



DEVELOPMENT OF A NEW CORRECTIVE AND COMPENSATORY MECHANISM FOR LOCAL GOVERNMENTS IN POLAND

SOSE S.p.A

Warsaw, 4 October 2017

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LET US START FROM THE POLISH EQUALIZATION SYSTEM

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2478 Municipalities => Two equalization subsystems

Vertical system mainly based on revenue equalization, grants are distributed to local authorities with:

- tax revenues below 92% of the national average
- population density below the national average

Horizontal system based on revenue and expenditure equalization

- Payments made by local authorities with tax revenues above 150% the national average
- Grants distributed to all local authorities according to:
 - *historical expenditure (housing)* => 75%
 - *historical revenues (PIT, agricultural tax, forestry)* => 25%

Judgment of the Constitutional Court => Violation of Art. 1 (par.1) of Polish Constitution

Jednostkom samorządu terytorialnego zapewnia się udział w dochodach publicznych odpowiednio do przypadających im zadań.



After the equalization some local authorities may remain with an amount of resources not sufficient for the provision of their fundamental local services.

Problems related to the horizontal adjustment mechanism

- Excessive depletion of own resources
- Grants recipients are not necessarily poorer than contributors
- Special needs of large cities are not considered (seasonal population inflow)
- Reversing of the ranking of local authorities after equalization

Problems related to the existence of two separate sub-systems in the equalization mechanism

- No transparency in the flow of inter-governmental grants

Solutions that can be taken from the Italian experience

- Evaluation of standard expenditure needs using econometric methods (Regression Cost Base Approach)
- Single equalization mechanism based on the difference between revenue raising capacity and expenditure needs => equalization of the fiscal gap
- Revision of fiscal capacity?

STRONG AND WEAK FEATURES OF THE ITALIAN MODEL IN THE LIGHT OF THE FISCAL FEDERALISM LITERATURE

Main drawbacks of fiscal equalization systems	Solutions adopted by the Italian model
Revenue equalization can reduce and/or distort the jurisdiction's tax effort	<ul style="list-style-type: none"> • RTS method for the evaluation of fiscal capacity • All sub-central taxes are included in the computation of fiscal capacity • Local fees are standardized through a regression method
Cost equalization can inflate expenditure needs and invite rent seeking	<ul style="list-style-type: none"> • RCA approach for the evaluation of standard expenditure needs • Complex system complemented with higher transparency (opendata) • The task of producing the distribution formula is assigned to an independent agency
Fiscal equalization can put pressure on the budget (centrl gov. and local gov.) and can be pro-cyclical	<ul style="list-style-type: none"> • Close-end system • Two-stage budget procedure, whereby the overall budget for equalisation is determined before the distribution formula is negotiated among sub-central governments • Marginal equalization rata at 50% • Both revenue and expenditure are standardized
Lack of incentive in increasing local government efficiency and accountability	<ul style="list-style-type: none"> • Equalization of the fiscal gap • Efficiency elements in the evaluation of standard expenditure • Online publication of expenditure and performance indicators (naming and shaming)

POLAND vs ITALY

STRUCTURE OF SUBNATIONAL GOVERNMENTS

TERRITORIAL ORGANISATION AND SUBNATIONAL GOVERNMENT RESPONSIBILITIES



MUNICIPAL LEVEL	INTERMEDIATE LEVEL	REGIONAL OR STATE LEVEL	TOTAL NUMBER OF SNGs
2 478 MUNICIPALITIES (GMINA) AVERAGE MUNICIPAL SIZE: 15 530 INHABITANTS	380 COUNTIES (POWIAT)	16 REGIONS (WOJEWÓDZTWO)	2 874

TERRITORIAL ORGANISATION AND SUBNATIONAL GOVERNMENT RESPONSIBILITIES



MUNICIPAL LEVEL	INTERMEDIATE LEVEL	REGIONAL OR STATE LEVEL	TOTAL NUMBER OF SNGs
8 047 MUNICIPALITIES (COMUNI), INCLUDING 14 METROPOLITAN CITIES (CITTA METROPOLITANE) AVERAGE MUNICIPAL SIZE: 7 545 INHABITANTS	107 PROVINCES (PROVINCE)	20 REGIONS (REGIONI)	8 174

- Poland and Italy show a very similar structure of Subnational Governments
- Very similar subnational governments responsibilities in the two countries, we noticed the following differences:
 - In Poland municipalities have more responsibilities in the Education and Health care sector
 - In Italy municipalities have more responsibilities in the Local police sector
 - In Italy regions have full responsibility of the Health care service

POLAND vs ITALY DECENTRALIZATION (1)

Figure 41. Expenditure as a % of public expenditure and SNG tax revenue as a % of public tax

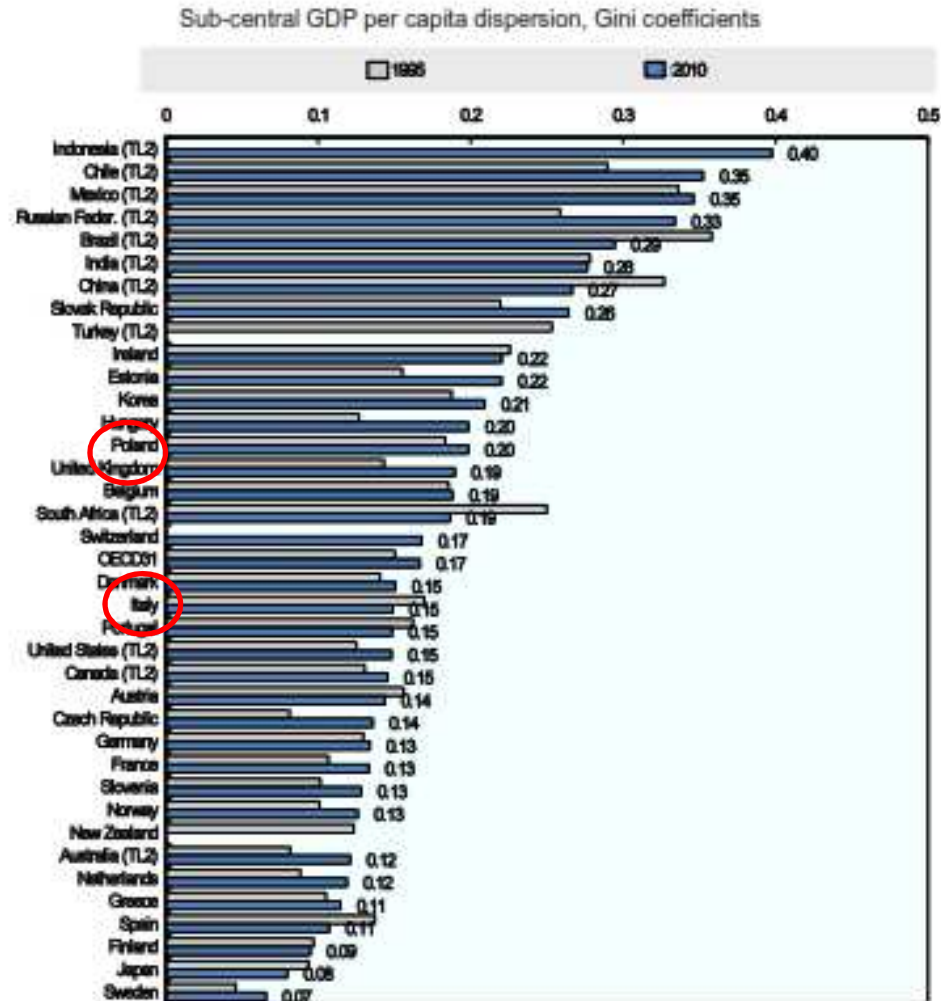


Source: OECD Global Observatory on Local Finances

POLAND vs ITALY

INTER-JURISDICTIONAL GDP INEQUALITY

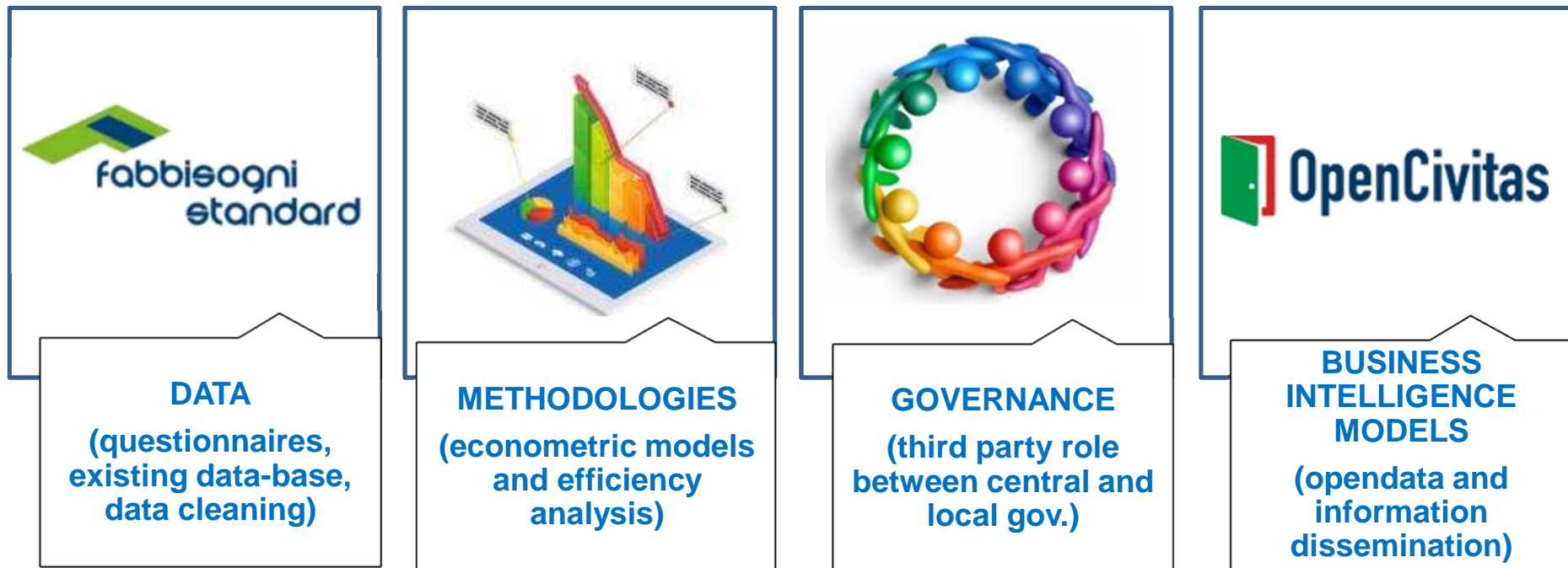
Figure 1. Inter-jurisdictional GDP disparities vary across the OECD

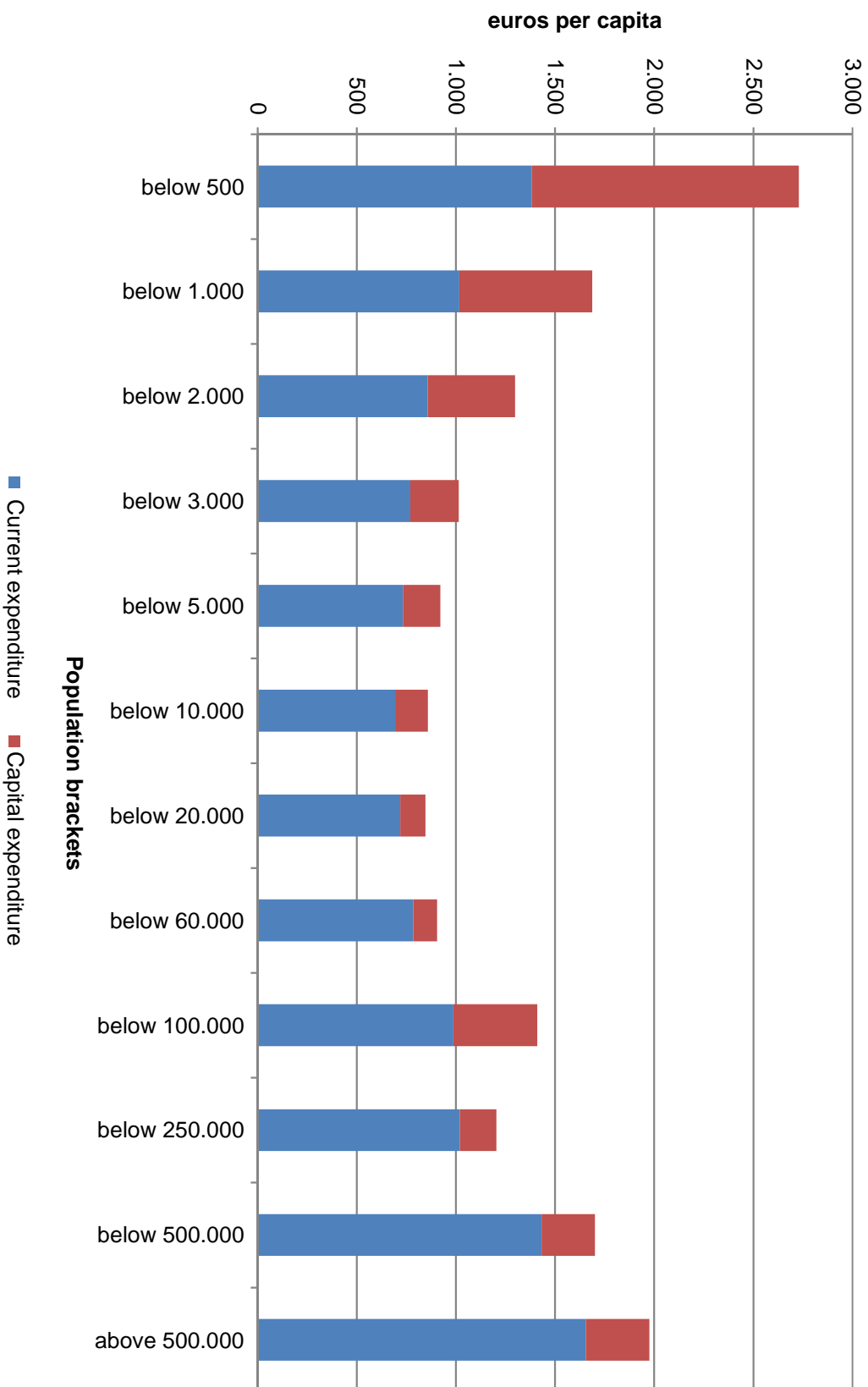


Source: OECD "Fiscal federalism 2014 Making decentralization work"

EVALUATION OF MUNICIPAL STANDARD EXPENDITURE NEED

SOSE METHODOLOGY RELIES ON FOUR MAIN PILLARS:





DATABASE CONSTRUCTION

INFORMATION FLOW

Questionnaire



Standard expenditure needs web portal project
opendata.sose.it/fabbisognistandard/



Local authorities:
6.700 Municipalities
220 Unions
86 Provinces

SOSE also verifies accurately the quality of data



Official sources



Budget sheets



Italy condominium



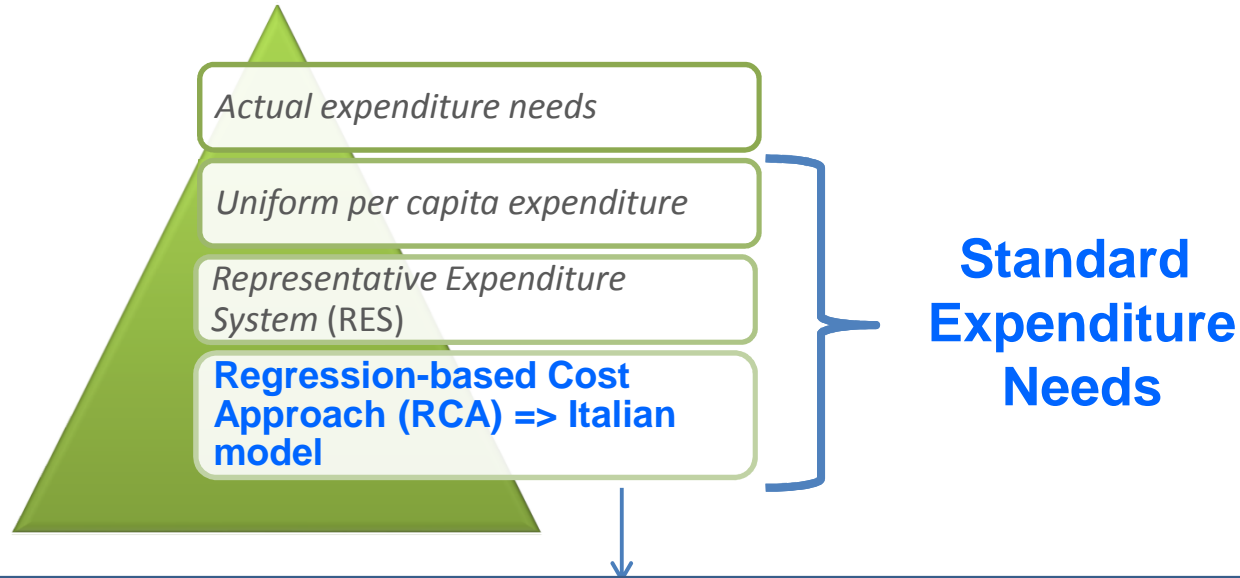
... resource management is handled through a system of coefficients and not to the negotiations of the different members

Navigational compass



.... possibility to measure the level and the quality of local expenditure (efficiency) against a benchmark

Methods for the evaluation of expenditure needs



$$\text{Standard expenditure (y)} = \alpha_1 X_1 + \alpha_2 X_2 \dots + \alpha_i X_i \dots + \alpha_n X_n$$

Expenditure function → a are weights in euros and X are context variables (e.g. population by age)

Cost function → a are standard cost and X are service variables (e.g. tons of waste disposed and recycled, school meals, elderly people assisted in residential care etc..)

In all cases a are parameters estimated using a linear regression models



SUPPLY SIDE

COST FUNCTION

$$y = s(g_s, g_e, p, A)$$

y = total service cost

g_s = exogenous load factors

g_e = endogenous output

p = input prices

A = supply control variables (total factor productivity)

Expenditure function

(reduced form of the cost function)

$$y = f(Q, R, p, A, g_s)$$



DEMAND SIDE

DEMAND FUNCTION

$$g_e = d(Q, R, y)$$

g_e = endogenous output

Q = demand control variables
(preferences)

R = income

y = service cost

Output function

(reduced form of the demand function)

$$g_e = h(Q, R, p, A, g_s)$$

p = input prices

A = supply side control variables



SUPPLY SIDE

COST FUNCTION

$$y = s(g_s, g_e, p, A)$$

y = total service cost

g_s = exogenous load factors

g_e = endogenous output

p = input prices

A = supply control variables (total factor productivity)

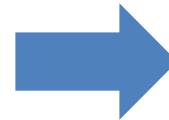
Expenditure function

(reduced form of the cost function)

$$y = f(Q, R, p, A, g_s)$$

Benchmark of expenditure

- Evaluation of the **allotment ratio** of standard expenditure needs
- Main pillar of the **new equalization system** with the fiscal capacity
- Distribution of **100%** of grants, **Fondo di Solidarietà Comunale** in 2021



SUMMARY OF DETERMINANTS OF STANDARD EXPENDITURE NEEDS

Homogeneous group of variables	2016 Methodology	
	No. of variables	% impact
TOTAL	85 (40 from questionnaire)	100
Service provided	23	28,68
Regional effect	15	20,87
Territorial morphology	6	11,08
Resident population	4	10,71
Input prices	8	5,20
Vehicles and road traffic	5	4,88
Local economy	3	4,61
Buildings and real estate	1	2,93
Census	2	2,67
Exogenous load factors	5	2,08
Managerial choices	8	2,11
Tourism	2	1,87
Investments	1	1,31
Deprivation	2	0,99

19 Variables generates

90% of standard expenditure

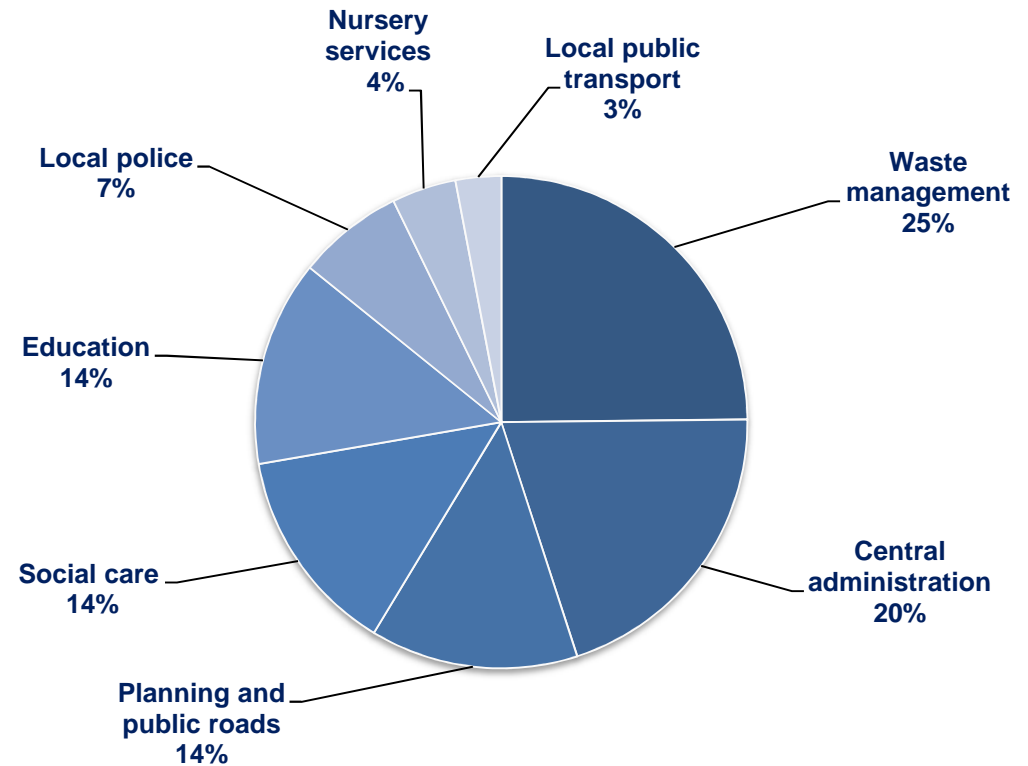
Main variables:

- Resident population
- Waste disposed
- Waste recycled
- Population above 65
- Population between 3 and 14
- Nursery served children
- School meals
- Presence of Metro/Tram service
- Surface area of the municipality
- Altitude of the municipality

THE ESTIMATION OF STANDARD EXPENDITURE NEEDS – THE ALLOTMENT RATIO

Expenditure needs

Functions	Billion euros
Waste management	8,66
Central administration	7,04
Planning and public roads	4,76
Social care	4,75
Education	4,72
Local police	2,43
Nursery services	1,48
Local public transport	1,04
Total	34,88



- Eventually, standard expenditure needs are converted in an allotment coefficient according to the weight of each function in terms of standard expenditure
- To compute the amount of equalization grants, the allotment coefficient of each municipality is multiplied by the macrobudget and compared with its fiscal capacity

AN EXAMPLE WASTE MANAGEMENT, SOCIAL AND ADMIN. SERVICES

Standard expenditure computation of two municipalities:

- Rome 2864731 inhab. the biggest city
- Pedesina 39 inhab. the smallest city

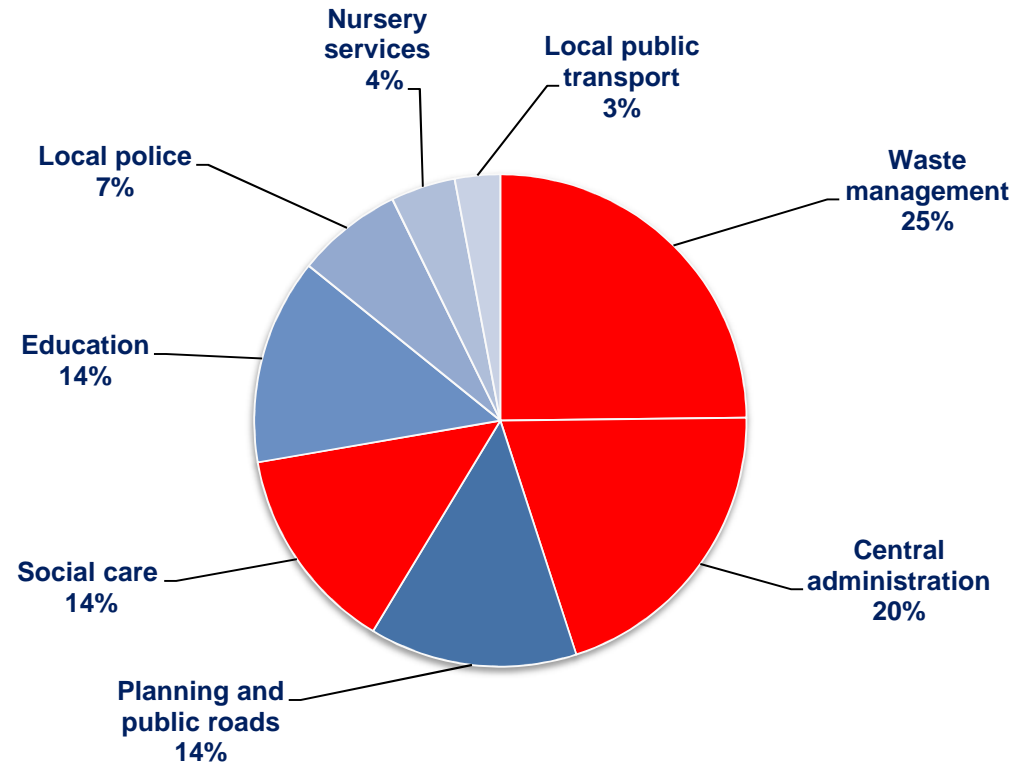
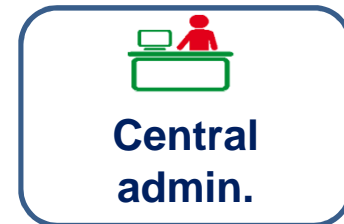
Cost function



Augmented Expenditure function



Pure expenditure function



The model can accommodate the evaluation of standard expenditure needs of municipalities with different structure

AN EXAMPLE WASTE MANAGEMENT SERVICES

	Standard costs in euros (A)	PEDESINA		ROMA			
		Variable value (B)	Standard expenditure (C = A * B)	Variable value (D)	Standard expenditure (E = A * D)		
<i>Basic standard cost per tonne of disposed waste (differentiated by cluster and region)</i>			233,60	+	377,80	+	
<i>% of Recycled waste</i>	1,15	51,28	58,97	+	38,83	44,65	+
<i>Distance from disposal facilities in km (weighted average by type of waste)</i>	0,41	70,00	28,70	+	29,97	12,29	+
<i>Petrol average municipal cost (% difference from national average)</i>	1,22	-10,76	-13,13	+	1,41	1,72	+
Final standard cost per tonne of disposed waste (G)			308,14	=	436,46	=	
<i>Tons of waste disposed (H)</i>		36			1.681.245		
<i>Standard expenditure depending on tons of waste (I = G*H)</i>			11.093	+	733.800.228	+	
<i>Diseconomy of scale (J)</i>			6.321	+	6.321	+	
Total expenditure needs (K = I+J)			17.414	=	733.806.549	=	
Expenditure needs of all municipalities (L)			8.818.067.127		8.818.067.127		
Allotment coefficient (M = K/L)			0,000001974833		0,083216257953		

	Standard costs in euros (A)	PEDESINA		ROMA		
		Variable value (B)	Standard expenditure (C = A * B)	Variable value (D)	Standard expenditure (E = A * D)	
<i>Basic standard cost per capita (differentiated by region)</i>			32,85	+	19,36	+
<i>Congestion factor, populatoin betweeb 5.500 and 15.000 inhabitants</i>	0,001643	0,00	0,00	+	9.500	+
<i>Congestion factor, populatoin betweeb 15.000 and 500.000 inhabitants</i>	0,000167	0,00	0,00	+	485.000	+
<i>No. of served target (min 1, max 6)</i>	1,22	1,00	1,22	+	6,00	+
<i>Residential care services (dummy, 1 = yes)</i>	4,27	0,00	0,00	+	1,00	+
<i>Municipal deprivation index</i>	0,05	23,82	1,19	+	34,38	+
<i>Elderly resident population (% over 65)</i>	1,39	41,03	57,03	+	21,85	+
<i>Average rent per square meter for commercial use (% difference from national average)</i>	0,07	-22,91	-1,60	+	55,56	+
Final standard cost per capita (G)			90,69	=	163,53	=
<i>Resident population (H)</i>		39			2.864.731	
<i>Standard expenditure depending on resident population (I = G*H)</i>			3.537	+	468.478.628	+
<i>Pupils with disabilities (pre-school, primary and secondary; per capita)</i>	791	0	0	+	12.396	+
Total expenditure needs (K = I+J)			3.537	=	478.281.880	=
Expenditure needs of all municipalities (L)			4.854.279.743		4.854.279.743	
Allotment coefficient (M = K/L)			0,000000728609		0,098527877570	

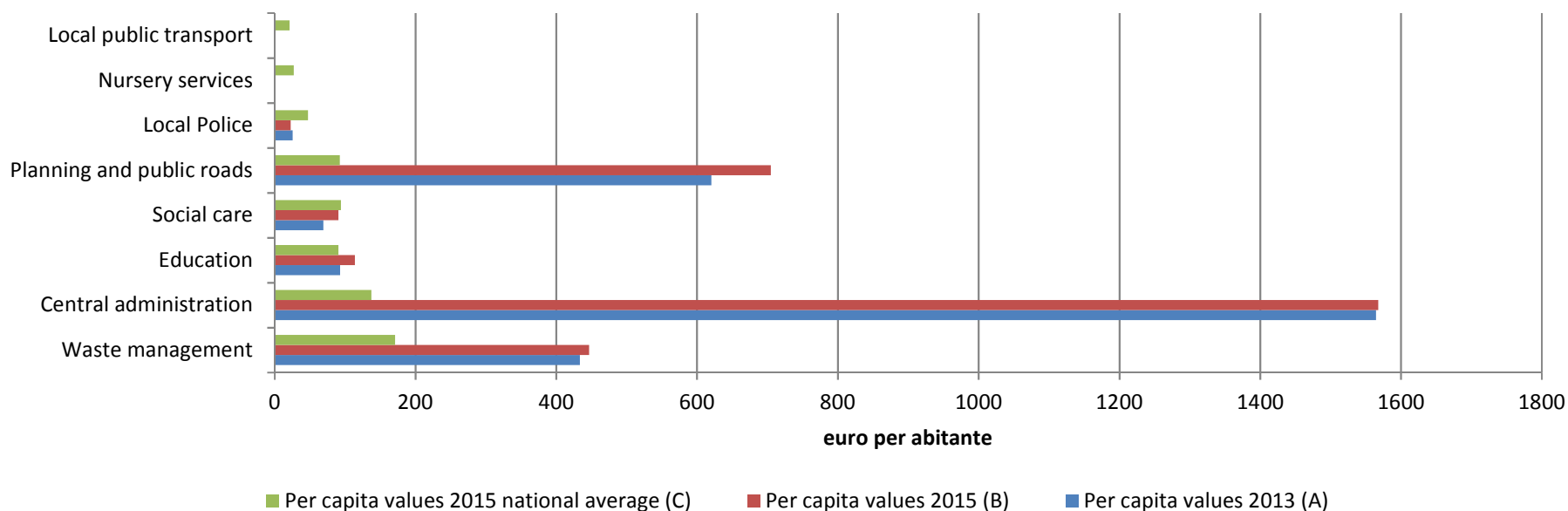
AN EXAMPLE CENTRAL ADMINISTRATION

	Standard costs in euros (A)	PEDESINA		ROMA		
		Variable value (B)	Standard expenditure (C = A * B)	Variable value (D)	Standard expenditure (E = A * D)	
<i>Basic standard cost per capita</i>			89,28	+	89,28	+
<i>Rischio sismico alto</i>	29,14	0,00	0,00	+	0,00	+
<i>Elderly resident population (% over 65)</i>	1,74	41,03	71,38	+	21,85	+
<i>Cost of labour, average cost per employee (% difference from national average)</i>	0,44	-1,99	-0,87	+	-2,83	+
<i>Average rent per square meter for commercial use (% difference from national average)</i>	0,11	-22,91	-2,62	+	55,56	+
<i>Software and hardware average cost (% difference from national average)</i>	0,04	-59,26	-2,35	+	-13,88	+
Final standard cost per capita (G)			154,83	=	131,85	=
<i>Resident population (H)</i>		39			2.864.731	
<i>Standard expenditure depending on resident population (I = G*H)</i>			6.038	+	377.728.850	+
<i>Diseconomy of scale (J)</i>	59.376	1	59.376	+	1	+
<i>Surface area of the municipality (K)</i>	1.160	6	7.307	+	1.287	+
<i>Employees in the field of "accommodation and catering services" (L)</i>	1.010	1	1.010	+	81.116	+
<i>No. of buildings (M)</i>	32	427	13.601	+	2.592.075	+
Total expenditure needs (N = I+J+K+L+M)			87.332	=	543.751.875	=
Expenditure needs of all municipalities (O)			10.119.067.579		10.119.067.579	
Allotment coefficient (P = N/O)			0,000008630451		0,053735373406	

AN EXAMPLE PEDESINA (THE SMALLEST CITY IN ITALY, 39 INHAB.)

	YEAR 2013		YEAR 2015		National average 2015		Gap % bewteen 2015 and 2013	Gpa % form national average 2015
	Per capita values 2013 (A)	Composition %	Per capita values 2015 (B)	Composition %	Per capita values 2015 (C)	Composition %	$E = (B-A)/A*100$	$F = (B-C)/C*100$
Waste management	433,86	15,46%	446,96	15,16%	171,15	25,08%	3,02%	161,16%
Central administration	1564,55	55,74%	1567,61	53,19%	137,47	20,14%	0,20%	1040,31%
Education	93,08	3,32%	114,26	3,88%	90,86	13,31%	22,76%	25,75%
Social care	69,18	2,46%	90,82	3,08%	94,21	13,80%	31,28%	-3,60%
Planning and public roads	620,31	22,10%	704,72	23,91%	92,85	13,61%	13,61%	658,98%
Local Police	25,84	0,92%	23,06	0,78%	47,46	6,95%	-10,76%	-51,42%
Nursery services	0,00	0,00%	0,00	0,00%	27,30	4,00%	n.a.	-100,00%
Local public transport	0,00	0,00%	0,00	0,00%	21,17	3,10%	n.a.	-100,00%
TOTAL	2806,82	100,00%	2947,43	100,00%	682,47	100,00%	5,01%	331,88%

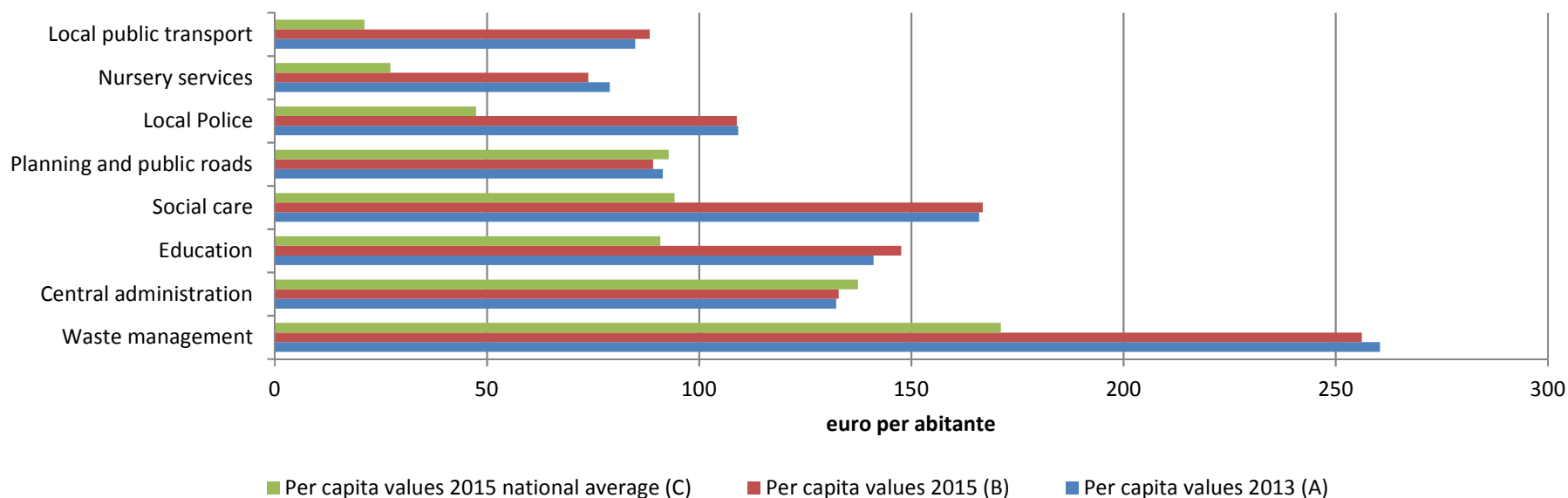
Standard expnditure needs 2015, 2013 and 2015 national average



AN EXAMPLE ROMA (THE BIGGEST CITY IN ITALY, 2,9 MLN INHAB.)

	YEAR 2013		YEAR 2015		National average 2015		Gap % bewteen 2015 and 2013	Gap % form national average 2015
	Per capita values 2013 (A)	Composition %	Per capita values 2015 (B)	Composition %	Per capita values 2015 (C)	Composition %	$E = (B-A)/A*100$	$F = (B-C)/C*100$
Waste management	260,43	24,47%	256,18	24,08%	171,15	25,08%	-1,64%	49,68%
Central administration	132,32	12,43%	132,93	12,49%	137,47	20,14%	0,46%	-3,30%
Education	141,15	13,26%	147,65	13,88%	90,86	13,31%	4,60%	62,49%
Social care	165,98	15,59%	166,82	15,68%	94,21	13,80%	0,51%	77,08%
Planning and public roads	91,45	8,59%	89,19	8,38%	92,85	13,61%	-2,47%	-3,94%
Local Police	109,26	10,26%	108,91	10,24%	47,46	6,95%	-0,32%	129,48%
Nursery services	78,94	7,42%	73,89	6,95%	27,30	4,00%	-6,40%	170,67%
Local public transport	84,95	7,98%	88,35	8,30%	21,17	3,10%	4,01%	317,34%
TOTAL	1064,49	100,00%	1063,93	100,00%	682,47	100,00%	-0,05%	55,89%

Standard expenditure needs 2015, 2013 and 2015 national average



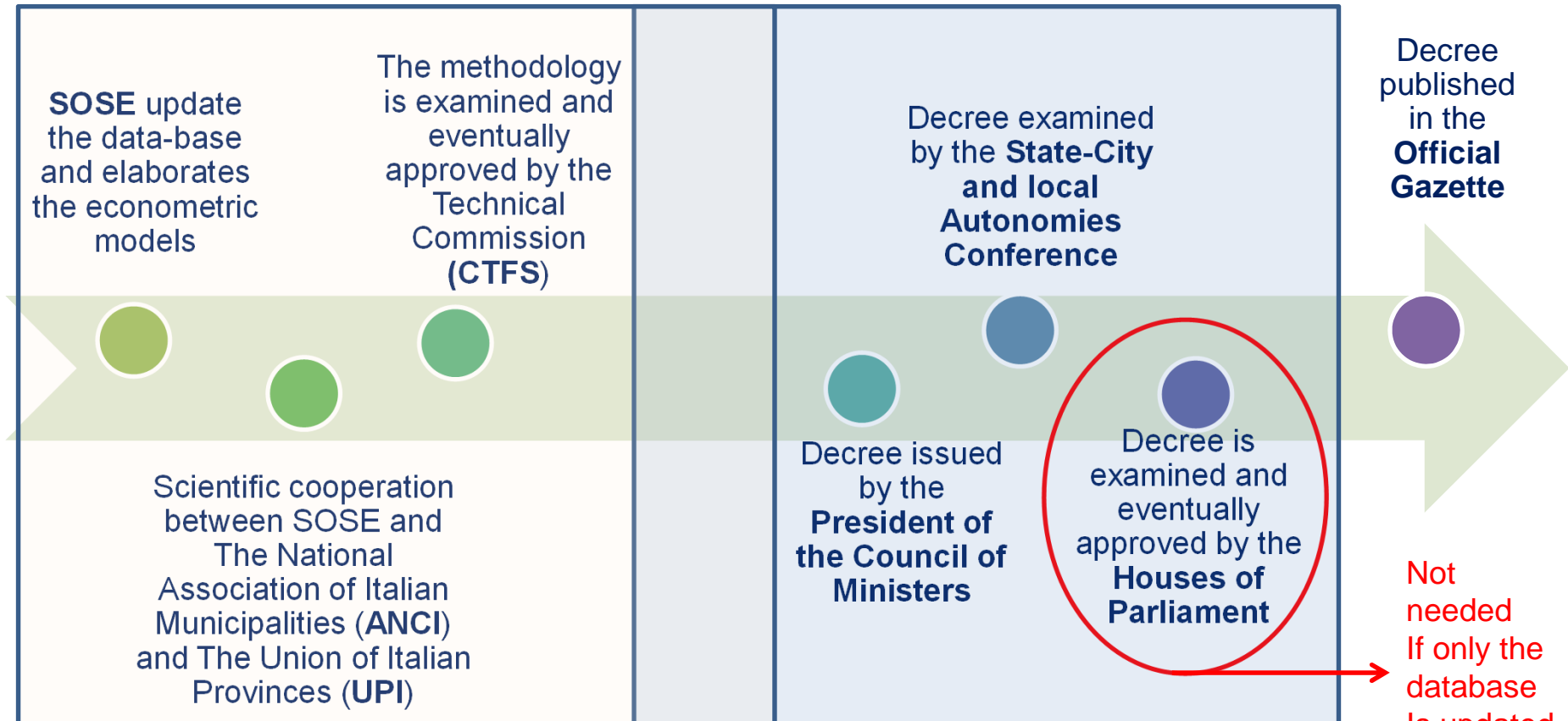
THE INSTITUTIONAL PROCES FOR STANDARD EXPENDITURE NEEDS

Technical steps

usually from April to September

Political steps

usually from September to December



Technical and political steps tend to overlap

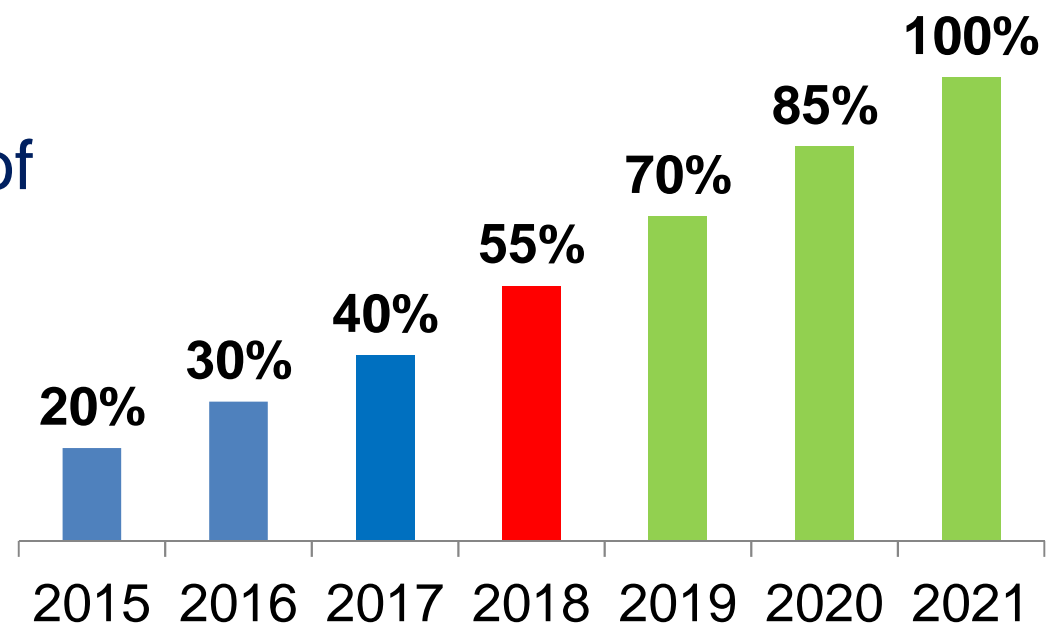


- On line publication of municipal data on expenditures and performances in the provision of public services
- Open access to all citizens
- Open data
- More information for local administrations
- Stimulate higher electoral accountability and citizens' participation

FOCUS ON THE MUNICIPAL EUQUALIZATION SYSTEM

- Ex-ante macro-budget definition (closed-end system)
- Equalization grants
 - *expenditure needs - Fiscal capacity*
- Horizontal equalization
- Equalization target = 50%

Transitional period, % of grants distributed with the standard system

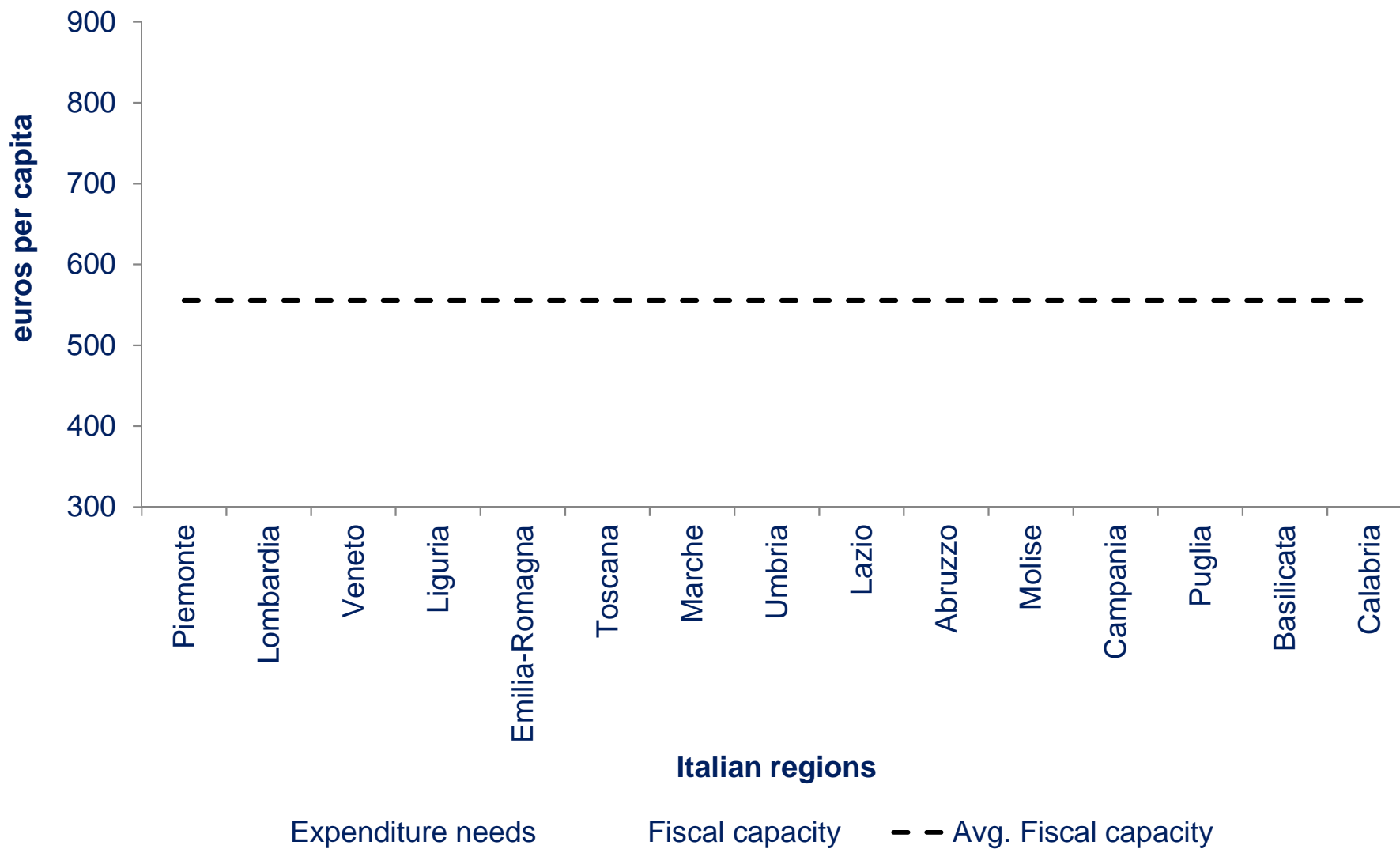


THE ITALIAN MODEL OF MUNICIPAL FISCAL CAPACITY

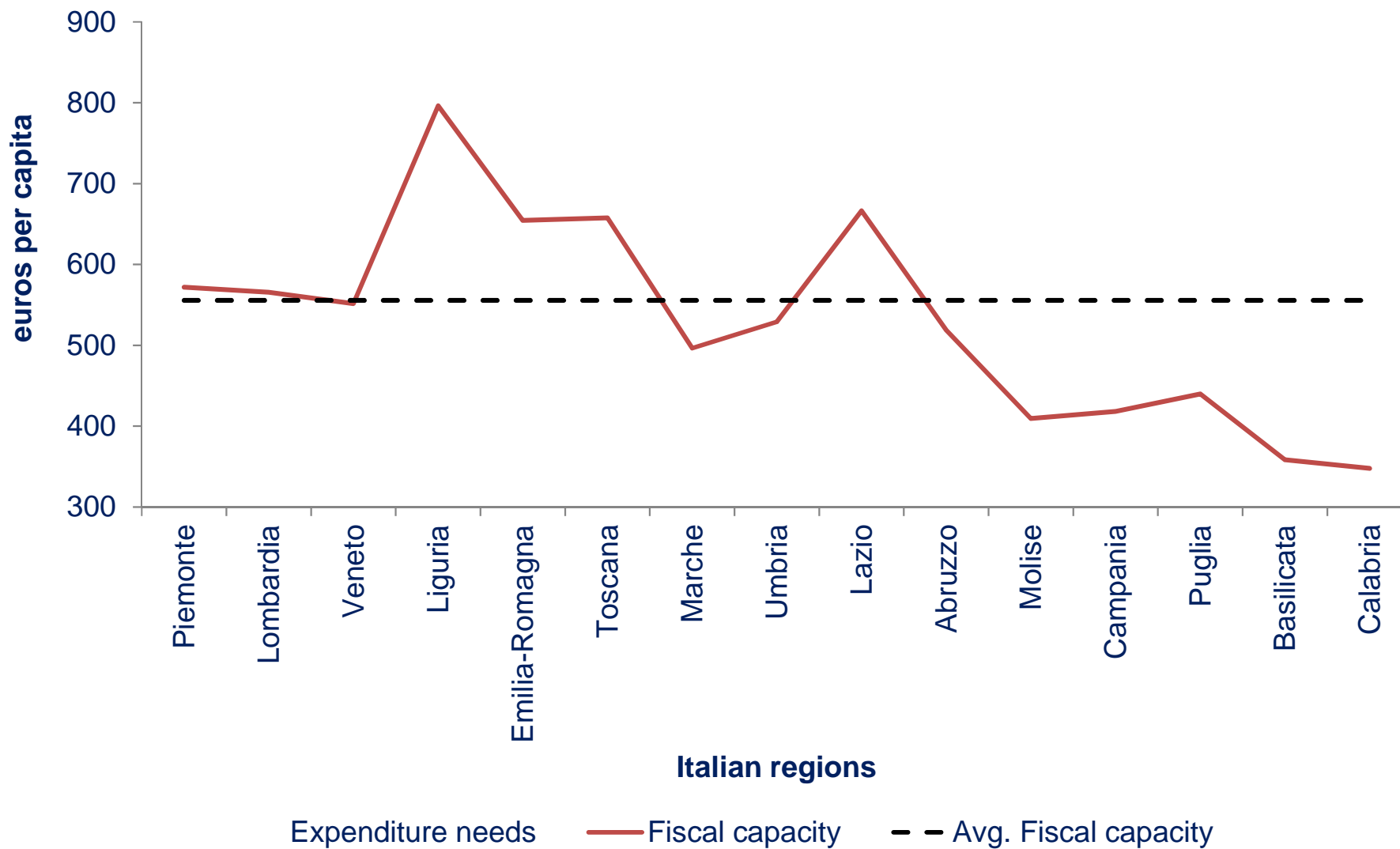
REVENUES ITEM	MODELS	BILLION EUROS	%
Local income tax (ACI)	RTS (Representative Tax System)	2.6	10,3%
Property tax (IMU-TASI)	RTS with Tax-gap	12.3	48,8%
Fees	RFCA (Regression-based Fiscal Capacity Approach)	4.1	16,3%
Waste Management fees (TARI)	Neutralization against standard expenditure needs	6.3	25,0%
Total fiscal capacity =		25.2	100,0%

Macro budget (26.3 billion euros) = 25.2 + 1.1
 Central gov. resources

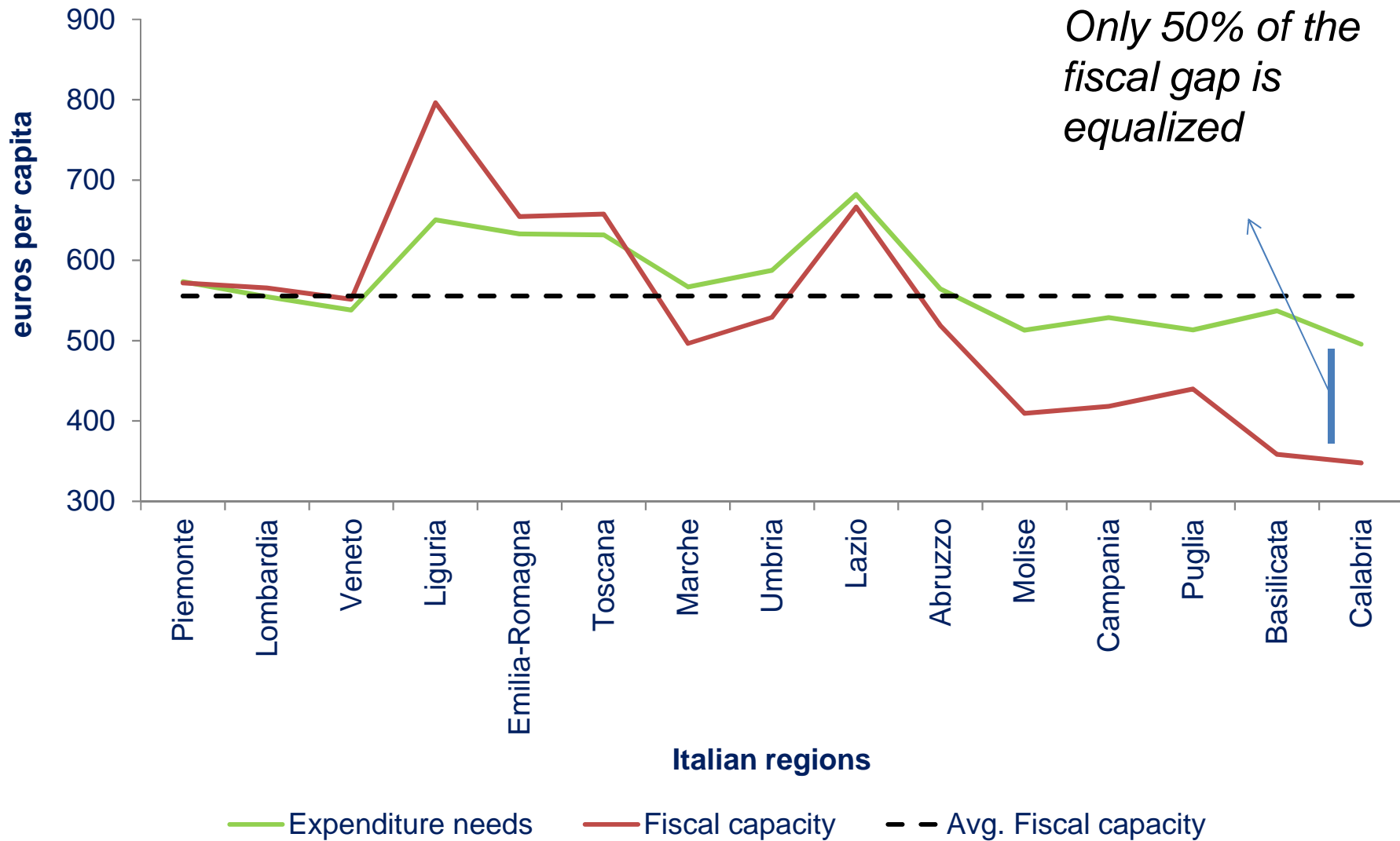
FISCAL CAPACITY AND STANDARD EXPENDITURE



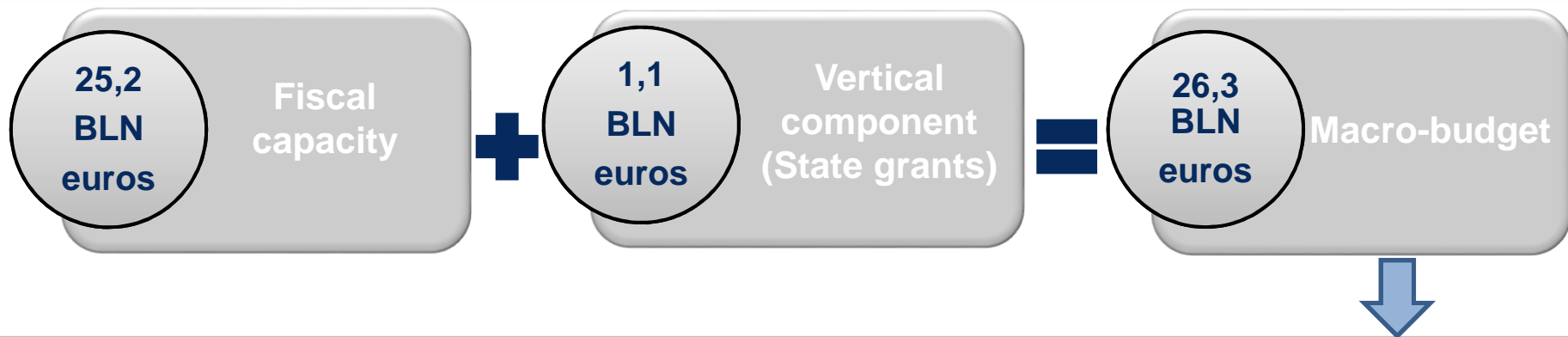
FISCAL CAPACITY AND STANDARD EXPENDITURE



FISCAL CAPACITY AND STANDARD EXPENDITURE



STRUCTURE OF THE ITALIAN MUNICIPAL FISCAL EQUALIZATION SYSTEM



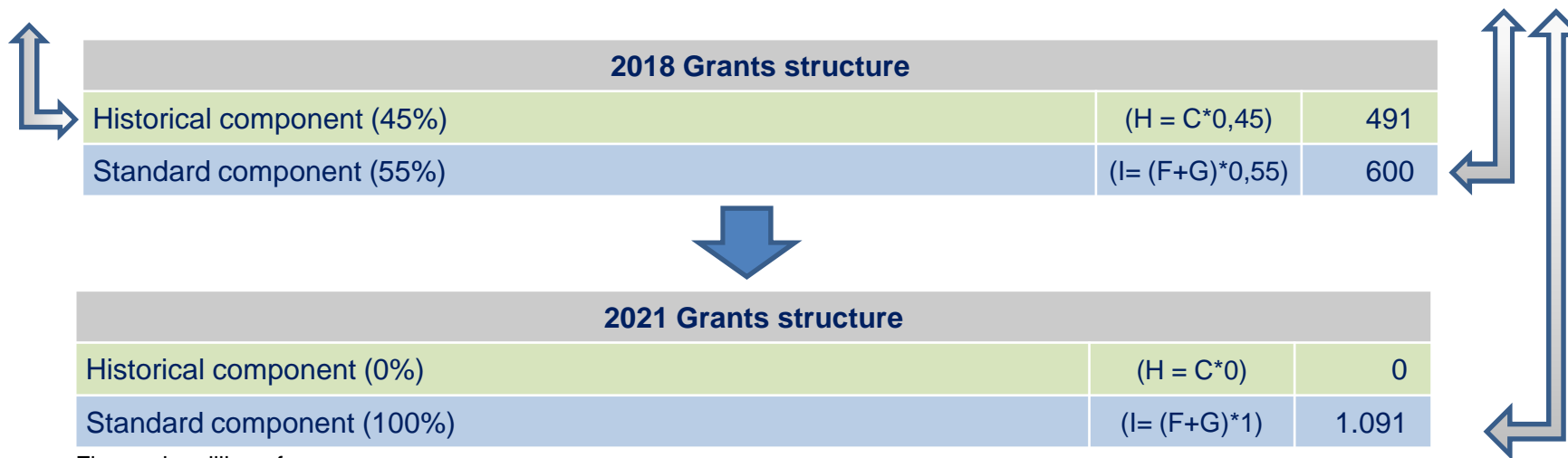
- **Mixed equalization system** => 80% of fiscal gap and 20% of fiscal capacity only
- **Standard expenditure of each municipality correspond to:**
Microbudget X (80% allotment coefficient of stadnard expenditure needs + 20% allotment coefficient of the resident population)
- **Marginal equalization rate** = 50%
- **Equalization grant** = 50% X (Standrd expnediture – Fiscal Capacity) + 50% X Historical grants

Flexible system that can be controlled by polcy-makers adjusting four parametes:

- **Microbudget** => *Vertical and Horizontal equalization*
- **Weight of population** in the composition of standard expenditure => *Revenue vs Expenditure equalization*
- **Marginal equalization rate** => Degree of solidarity among local authorities

COMPUTATION OF EQUALIZATION GRANTS TRANSITION PERIOD (2015-2021)

Historical property tax revenues (2011)	(A)	15.678	50% Standard expenditure	(D)	13.150
Standard property tax	(B)	14.587	50% Fiscal capacity	(E)	12.605
Historical grants	(C = A - B)	1.091	New formula grants	(F = D - E)	545
			Historical grants 50%	(G = 0,50*C)	545



Figures in million of euros

Standard expenditure **below** Fiscal capacity and Historical property tax **below** Standard property tax implies a **negative grant**



Standard expenditure **above** Fiscal capacity and Historical property tax **above** Standard property tax implies a **positive grant**

HOW THE EQUALIZATION SYSTEM WORKS

MILAN vs NAPLES

Comune di Napoli



Region: Campania

Inhabitants: 970.185 (Istat 01/01/2017)

Foriners: 55.652 (Istat 2016)

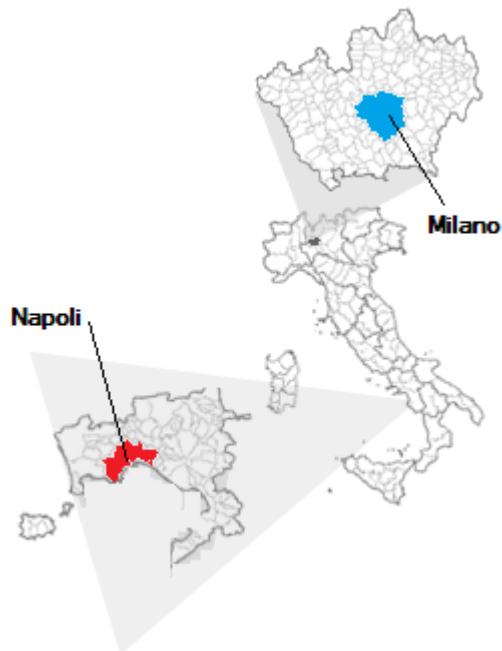
Average personal income: 19.730 euros

Surfice area: 119,02 kmq

Average rent per square meter:

Population density: 8.184 ab/kmq

Altitude: 17 m s.l.m.



Comune di Milano



Region: Lombardia

Inhabitants: 1.341.562 (Istat 01/01/2017)

Foriners: 253.482 (Istat 2017)

Average personal income: 29.803 euros

Surfice area: 181,67 kmq


Average rent per square meter:

Population density: 7.408 ab/kmq

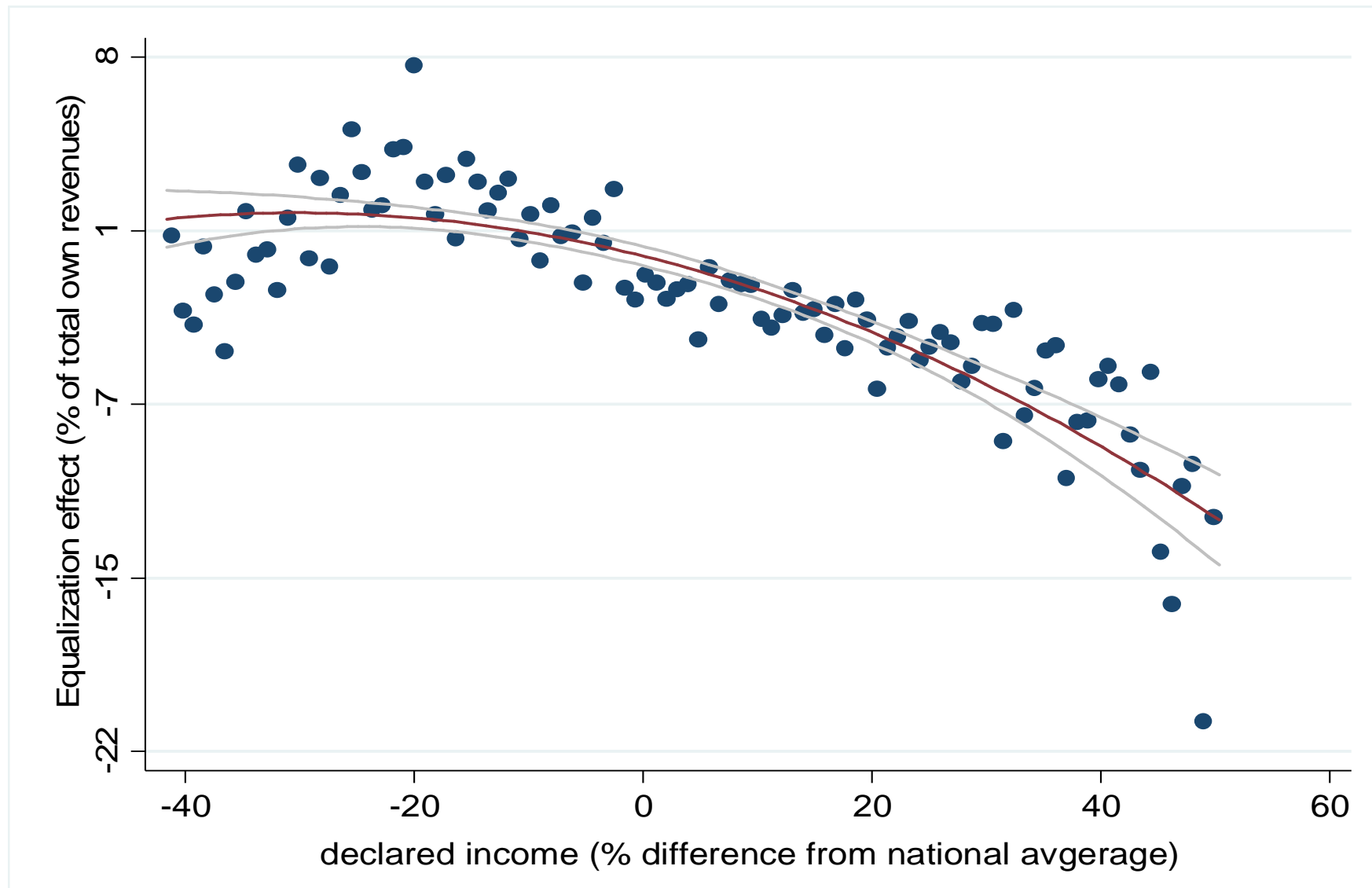
Altitude: 122 m s.l.m.

HOW THE EQUALIZATION SYSTEM WORKS

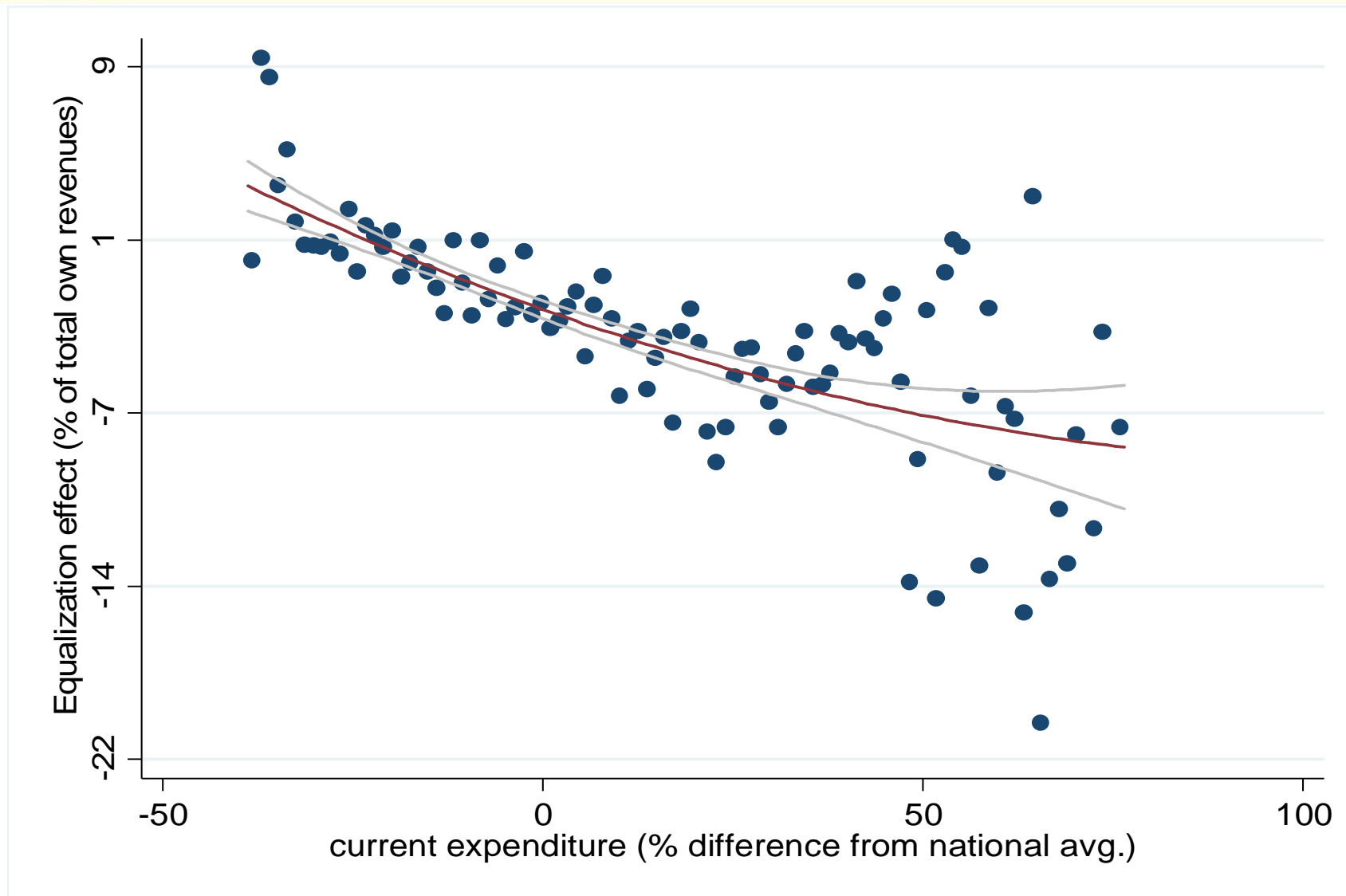
MILAN vs NAPLES

		NAPLES	MILAN
HISTORICAL GRANTS COMPUTATION			
HISTORICAL PROPERTY TAX (2011 collected revenue)	(A)	536.768.020	517.202.109
Standard property tax	(B)	218.297.448	712.030.337
Historical grants	(C=A-B)	318.470.572	-194.828.228
NEW FORMULA GRANTS COMPUTATION			
50% of Standard expenditure	(D)	307.595.295	476.948.191
50% of Fiscal capacity	(E)	229.496.668	554.970.359
New formula grants	(F=D-E)	78.098.627	-78.022.168
50% of Historical grants	(G=0,5*C)	159.235.286	-97.414.114
2018 grants structu			
Historical component (45%)	(H=C*0,45)	143.311.757	-87.672.703
Standard component (55%)	(I=(F+G)*0,55)	130.533.652	-96.489.955
TOTAL GRANTS	(J=H+I)	273.845.410	-184.162.658
2018 Euqalization effect	(K=J-C)	-44.625.162	10.665.570
			
2021 Euqalization effect	(L=F+G-C)	-81.136.659	19.391.946

EQUALIZATION EFFECT (INCOME)



EQUALIZATION EFFECT (HISTORICAL EXPENDITURE)



MONITORING AND INCENTIVE MECHANISMS

Cost function



$$y = \alpha_0 + \alpha_1' \mathbf{X} + \gamma' \mathbf{W} + \delta' \mathbf{Z} + \eta' \mathbf{T} + \theta' \mathbf{C} + \psi$$

Average cost

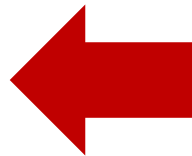
Type of services
Actual level of service

HIGHER SERVICES => HIGHER EXPENDITURE NEEDS

- Education => +meal services, + transport services
- Waste manag. => +recycled waste
- Nursery serv. => +childred served

Benchmark of output

- Evaluation of the **standard level of services**
- Main component of the **performance evaluation**
- Main component of a future **incentive system**



DEMAND SIDE

DEMAND FUNCTION

$$g_e = d(Q, R, y)$$

g_e = endogenous output

Q = demand control variables
(preferences)

R = income

g_s = exogenous load factors

y = service cost

Output function

(reduced form of the demand function)

$$g_e = h(Q, R, p, A, g_s)$$

p = input

A = supply side control variables

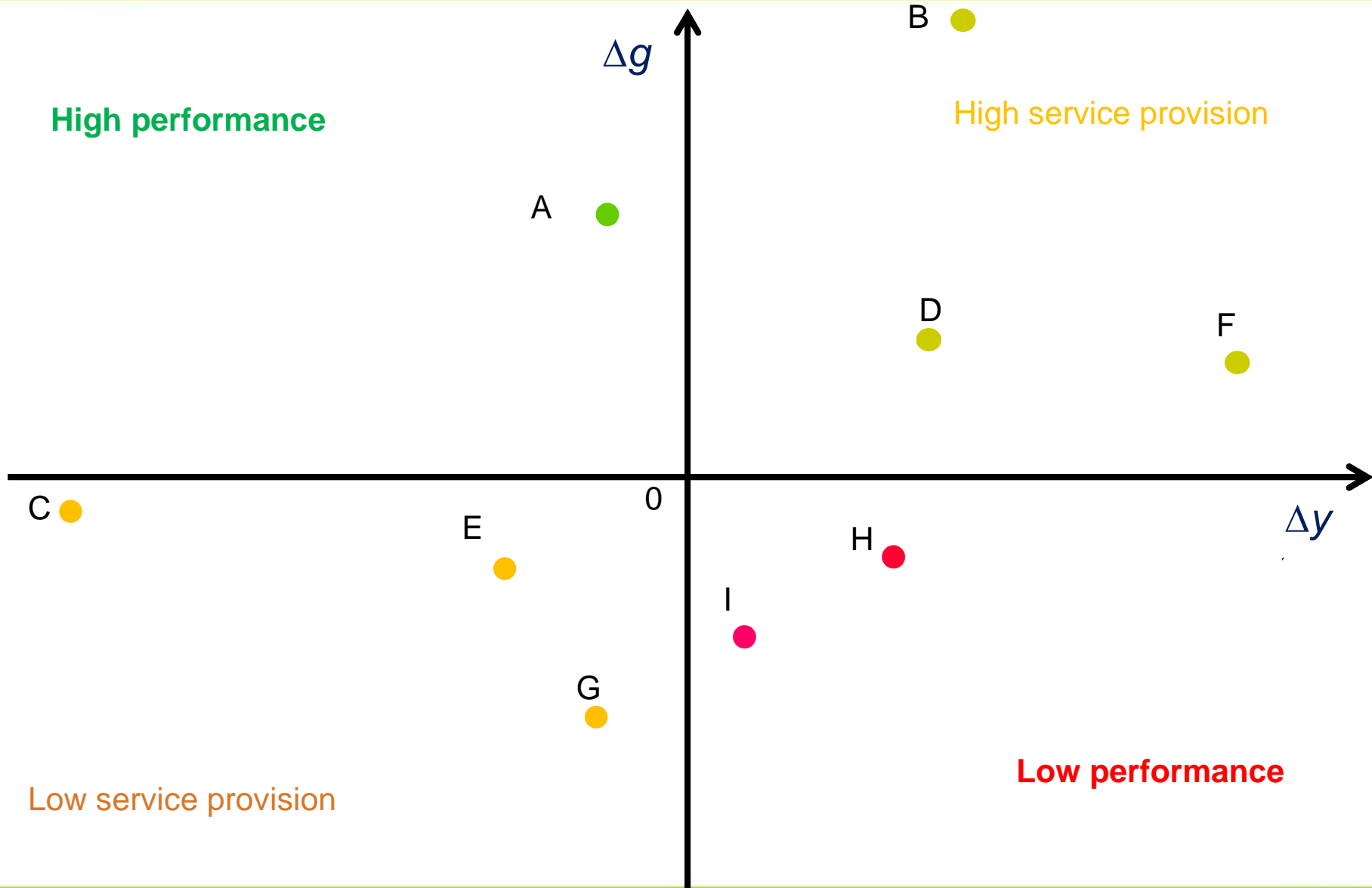
For each main function

	Historic (a)	Standard (b)	Difference (a-b)
Expenditure	y	\hat{y}	Δy
Level of Service	g	\hat{g}	Δg

Performance evaluation

- *Output score* = Δg
- *Expenditure score* = $-\Delta y$
- *QLS score* = $(\Delta g - \Delta y)$

PERFORMANCE EVALUATION: GRAPHICAL ANALYSIS

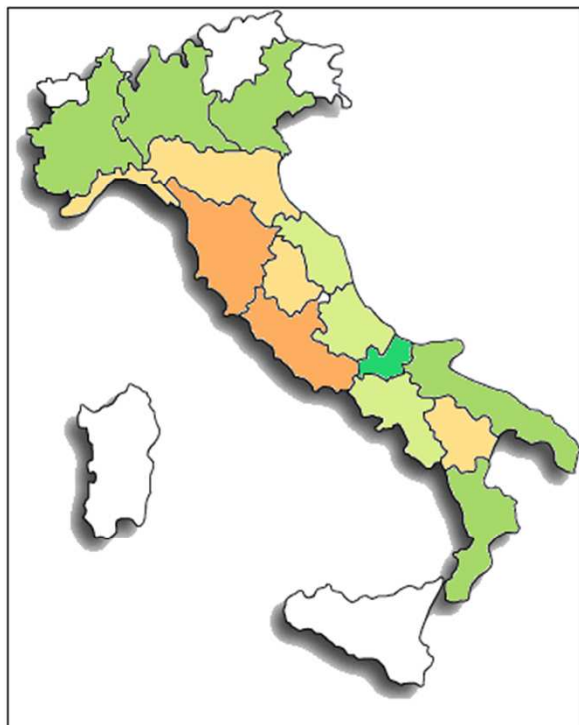


THE RATING SYSTEM OF OPENCIVITAS.IT

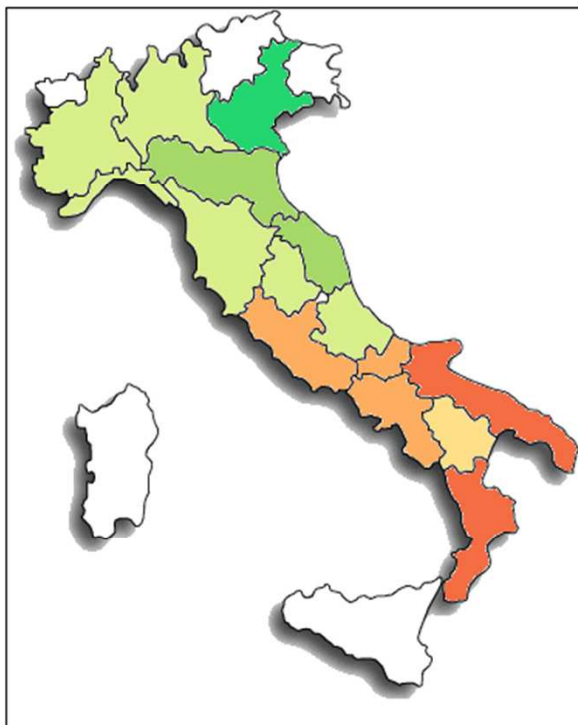
REGIONAL AVERAGES

All municipal functions 2013

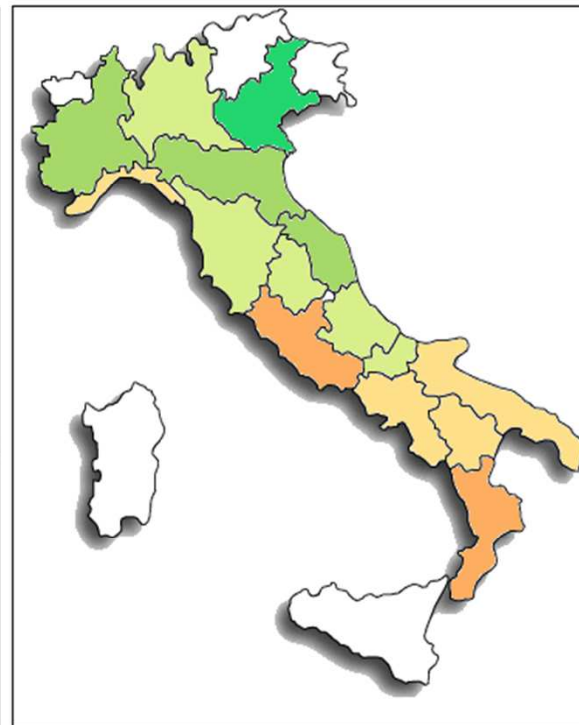
Expenditure score



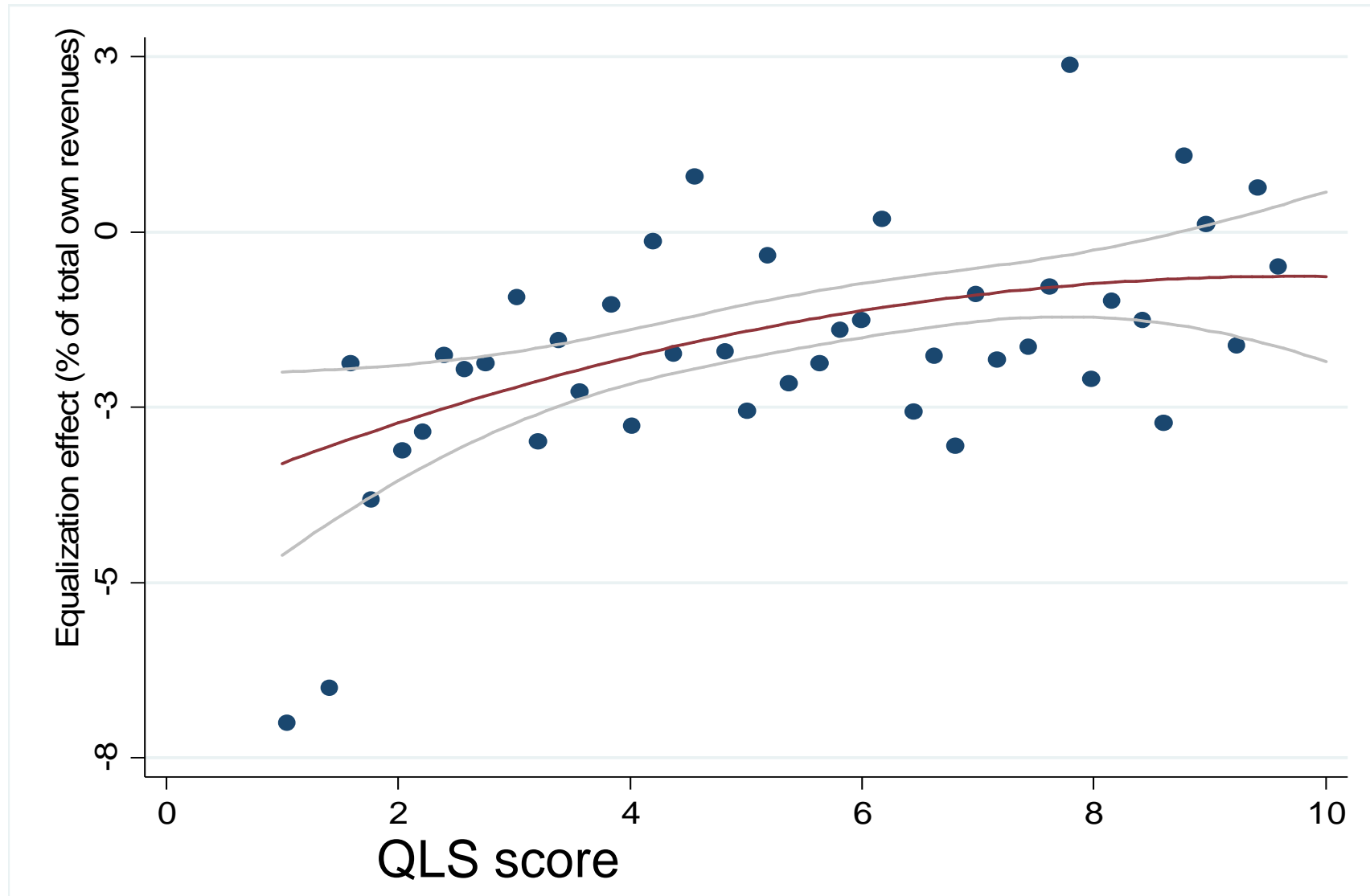
Output score



QLS score



EQUALIZATION EFFECT (POSITIVE CORRELATION WITH PERFORMANCE QLS SCORE)



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