

# The Impact of Local Decision-Making in Regional Development Schemes on the Achievement of Efficiency in EU Funds

Kuyucu Helvacioğlu Asli Deniz, Tektas Arzu

**Abstract**—European Union candidate status provides a strong motivation for decision-making in the candidate countries in shaping the regional development policy where there is an envisioned transfer of power from center to the periphery. The process of Europeanization anticipates the candidate countries configure their regional institutional templates in the context of the requirements of the European Union policies and introduces new instruments of incentive framework of enlargement to be employed in regional development schemes. It is observed that the contribution of the local actors to the decision making in the design of the allocation architectures enhances the efficiency of the funds and increases the positive effects of the projects funded under the regional development objectives. This study aims at exploring the performances of the three regional development grant schemes in Turkey, established and allocated under the pre-accession process with a special emphasis given to the roles of the national and local actors in decision-making for regional development. Efficiency analyses have been conducted using the DEA methodology which has proved to be a superior method in comparative efficiency and benchmarking measurements. The findings of this study as parallel to similar international studies, provides that the participation of the local actors to the decision-making in funding contributes both to the quality and the efficiency of the projects funded under the EU schemes.

**Keywords**—Efficiency, European Union Funds, Regional Development, Turkey

## I. INTRODUCTION

THE concept of Europeanization refers to the process of adopting European values, norms and system in the accession to the European Union (EU) and the ability of the candidate countries in configuring their regional institutional templates in the context of the requirements of the EU policies

and legal framework. The general emphasis is given on how domestic adaptation to European norms, structures and policies is facilitating greater systematic convergence and advancing European integration [1]. Schimmelfennig and Sedelmeier define Europeanization as the process in which states adopt EU rules [2]. Zerbinati takes the definition of Radaelli for to clarify the scope of the Europeanization processes including construction, diffusion, and institutionalization of formal and informal rules, procedures, policy paradigms, styles, ‘ways of doing things’ and shared beliefs and norms which are first defined and consolidated in the making of EU public policy and politics and then incorporated in the logic of domestic discourse, identities, political structures, and public policies [3]. Europeanization is about the resources in time, personnel and money directed by current and future member states towards the EU level [4]. Europeanization studies also try to explain if, why and how domestic politics and policies change under the pressure of European integration. In this regard, Europeanization is understood as the domestic adaptation to European integration leading to pressures to adjust (goodness of fit) which are then mediated by domestic-level factors, and finally to outcomes [5]. Grant schemes are the main instruments of the European model of integration that foresees the achievement of Europeanization by developing and systemizing a “very European” policy model based on partnership, project development and experimentation [6].

There are several studies on Europeanization that focus on analyzing the effects of EU funding in giving impetus to achieving European values and understanding. Most of the studies under this scope, center upon the aspects of European funding at the national level and survey the phenomenon of Europeanization in decision-making in the local administrations [7]; [8]; [9] [3], [10], [6], [11], [12], [13]. The process of Europeanization anticipates the candidate countries configure their regional institutional templates in the context of the requirements of the EU policies and *acquis* and introduces new instruments of incentive framework of enlargement to be employed in regional development schemes. It is observed that the contribution of the local actors to the decision making in the design of the allocation architectures enhances the efficiency of the funds and increases the positive effects of the projects funded under the

Kuyucu Helvacioğlu A. D. is with the Department of International Trade, Bogazici University, Hisar Kampus 34342 Istanbul Turkey (phone: +90-212-359-45-38, fax: +90 -212-287-24-80; e-mail: asli.helvacioğlu@boun.edu.tr).

Tektas A. is with Department of International Trade, Bogazici University, Hisar Kampus 34342 Istanbul Turkey (e-mail: tektas@boun.edu.tr).

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regional development objectives.

Pasquier takes the regional sub-national actors as the key elements of adaptation of domestic political systems to these European norms in the interactive character of the Europeanization process and claims that regional institutions participate in learning processes through a multilevel transfer of EU norms and build a new territorial policy 'model' based on the European stimuli [6]. Pasquier [6], builds his argument upon the neo-institutionalist contributions focusing on the impact of Europeanization within the domestic political multi-level frameworks and in particular on centre-periphery relations and argues that European spatial programs of funding develop similar norms of action at the local and regional level. Comparative analysis demonstrates that French and Spanish administrations implement territorial policies which display very similar principles of action. Both of them establish new territorial spaces for local development, stabilized partnership and development policies. Pasquier [6] concludes that the new territorial structures try to attract European resources.

Thielemann [10] explores the European regional policy's impact on European governance by analyzing the German case. The study is built upon three key dichotomies that have shaped the evolution of the European regional policy regime: development versus compensation; intergovernmentalism versus multi-level governance; and cohesion versus competition. Thielemann finds out that the experiences of post-unification Germany suggest that ironically it is the Commission's DG Competition which must be regarded as the most powerful regional policy actor in Europe, as its competition priorities can severely undermine the cohesion strategies of both national and European authorities. European regional policy initiatives can therefore be seen as constituting a double-edged sword for the member states. While member states have been able to reap financial benefits or have at least managed to decrease their net contribution to the European budget, these benefits have come at a political cost as European regional policy initiatives can significantly curtail the independence of national authorities.

In that context there are two important features of Europeanization in regional development; the ability to form a new structure for administrative harmonization and the efficient utilization of the EU funds allocated under the pre-accession schemes. The crucial issue in the achievement of Europeanization lies in the success level of the candidate countries in attaining the balanced contribution and the participation of all sub-national local actors to the decision-making for regional development schemes. This leads to both increasing the impact of the projects funded in line with the EU harmonization objectives and to the intensive adjustment motives to the EU norms and policies that are observed in the attributes of the local actors. Regional Development Agencies, in that respect, even though very novel in Turkey have become one of the major local parties as they constitute a center of motivation and initiation for regional policies and programs [14], [15], [16].

This study aims at exploring the performances of the three regional development grant schemes in Turkey, established and allocated under the EU harmonization process with a special emphasis given to the roles of the national and local actors in decision-making for regional development. A special emphasis is given to the regional development agencies in those areas. Efficiency analyses have been conducted using the DEA methodology which has proved to be a superior method in comparative efficiency and benchmarking measurements. The findings of this study as parallel to similar international studies, provides that the participation of the local actors to the decision-making in funding contributes both to the quality and the efficiency of the projects funded under the EU schemes.

## II. REGIONAL DEVELOPMENT POLICIES AND STRATEGIES IN TURKEY IN THE EU HARMONIZATION PROCESS

Regional development architecture in Turkey has always been an issue of central decision-making mechanisms, mostly outlined and applied under the national incentive programs designed to improve the economic and social conditions of the least developed regions. In the 1998 Regular Report, the European Commission had identified that closing the gap deriving from the wide regional development disparities should be high on the government's list of priorities and stated that the European Union would deploy the resources of the European strategy in line with this task as Turkey's development lagged well behind the Community average [17]. In mid-July 2000, The Turkish Parliament has approved the 8th Development Plan, setting medium-term targets for economic consolidation, social and regional development and legal reform. In 2000, State Planning Organization Regional Development Specialization Commission [18] published a report claiming that the regional development policies and the organizational structures of the local administrations in the EU might form a sample for the regional development schemes in Turkey.

In 2002, Turkey adopted the NUTS-IBBS (The Nomenclature of Teritorial Units for Statistics) system that is used in the EU. This system provides a new regional mapping of 3 levels which constitutes the main framework of regional fund allocation. In Turkey, NUTS 1 level includes 12 regions whereas NUTS 2 level covers 26 regions. Consequently, NUTS 3 level presents all of the 81 cities in Turkey. Article 4 of the Law [19] setting the NUTS regions states that in all of the studies that would be undertaken with the aim of regional statistical data collection, regional socio-economic analysis development and the setting of the framework of regional development policies, public institutions and administrations entirely are entitled to use the NUTS system. This change in the system is attained in compliance with the EU harmonization. The most important feature of it is the new geographical mapping is the methodology grouping the cities with similar economic and social conditions and taking those groups as the reference units for fund allocation.



Fig 1 NUTS 2 Regions in Turkey [20]

In 2003, The Central Finance and Contracts Unit (CFCU) is established by the Memorandum of Understanding which is signed between EU Commission and Turkish Government. CFCU is founded as the agency that is responsible for the overall budgeting, tendering, contracting, payments, accounting and financial reporting aspects of all procurement in the context of the EU funded programs in Turkey, including the regional development schemes. In 2006, Law No.5449 establishing Regional Development Agencies had come into effect. This was a remarkable development in the regional policy of Turkey. Today, Regional Development Agencies are still in the process of institutionalization. An amount of 200 million YTL was appropriated for 2007 for the Development Agencies whereas a 100 million YTL appropriation has been allocated for 2008 [21]. The budget allocated to the Regional Development Agencies is provided in Table 1 [21].

TABLE I

MATRIX OF POLICY COMMITMENTS: REGIONAL DEVELOPMENT (1000 €)

	2006	2007	2008	2009	2010
Development Agencies Implementation Profile					
Net Effect on Budget	3,337		53,769	53,529	54,862
Direct Effect on Budgetary Revenues					
Direct Effect on Budgetary Expenditures -	3,337		53,769	53,529	54,862

In the 2007 Regular Report, the European Commission once more stressed the need for reforms that would foster better-balanced socio-economic and regional development [22]. In 2008, the Council in the Council Decision document on the principles, priorities and conditions contained in the Accession Partnership with the Republic of Turkey, provided the task to be realized as the basis of harmonization in the regional policy and coordination of structural instruments which is to reinforce the establishment of institutional structures and strengthen administrative capacity in the areas of programming, project preparation, monitoring, evaluation and financial management and control, particularly at the level of line ministries, to implement EU pre-accession programs as a preparation for the implementation of the Community's cohesion policy.

The Ninth Development Plan (2007-2013), the Government Program and the process of convergence to the EU shape the

framework of basic reforms in Turkey. In determining and implementing the reforms, the decision-making are made in compliance with the priorities and strategies of both Turkey and the EU. Policies to be followed and reforms to be realized in the EU accession process are stated in the documents prepared by Turkey such as the National Program, Pre-Accession Economic Program and the Strategic Coherence Framework (SCF) [21]. Harmonization with the EU, regional development projects and developing institutional capacity for regional development at both central and local levels are introduced as the two major tasks to be accomplished for regional development and a roadmap for legal harmonization is provided in the Pre-Accession Economic Program in 2007 as presented in Table 2 [21]

TABLE II  
REGULATIONS ON REGIONAL DEVELOPMENT

Regulation	Year	
The Law No.5449 on the Establishment, Coordination and Duties of Development Agencies	2007	The Law, which allows the establishment of Development Agencies in the determined NUTS II Regions and regulates the related principles and procedures, has been enacted on 8 February 2006 by Law No.5449 upon the adoption of the TBMM.
The Decision of the Council of Ministers on the Establishment of Development Agencies in certain NUTS II Regions	2007	Development Agencies have been established in TR62 NUTS II Region (comprising the provinces of Adana and Mersin), of which the province of Adana is the center and TR31 NUTS II Region (comprising the province of İzmir), of which İzmir is the center.
Regulation on the Working Principles and Procedures of Development Agencies	2009	Provisions on structure and bodies of Development Agencies, duties and authorities of these bodies, and the functioning of Development Agencies have been regulated.
Twinning Project of Support to the State Planning Organization General Directorate of Regional Development and Structural Adjustment for Strengthening Institutional and Administrative Capacity	2007	The Project, which lasted for 18 months, has finished on January 25, 2007.

The regional development programs are accompanied by financial instruments that are mostly operated by the CFCU. Those funds are established under the pre-accession scheme to harmonize regional development policy and practices with EU and activate local development potentials and initiatives at identified priority regions, special regional development programs [21]. South Eastern Anatolia Project (GAP), Zonguldak-Bartın-Karabük (ZBK), Eastern Black Sea (DOKAP) and Eastern Anatolia (DAP) Regional Development Plan and Yeşilırmak Basin Development Plan (YHGP) are the regional programs that are already being applied. Table 3 provides the budgets of those regions that are set under the NUTS II regional mapping schemes for the 2006-2008 terms [20]. The allocation of these funds bear a symbolic importance as they are the first regional fund schemes that are established through a call system where both

the civil society and the entrepreneurs have the chance of participation.

TABLE III  
MATRIX OF POLICY COMMITMENTS: REGIONAL DEVELOPMENT (1000 €)

	2006	2007	2008
1. Regional Development in TR82, TR83 and TRA1 NUTS II Regions			
<i>Implementation Profile</i>	-9,655	-2,414	
<i>Net Effect on Budget</i>	-9,655	-2,414	
<i>Direct Effect on Budgetary Revenues</i>			
<i>Direct Effect on Budgetary Expenditures</i>			
Regional Development in TRA2, TR72, TR52 and TRB1 NUTS II Regions			
<i>Implementation Profile</i>			
<i>Net Effect on Budget</i>		20,970	
<i>Direct Effect on Budgetary Revenues</i>			
<i>Direct Effect on Budgetary Expenditures</i>		20,970	
Regional Development in TR90 NUTS II Regions			
<i>Implementation Profile</i>			
<i>Net Effect on Budget</i>			6,000
<i>Direct Effect on Budgetary Revenues</i>			
<i>Direct Effect on Budgetary Expenditures</i>			6,000

In the 2008 National Program of Turkey [23], regional development is noted as one of the major areas of advancement. The priority is given to the establishment of the national regional development strategy, prepared to cover the entire country, the framework for spatial and regional development policies and strategies. National Program focuses on mobilizing the local potential with financial support systems and proposes to develop and strengthen local development initiatives. There is a tendency to improve the formation and development of these local initiatives and funding programs within the scope of the regional development plans and strategies. The most important part of this structure is to create a participatory approach where all the relevant actors, including the local ones shall contribute to the design of those programs. This is an interesting issue which will lead to the increased participation of the local authorities and institutions as well as the civil society in the adaptation and the production of the regional development policies and special regional development programs financed within the framework of the Turkey-EU financial cooperation.

### III. DECISION-MAKING IN REGIONAL DEVELOPMENT IN TURKEY

In March, 2001 the Commission clarified that the major challenge in the candidate countries is the weak regional administrative capacity and offered to establish a centralized management of funds to maximize efficiency [1]. In line with this approach, CFCUs are established in every single candidate state including Turkey. This has been a crucial but also controversial attempt in achieving the Commission's goal of decentralization in regional development as it was empowering the central institution accepting the risk that the

regional administrations may lack the required decision making skills and knowledge. This conditionality has created a novel, three-level decision making environment in Turkey.

1. National level: The decisions for regional development at the national level are in line with the national regional development policies, EU regional development priorities and strategies and NUTS II region based regional planning. As CFCU is responsible for right, effective funding, there should be SWOT analysis undertaken in the process of fund designing, accompanied by the participation of local experts and administrations that identify the real needs of the region.

2. Regional level: The local administrations in the cities, municipalities, NGOs, educational institutions, chambers, sectoral associations and unions are encouraged to become the parties to be involved in the decision-making. The objective compliance level should target high number of beneficiaries with a greater geographical coverage. Decisions in less privileged regions should be supported by the achievement of synergy between the projects.

3. Individual level: This is the final beneficiary level focuses on self improvement and career development. The need is to establish a functioning project network, to select right partners and to attain project management knowledge. Europeanization is also the transfer from tradition understanding of self-oriented project making to cooperative and partnership-oriented EU mindset. The individual level is vital in less privileged regions as they are more conservative, traditional and timid to change and novelty, however at the very same time very motivated for EU projects. Especially gender issues become a motivation for to participate in EU projects. This process and experience contributes to self recognition and identity building for women in the local society. This is seen as an opportunity. Leading role of women among the regional role models improve women identity and hinder gender inequality

### IV. METHODOLOGY

Regional impact assessment relies on multifactor analyses where a number of input factors such as the budget allocated, types of projects involved influence a number of output factors that designate the amount of development in the region such as change in the level of GDP. The output-input ratio, defined as efficiency, would be a useful analysis of impact level through which different projects can be evaluated, benchmarked and accordingly upgraded. Data Envelopment Analysis (DEA) is a nonparametric quantitative method that has been successfully utilized as an efficiency measurement tool. This paper also utilizes the DEA, basically due to its ability to handle multiple input and output criteria. For this study, a DEA model is developed to assess the performance of regional development funds regarding three schemes covering eight regions and 27 cities.

DEA methodology [24] is commonly used for measuring relative efficiencies of decision making units within a specified set of units. DEA does not require identification of the relationship between the input and output variables. Despite a number of benchmarking approaches that identify the best practice units by relying on managers' subjective

evaluations; DEA enables management to objectively determine the best practices especially in multi factor operations. In DEA, best-practice defines the service provider that uses the least amount of resources to provide its volume and mix of service at or above the quality standard of business. Best practice units receive an efficiency score of one, which is less than one for inefficient units. Besides identifying and scoring the relatively inefficient units, DEA identifies an efficiency reference set for each inefficient unit. This is the set of relatively efficient units to which the inefficient one has been most directly compared to in calculating its efficiency rating. This comparison makes it possible to determine the amount of excess resources used by each inefficient unit as well as the amount of excess capacity to increase the outputs in these units without utilizing additional resources.

Among a number of mathematical DEA models sharing the envelopment principle, this paper utilizes the original model of Charnes [24]. The formulation in Fig. 2 is the linear programming equivalent of the fractional programming form of Charnes' model. The objective function aims to maximize the output of the rated city; the constraints make sure that the output/input, namely the efficiency ratio cannot be larger than 1. In this way, 1 depicts an efficient unit whereas values less than 1 imply inefficiency.

The DEA model is run separately for each city and produces a relative efficiency rating for each one. The ultimate objective is to find the highest possible efficiency score for each city (region). This is achieved by calculating for each city a distinct set of  $u_i$  (the weight of each output factor  $i$ ) and  $v_j$  (the weight of each input factor  $j$ ) values that maximize the efficiency ratio (Eo).

Objective function

$$\text{Max } E_o = \frac{\sum_{i=1}^k u_i y_{io}}{\sum_{j=1}^m v_j x_{jo}}$$

subject to

$$\sum_{i=1}^k u_i y_{ir} = 1$$

subject to

$$\frac{\sum_{i=1}^k u_i y_{ir}}{\sum_{j=1}^m v_j x_{jr}} \leq \frac{\sum_{i=1}^k u_i y_{io}}{\sum_{j=1}^m v_j x_{jo}} \quad r = 1, \dots, n$$

where

$$u_i, v_j > 0, \quad i = 1, \dots, k \quad j = 1, \dots, m$$

where  
 $o$  = the city/region being rated  
 $r = 1, 2, \dots, n$  cities/regions  
 $k$  = the number of output factors  
 $m$  = the number of input factors  
 $y_{ir}$  = observed output  $i$  at city  $r$   
 $x_{jr}$  = observed input  $j$  at city  $r$   
 $u_i$  = the weight (to be calculated) given to output  $i$  by the rated city  
 $v_j$  = the weight (to be calculated) given to input  $j$  by the rated city

Fig. 2 DEA Formulation

For the purpose of this paper, DEA has the capability to identify regions where the funds utilized have generated a noticeable impact so that the factors behind the relative success of these regions may be analyzed in order to better allocate the funds and improve the overall impacts of funded projects at country level. The results illustrate the efficient as well as inefficient use of regional development funds in the regions studied in Turkey. Ağrı, Ardahan, Iğdır (TRA2); Çankırı, Sinop (TR82); Bingöl (TRB1) and Amasya (TR83) are regarded as the best practice cities within the regions analyzed and should be considered as benchmarks for the remaining units of analysis.

## V. MODEL APPLICATION AND EMPIRICAL RESULTS

Impact assessments such as the one aimed at in this study require defining an output to input ratio and comparing this ratio for each decision unit. Regarding this ratio, the choice of related input and output variables is a critical issue; however, in developing countries such as Turkey, lack of standard panel data emerges as a major constraint regarding the choice of variables. There are hardly a number of regional development related data at city or region level. Output variable is the annual percentage change in the level of tax ( $y_1$ ), and the annual percentage change in the employment level ( $y_2$ ). Input variables are total budget allocated ( $x_1$ ), number of projects ( $x_2$ ), average project duration ( $x_3$ ) and a weighted indicator of project types ( $x_4$ ). The indicator reflects the strength of the project type in creating an impact on a number of factors such as the number of potential beneficiaries, duration of the impact etc. In this aspect, the SME projects are weighed as 1; relatively, the weight of development projects is 50 and utility projects weigh 500. The weights are educated guesses developed as a result of literature survey and interviews with experts in Turkey.

Finding the appropriate output factor has been a cumbersome task due to data limitations; therefore, the results should be interpreted with precaution keeping this fact in mind.

Data are compiled using statistics of TUIK (Turkish Statistics Institute) and reports of regional development fund calls for pre and post call years. The analysis covers three development fund calls, eight regions and 27 cities in Turkey. Grant contracts have been signed and the implementation of the projects is continuing under the Eastern Anatolia Development Program, covering Bitlis, Hakkari, Muş, Van and NUTS-2 Regions Development Program, covering TR83 (Amasya, Çorum, Samsun, Tokat), TR82 (Çankırı, Kastamonu, Sinop) and TRA1 (Bayburt, Erzurum, Erzincan). 510 grant contracts have been signed and the implementation of the projects has begun within the framework of NUTS-2 Regions Development Program covering TRA2. (Ağrı, Ardahan, Iğdır, Kars), TR72 (Kayseri, Sivas, Yozgat), TR52 (Karaman, Konya) and TRB1 (Bingöl, Elazığ, Malatya, Tunceli). These programs are supported by a joint monitoring system that is formed by the coordination of State Planning Organization and the CFCU. In this context, 1,200 projects in 8 NUTS-2 regions and 27 provinces are implemented [20].

The Calls are designed under three broad priorities; improvement of infrastructure, increasing the competitiveness of SME's located in the periphery, fostering local development initiatives that serve to advance human resource and entrepreneurship. Being the first calls in Turkey along with the regional diversities resulted in varying levels of efficiencies. These first calls have more served the purpose of structural adjustment and turned into an experimental phase for most of the beneficiaries rather than generating direct influence on regional development. At this point, evaluating post call efficiencies emerges as a critical issue in identifying the degree of effectiveness of the calls. Table 5 summarizes some demographic data about the cities that are grouped under the three calls.

#### A. DATA

Efficiency of funded projects is analyzed separately at call, region and city level utilizing the DEA model developed. The results which are discussed here are presented in Table 4.

A significant result is that there is little discrepancy (between 1 and 0.85) among the efficiencies of three calls when the analysis is made at call level. This depicts the fact that the budgets allocated for each call as well as the distribution among the project types within each region seem appropriate. The relatively efficient Call 1 ( $E=1$ ) includes the regions TR82, TR83, and TRA1; followed by Call 2 ( $E=0.95$ ) covering regions TRA2, TR72, TR52, TRB1 and finally Call 3 ( $E=0.85$ ) for region TRB2.

TABLE IV DEA EFFICIENCY SCORES

Region/City	Efficiency	Region/City	Efficiency
CALL 1		CALL 2	
TRA2	$E_{avg} = 0.95$	TRB2	$E_{avg} = 0.73$
Ağrı	1	Bitlis	0.82
Ardahan	1	Hakkari	0.67
Iğdır	1	Muş	0.72
Kars	0.81	Van	0.70
TR72	$E_{avg} = 0.88$	CALL 3	
Sivas	0.82	TR82	$E_{avg} = 0.91$
Kayseri	0.65	Çankırı	1
Yozgat	0.85	Kastamonu	0.75
TR52	$E_{avg} = 0.62$	Sinop	1
Karaman	0.42	TR83	$E_{avg} = 0.79$
Konya	0.81	Amasya	1
TRB1	$E_{avg} = 0.78$	Çorum	0.67
Bingöl	1	Samsun	0.78
Elazığ	0.62	Tokat	0.72
Malatya	0.53	TRA1	$E_{avg} = 0.86$
Tunceli	0.98	Bayburt	0.90
		Erzincan	0.88
		Erzurum	0.86

The efficient Call 1 region is a mediocre developed region which significantly generates income and includes production, trade besides agriculture in its economy. Within this call, TR82 region can relatively be considered the most developed at regional level; therefore two out of its three cities have an efficiency score of 1 in city-level analysis. TR83 region has a lower average efficiency score. Amasya is the only efficient city here whereas others have lower than average efficiency scores. Amasya is actually a high level benchmark within the region which makes the remaining cities relatively less efficient. Amasya owns the first development office in Turkey which is established in compliance with the Yeşilirmak Development Plan; the first regional development strategy paper ever designed parallel to the EU schemes. This scheme foresees higher allocation of government funds to the regional actors such as municipalities, NGOs and related institutions. The technical assistance provided by an English technical consultant group has also increased the regional development agency's level of expertise on project development and management. Furthermore, Yeşilirmak Project has a significant impact on the objectives of this region's call which create a perfect balance between the Call's and Amasya's objectives. This fact emerges as another reason for Amasya's efficiency level. Contrary to the Call's priorities, Tokat and Çorum are more agriculture oriented. Especially, SME

assistance programs increasingly focus on modernization and management skills although the SME's are mostly related with agriculture. Despite the fact that both cities have more projects and budget than Amasya, they haven't been able to generate as much tax possibly due to the mismatch of objectives.

In TRA1, there exists not even one city which is efficient in overall city rankings. This may be due to the imperfect match between the call's objectives and the region's economic priorities. The Call does not prioritize the agriculture and livestock support which are the major economies in the region. Therefore, the funded projects possess a wide range of subjects which does not create synergy nor a wide impact within the region. As an example, Erzurum has been included in the Call not as a result of strategic planning but only because it is the poorest economy in the region. It is the only city among the three calls which does not possess any infrastructure projects. Funded projects in Erzurum are small and mostly SME oriented. The results depict that although not perfectly efficient, even those small projects have made a considerable contribution to the present underprivileged situation.

Within Call 2, there exists larger diversity among the efficiency levels of the four regions. Considering all the regions in the three calls, both the most efficient and the least efficient regions are within Call 2. Although there are efficient regions within Call 2, there are two cities with lower efficiency values which pull down the average efficiency of the Call. Turkey should develop region specific policies here so that these regions could continue benefiting from increasing EU funds. TRA2 has the highest level of efficiency where three out of four cities are efficient and one has an efficiency score of 0.81. Analysis of projects of the efficient cities shows that they are focused on each city's economic priorities. For example, the SME projects as well as the development projects in Ağrı emphasize the development and improvement of agriculture, food, tourism sector. Similarly, in Ardahan and Iğdır SME projects significantly focus on agriculture and livestock. Within Call 2, TR72 is among the lower efficiency regions in general and it doesn't contain any cities on the efficient frontier. The Call prioritizes agriculture and livestock and applies positive discrimination to the participating farmers such as offering free training programs; however, the priorities are not in line with cities such as Kayseri. Kayseri's economic activities are basically manufacturing, trade and transportation. Among 27 cities in the reference set, Kayseri ranks the third in terms of the number of projects funded; however, its efficiency score of 0.65 falls below average due to the mismatch. Sivas lacks sufficient skills and knowledge on business culture and management; however, the funded projects do not emphasize this enough.

Yozgat has the highest efficiency score within TR72. Its economy is basically agriculture, forestry, livestock and tourism justifying the highest fit to the Call's priorities. Within Call 2, TRB1 is among the lower efficiency regions. The region is at the eastern part of Turkey and experiences a rather poor economy. Call's basic priorities are agriculture and livestock. Local development projects within the call emphasize ecotourism, cultural and agricultural tourism.



Number of SME projects in the region is quite low due to two major factors. First is the low number of SME's in the region. The second factor is the 50% self funding required for SME projects, which is quite cumbersome in this poor economic conjuncture. Bingöl is the only efficient city in this region. Agriculture, especially fruit and apple come forward in Bingöl's economy. The soil here is quite productive. The city exports livestock to nearby countries such as Syria. Bingöl's development projects are basically related such as finding new markets or improving current management/production systems.

Tunceli has demographic structure similar to Yozgat and Bingöl. It is almost efficient probably due to the proper allocation of funds among projects. On the other hand, Malatya is among the least efficient cities. It majors in agriculture and somewhat in textile. It holds 85% of the world's apricot production. It owns 240 apricot related and 100 textile related industrial organizations. It receives government subsidies and utilizes these efficiently. The low efficiency is due to the tax rebates they receive. The output variable in efficiency measurement has been set as % annual change in tax as discussed in the above section and tax rebates in this city has ended up with a small annual change. As a result, the relatively low efficiency is influenced by the specific output variable selected.

Call 3 covers only TRB2. The region contains the cities on the eastern part of the country which struggle with major problems such as economic, political and social. This has ended up with high ratios of migration. None of the cities in the region are efficient within the set of 27 cities. On the other hand, within group efficiencies are closer to each other due to similar problems shared as well as each city's being impact areas of others. The region's economy rests on agriculture and livestock, lacking major industries. Hakkari has one of the highest unemployment rates within the country, struggling with terrorism. Muş is the lowest ranking country in terms of NUTS economic ranking.

Among the two cities within TR52, Karaman has the lowest efficiency among all 27 cities due to a number of reasons. There exists too many and diverse SME projects, they are not focused on the regional development strategy; furthermore, the projects are not oriented towards generating economic added value. There are projects about automotive industry, elevator establishment, socks, biscuit, meat, milk, transportation, cool chain management etc. Despite the large number of SME projects, it is a fact that SME's cannot compete with the existing large companies; therefore, the allocation of a significant amount of funds on SME's does not seem to be a correct decision making strategy. On the other hand, Konya is a better performing city although it is not on the efficient frontier.

#### *B. Sensitivity Analysis of the Results*

Some changes have been made in the variable set to test the sensitivity of the results to the variables selected. The variables have been revised in a way to include three input and two output variables. The weighted indicator of project types, which has been an input variable previously, has been treated as an output variable this time due to the fact that the

specific project type can also be an indirect measurement of impact. The output of this revised model has shown some increases in the efficiency levels of some cities. For those cities, this may be interpreted as the correct decision making approach because those cities which have allocated their budgets in line with the cities' priorities and needs have increased their efficiency scores.

#### VI. CONCLUSION

The general principle of EU harmonization does not remain at the abstract level but provides concrete policies to prepare the future members for accession under pre-accession schemes. The regional development funds that facilitate the promotion of regional economic welfare are one of the financial instruments of this process. The general framework of the system is provided by the EU; however, the determinacy is left to the member states in developing their own basic fund allocations. The EU expects the individual projects funded under those grant schemes respond to priorities set by the Commission such as regional competitiveness, employment and social cohesion. However, administrative competencies of the candidate states and their abilities to apply the set of rules given as a prerequisite for receiving pre-accession funds determine the success of fund allocations. The major challenge in this process is to attain efficiency in the allocation of the funds along with level of impact created. Level of impact created is significant considering the fact that high impact would lead to higher absorption capacity for further funding. Among the candidate states, Turkey is worth analyzing in the sense that it is geographically and population-wise the largest along with wide economic and social dispersion among the regions. The three regional development grant schemes that have been included in this study are the first that have ever opened under the NUTS scheme in Turkey. This study, to our best knowledge, is a first attempt to evaluate the efficiency of fund allocations in Turkey by using a quantitative decision support tool such as DEA.

It should be noted that for to attain efficiency in the funds being allocated as a part of the regional development schemes designed under the EU harmonization framework, there should be a fit between the Call's objectives and the city's economic priorities. This is a vital decision-making issue. The cities that have Regional Development Agencies founded already are much more luckier than the others as having a development office and working with an international team of experts significantly contributes to increasing efficiency as is the case with Amasya. Previous research on Regional Development Agency in Sivas [16] also provides a similar finding. Öncül states that the agencies that have developed better relations with the local community by both informing consistently the parties subject to funding and producing updated information on the funds and best practices, have attained considerable success in the funding process. Expert opinion shows that information and training days as well as awareness rising campaigns attribute to the level of impact. Project management related training also seems to have a significant positive influence.

TABLE V  
REGIONAL EFFICIENCY RATINGS

Region/City	Population	Area (km <sup>2</sup> )	Population Density	Budget	No. of Projects	No. of Development Projects	No. of SME Projects	No. Infrastructure Projects	Average Duration	%change tax
<b>CALL 1/TRA2</b>										
Ağrı	530.879	11.499	46,17	4131913	16	3	9	3	1,00	40,07
Ardahan	112.721	4.968	22,69	3214088	14	5	5	4	8,50	34,44
Iğdır	181.866	3.588	50,69	5142957	9	1	6	4	9,82	30,29
Kars	312.205	10.139	30,79	4188614	17	6	5	6	10	33,77
<b>TR72</b>										
Sivas	638.464	28.567	22,35	6282743	49	22	22	5	10,04	41,89
Kayseri	1.165.088	17.109	68,10	12606459	86	40	43	4	10,19	34,63
Yozgat	492.127	14.074	34,97	4413498	20	10	8	2	10,00	33,16
<b>TR52</b>										
Karaman	226.049	8.869	25,49	7714239	39	13	21	5	9,59	19,75
Konya	1.959.082	40.813	48,00	16692522	166	28	131	7	8,83	38,42
<b>TRB1</b>										
Bingöl	251.552	8.254	30,48	5355701	23	10	7	6	8,43	45,52
Elazığ	541.258	9.281	58,32	6984615	33	11	17	5	9,97	29,87
Malatya	722.065	12.103	59,66	6657161	38	16	12	10	10,13	28,80
Tunceli	804.022	7.686	104,61	3198211	14	9	1	4	9,21	33,69
<b>CALL 2/ TRB2</b>										
Bitlis	327.886	7.094	46,22	4099691	55	30	20	5	9,91	35,15
Hakkari	246.469	7.179	34,33	2714611	30	17	8	5	10,83	25,73
Muş	405.509	8.067	50,27	4580464	38	19	8	11	10,87	34,26
Van	979.671	22.984	42,62	13394514	142	82	32	28	10,92	41,51
<b>CALL 3/ TR82 TR83 TRA1</b>										
Çankırı	174.012	7.492	23,23	4713213	19	6	11	2	10,00	37,63
Kastamonu	360.366	13.158	27,39	6815135	47	18	21	8	9,51	38,29
Sinop	198.412	28.567	6,95	1950060	19	9	8	2	9,32	29,16
Amasya	328.674	5.731	57,35	1170425	26	6	18	2	8,35	24,84
Çorum	549.828	12.796	42,97	5852773	44	9	30	5	9,62	31,28
Samsun	1.228.959	9.364	131,24	7796566	82	27	47	8	9,51	40,22
Tokat	620.722	10.073	61,62	7245120	42	17	21	4	9,93	33,90
Bayburt	76.609	3.739	20,49	4266303	26	15	3	8	9,42	38,04
Erzincan	213.538	11.728	18,21	3606552	30	10	14	6	10,13	35,83
Erzurum	784.941	25.330	30,99	3972528	62	31	31	0	9,71	33,10

Source: Data compiled and produced by the authors and State Planning Organization.

For infrastructure calls, the application should include well-designed feasibility report.

This requirement has especially become a barrier for most of the local beneficiaries whereas providing an opportunity for those that already acquired the related skills. This is an issue of local decision-making. The readiness of the local administrations for intensive infrastructure projects depends

on the quality of the preparation made for this project. Parallel to our findings, Demir [25], in his study refers to this need of master plans for the development program in Southeast Anatolia. Almost all the cities in the Southeast Anatolia have efficiency scores below the average which shows that problems such as weak infrastructure, terrorism and low GDP influence the impact of the projects negatively.



Furthermore in these less privileged regions SME projects seem to generate lower impact. It is of crucial importance for these regions to have SME projects focused specifically on the region's priorities rather than diverse subjects. This is again an issue of right decision-making at the local level in the process of project application.

The study shows that the efficient utilization of funding is a result of the right, integrated and participatory decision-making in all of three levels; national, regional and individual.

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