013	(0.06)	(0.09)	(0.23)
Higher educated per 1000 citizen aged	0.007	-0.080	-0.182
15-74 in 2013	(0.05)	(0.07)	(0.17)
Solvency ratio, municipality 2013	15.380	-3.772	-30.520
[0,1]	(10.36)	(15.23)	(38.59)
Renewable energy usage, municipality	12.927	4.177	-64.520
2013 [0,1]	(14.25)	(20.87)	(52.86)
Project cost in 10 <sup>6</sup>	1.999***	-0.168	-0.927
	(0.08)	(0.26)	(0.66)
Intercept	-88.005	-187.400**	-493.700**
	(63.02)	(92.58)	(234.5)
Region dummies	YES	YES	YES
Model	OLS	OLS	OLS
N	164	164	164
Adjusted R <sup>2</sup>	0.9452	0.0374	0.0007

\*\*\* if p<0.01, \*\* if p<0.05 and \* if p<0.10

Note: The median municipal population is 29,775

Table 2: Municipalities That Received ERDF (Sub-Sample)

	ERDF	Share in	Total project	Total project Share in project	Ratio share	Average	Average	Number	Average
		ERDF	cost	cost	ERDF to	coverage in	project	Jo	number of
					share in	project cost	duration in	projects	beneficiaries
					project cost		days		
West	315.117.592	0.62	1032.222.698 0.58	0.58	1.07	0.32	9069	164	4.0
East	72.839.610	0.14	283.552.868	0.16	06.0	0.24	4282	393	2.5
South	South 74.016.541	0.15	291.642.628	0.16	68.0	0.28	3020	123	3.7
North	46.097.294	60.0	168.420.641	60.0	96.0	0.29	4140	93	3.3
Sum	508.071.037	1	1775.838.835		1	1	1	1	
	Median		Median			Median	Median		Median
	ERDF		project cost			coverage in	project		number of
						project cost	duration in		beneficiaries
							days		
West	West 1.083.627		4.443.400			0.32	2571		3.9
East	346.759		1.304.214			0.24	1983		2.0
South	389.444		1.494.544			0.27	1633		3.0
North	080.606		2.975.619			0.31	1458		3.0

Table 3: Project Statistics

	Number of municipalities	Number of municipalities with ERDF	Share of municipalities receiving ERDF
West	125	35	0.28
East	77	63	0.83
South	108	50	0.46
North	45	23	0.51

Table 4: Project Clustering

North	20.593.302	5.673.780	4.166.036	2.983.413	1.782.277	
V	Groningen	Leeuwarden	Assen	Emmen	Dronten	nount received.
rh	17.892.346	5.908.479	5.471.895	5.223.729	4.232.669	n-regions along with the am
South	Eindhoven	Sittard-Geleen	Breda	's-Hertogenbosch	Maastricht	novatic
East	17.078.848	13.672.633	4.212.127	3.955.588	3.534.202	eceiving most ERDF in each of the four ir
	Nijmegen	Enschede	Wageningen	Arnhem	Hengelo	ring most ERDF
West	93.421.865	91.258.717	21.977.342	20.127.781	19.186.131	palities r
	Amsterdam	The Hague	Rotterdam	Utrecht	Amersfoort	Note: The five munici

Table 5: Regional Rankings