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Measurement of fiscal capacity for Macedonian LGU

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FISCAL CAPACITY:
OVERVIEW OF CONCEPTS AND MEASUREMENT ISSUES

1. Definition of fiscal capacity again
2. The level of total taxable resources
3. Representative tax system
4. Regression analysis to arrive at a representative tax system

FISCAL CAPACITY AND FISCAL EFFORT

Definition of Fiscal Capacity:

- the potential ability of the LGUs to raise revenues from their own resources in order to pay for a standardised basket of public goods and services (Martinez-Vasquez and Jameson Boex, 1997)
- the ability of governmental jurisdiction to translate economic activity within its geographic borders into public spending (Chernick,1998)
- a measurement of Fiscal Capacity should be an important factor in determining the allocation of intergovernmental grants in order to equalise the amount of resources available to each of the regions or cities

MEASURING FISCAL CAPACITY

Total Taxable Resources (TTR)

- Closely related to GRP
- Adjustments on GRP to arrive at TTR

  a) certain central taxes are subcontracted from GRP, unavailable to local government

  b) each GRP has to be augmented with the amount of central transfers to firms and individuals

  c) central transfers increase the ability of the LGU to raise revenue
- Advantage – TTR provides more accurate reflection of a LGU's actual fiscal capacity
- Disadvantage – TTS computation is actually data intensive

MEASURING FISCAL CAPACITY

- *Total Taxable Resources (TTR)*
- *Example:*

GMP		5,000.00
Central taxes (VAT for example) payment	-	600.00
Transfer (social transfer for example)	+	100.00
Intermediate balance		4,500.00
Profit generated in LGU by Firms with HQ outside LGU	-	1,300.00
Profit generated outside LGU by firms with HQ in LGU	+	1,400.00
Total Taxable Resources-TTR		4,600.00

MEASURING FISCAL CAPACITY

Representative Tax System (mostly used in USA and Canada)

- Calculates the amount of revenue that a LGU would collect under average fiscal effort
- Done by collecting data on revenue collections and tax bases for each of the taxes under consideration
- Main benefit – computations are made at a disaggregated level and based on detailed knowledge of the statutory tax bases

MEASURING FISCAL CAPACITY

Representative Tax System

Consists of five elements:

1. Determination of revenue coverage
2. Classification of revenues into sources
3. Definition of standard tax bases
4. Determination of average tax rates
5. Estimation of fiscal capacity

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MEASURING FISCAL CAPACITY (example of RRS)

LGU	GDP PPP 2002 in MKD per capita	GDP PPP 2002 in MKD per capita	population census 2002	Tax revenues per capita	Tax revenues LGU budget 2002		Effective tax rate	Fiscal capacity in MKD	Fiscal capacity in per capita base
Macedonia	6,850	445,250	2,022,547	328	663,646,243		0.0007369	663,646,243	328
Region	**9,839**	**639,526**	**203,697**	**1,729**	**67,704,971**		**0.0005197**	**67,704,971**	**332**
Strumica	17,281	1,123,265	56,080	250	14,028,780		0.0002227	32,739,214	584
Stip	5,909	384,085	47,796	377	17,995,718		0.0009803	9,541,066	200
Kocani	6,348	412,615	38,092	267	10,179,430		0.0006477	8,168,768	214
Gevgelija	10,183	661,895	22,988	435	10,000,983		0.0006573	7,908,030	344
Kavadarci	7,143	464,264	38,741	400	15,500,060		0.0008618	9,347,892	241
Sum	NA	NA	203,697	1,729	67,704,971		**0.0005197**	67,704,971	1,583
Average	9,839	639,526	40739	345.8094	13540994.2		**AETR**	13,540,994	317
Minimum	5,909	384,085	22,988	250	10,000,983			7,908,030	200
Maximum	17,281	1,123,265	56,080	435	17,995,718			32,739,214	584
Coef. Of Var.	50.42	50.42	30.34	23.84	25.52			79	50

MEASURING FISCAL CAPACITY

Representative Tax System using Regression Analysis

- Main benefit is its accuracy
- Reduces the data requirements for the measurement process
- Predicts the value of one variable based on one or more other known variables
- Only requires information on the total amount of revenues collected for each LGU plus data on a series of proxies for the tax bases
- More explanatory variables – increases the accuracy of the RTS regression approach
- Benefits over the computational version of the RTS

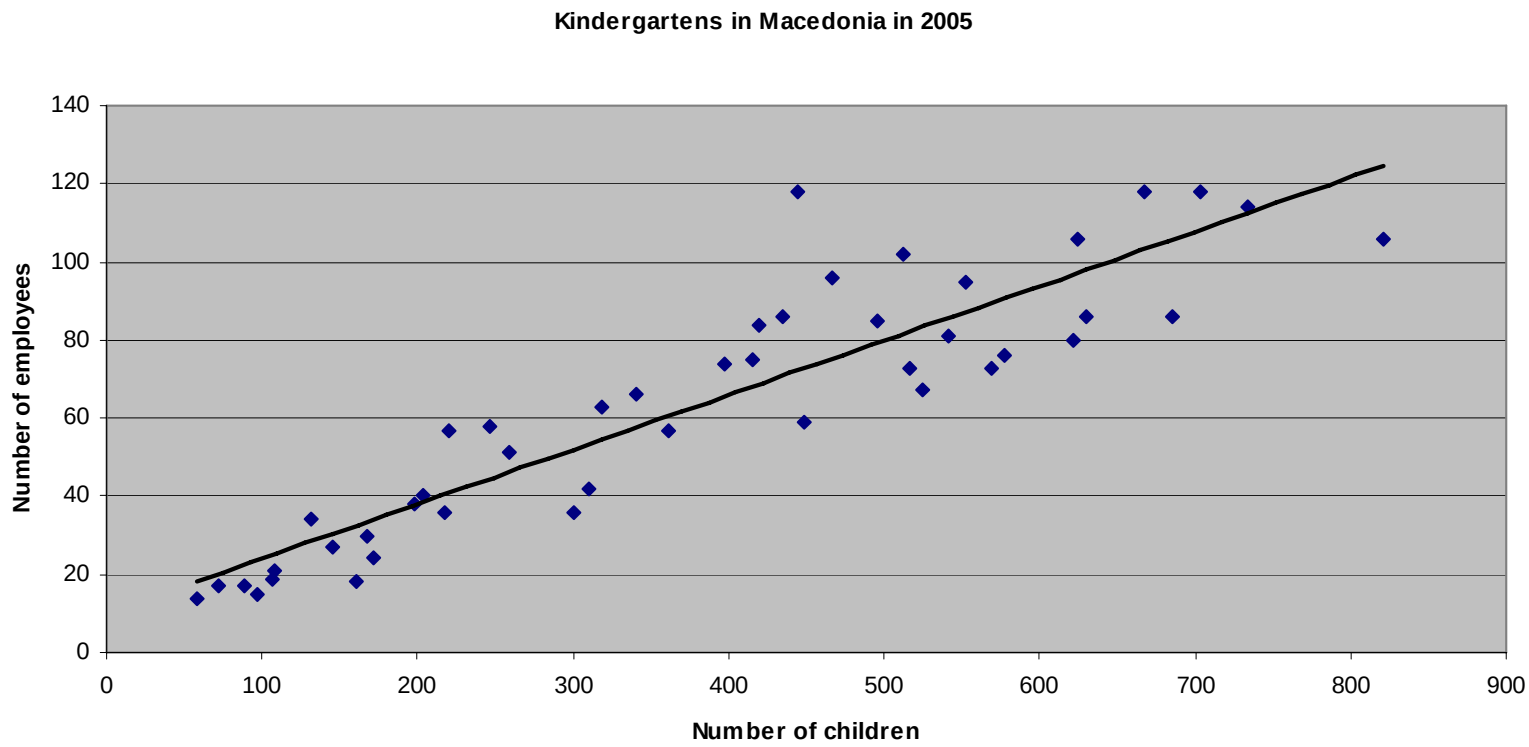
QUANTITATIVE METHODS FOR ANALYSIS

- Why would fiscal and financial officers use statistics and regression analyses:
  - Analyzing mean, median, variance, correlation between two variables
  - Analyzing how variations in one variable (dependent variable) are determined by one or more other variables (independent variables)
- PROS: provide numerical information, gives idea of the relationship between variables, can be used for policy simulations
- CONS: cannot replace knowledge of institutions or experts, expert analyses is still in need

REGRESSION ANALYSIS 1

- It quantifies the relationship between one variable (dependent) and one or more other (independent) variables.
- For example number of employees in Macedonian kindergartens depends on the number of children.

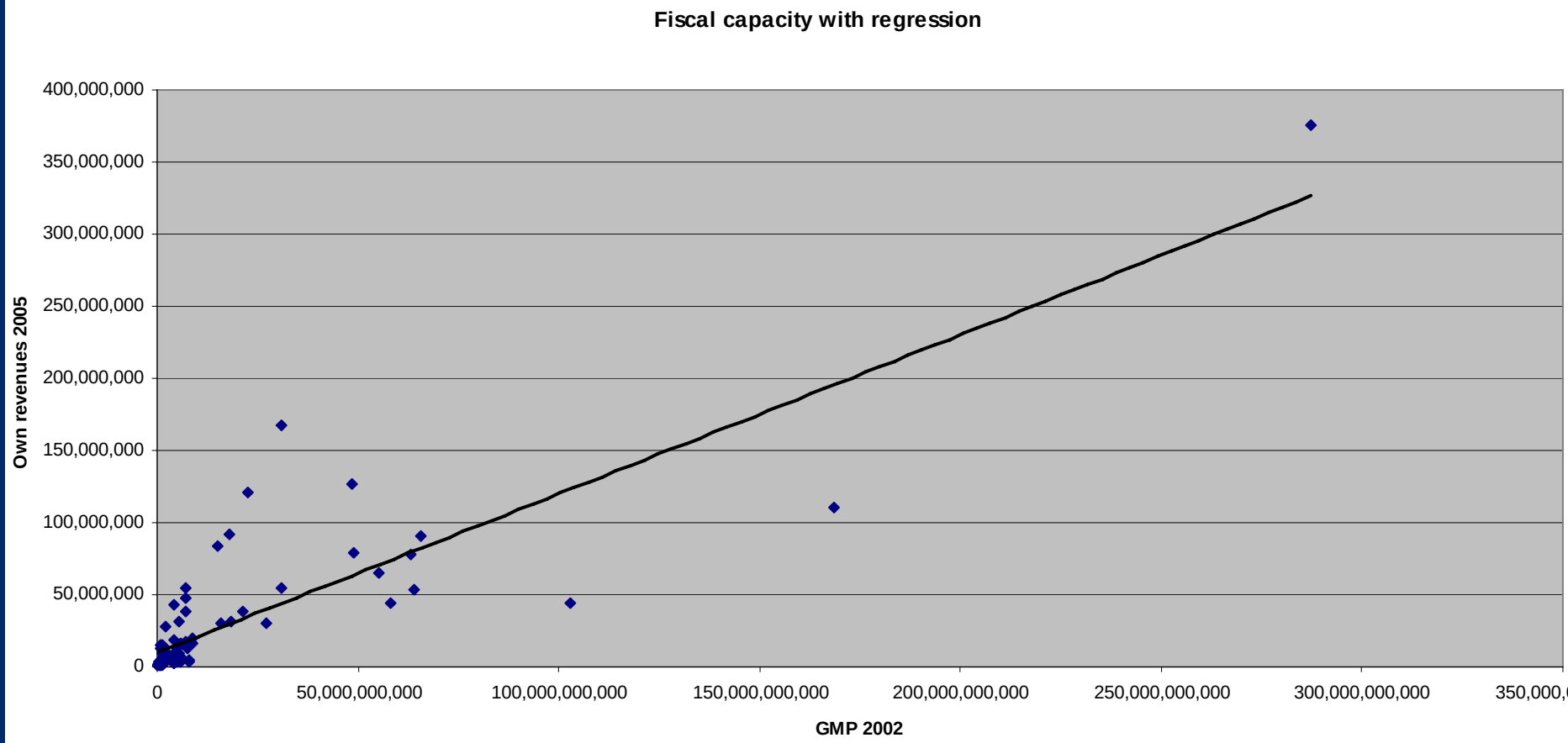
EXAMPLE OF REGRESSION ANALYSIS



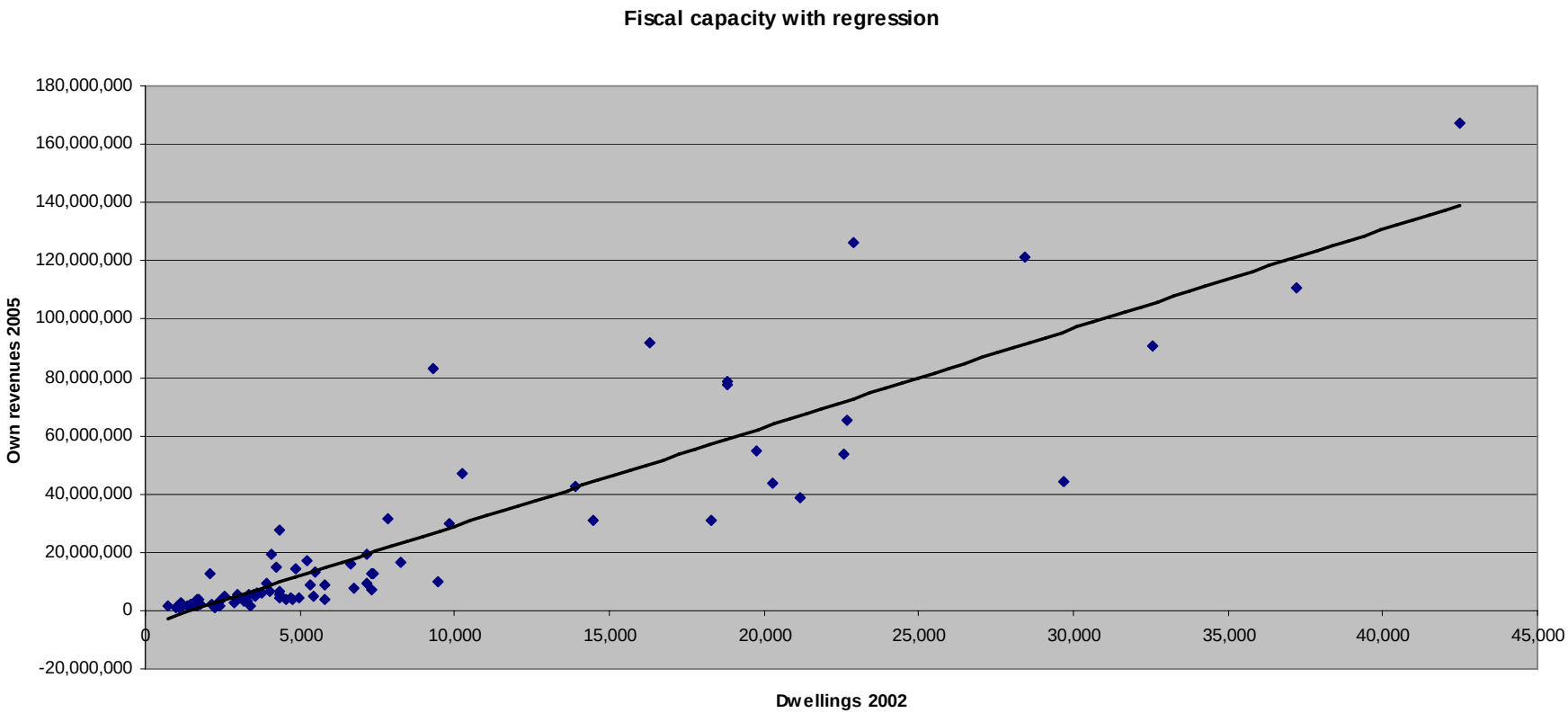
EXAMPLE OF REGRESSION ANALYSIS

- Just looking at the pattern of the dots in the graph it is obvious that there exist a positive relationship between the two variables.
- In order to quantify this relationship we could for example draw an straight line through the group of dots and measure the slope and the intercept of this line.
- Thus, the line is: EMPL=a+b(CHILDREN)+errors
- This is in essence what a regression techniques achieves.
- After applying Excel or E-Views we get: EMPL=10.1+0.1(CHILDREN)

EXAMPLE OF REGRESSION ANALYSIS 2



EXAMPLE OF REGRESSION ANALYSIS 3



And now:

HANDS ON WORK!