

## **PUBLIC FINANCING AS ONE OF THE FACTORS OF DEMAND FOR HIGHER EDUCATION**

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# OUTLINE

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- **Introduction & literature review**
- **General Empirical HE demand model for Slovenia**
- **Demand for HE and public financing:**
  - in Slovenia
  - by Slovenian Universities
  - by different fields of education (by ISCED97)
  - case study of the Faculty of Economics
- **Conclusion & policy implications of results**



# MOTIVATION

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- **Declining demand for HE and targeting of the optimal structure of demand for HE**
  
- **Consequences of the above changes for:**
  - **education market**
  - **labor market**
  - **economy and welfare in the broadest sense**

# **OBJECTIVES AND RESEARCH QUESTIONS**

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- **Which are the factors of demand for higher education in Slovenia and what is the role of public financing of HE among them?**
  
- **What has been the evolution of demand for HE and the evolution of public financing of HE on the level of:**
  - **Slovenia**
  - **Slovenian Universities**
  - **fields of education (by ISCED97)**
  - **the case study of the Faculty of Economics?**
  
- **What is the association between the demand for HE and public financing on the corresponding levels?**



# METHODOLOGY

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- **Review of previous research in the field of HE demand models**
- **Correlation and regression analysis of the time series data obtained from SORS and AJPES**

# THE GENERAL MODEL OF HE DEMAND IN SLOVENIA

## The best fitting regression model describing demand for HE:

$$NEH = \beta_0 + \beta_1 * LB_{-19} + \beta_2 * NO + \beta_3 * IRI + \beta_4 * NC + \beta_5 * RYU + \beta_6 * NSC + \beta_7 * ACC + \varepsilon$$

- **the “base group” factors** (determining the size of the group of the potential students):
  - life births nineteen years ago ( $LB_{-19}$ )
  - number of people aged 40 years or more ( $NO$ )
  
- **the “participation rate” factors** (determining the rate at which persons from the “base group” actually decide for the study):
  - fixed base index of real monthly average income per an individual ( $IRI$ )
  - total fertility rate as a proxy measure of the number of children per family ( $NC$ )
  - unemployment rate of youth under 26 years of age ( $RYU$ )
  - number of scholarships granted to students ( $NSC$ )
  - abolition of a compulsory conscription in Slovenia ( $ACC$ )



# THE GENERAL MODEL AND PUBLIC FINANCING

## Regression output summary

Variable	Coefficient	t-test	One-tailed p-value
Regr. const.	-796896.22	-6.44	0.000
LB <sub>-19</sub>	5.61	4.43	0.000
NO	0.60	7.51	0.000
IRI	189.11	1.73	0.051
NC	64596.64	5.44	0.000
RYU	1094.83	2.95	0.004
NSC	1.37	1.73	0.051
ACC	-12601.54	-2.60	0.009

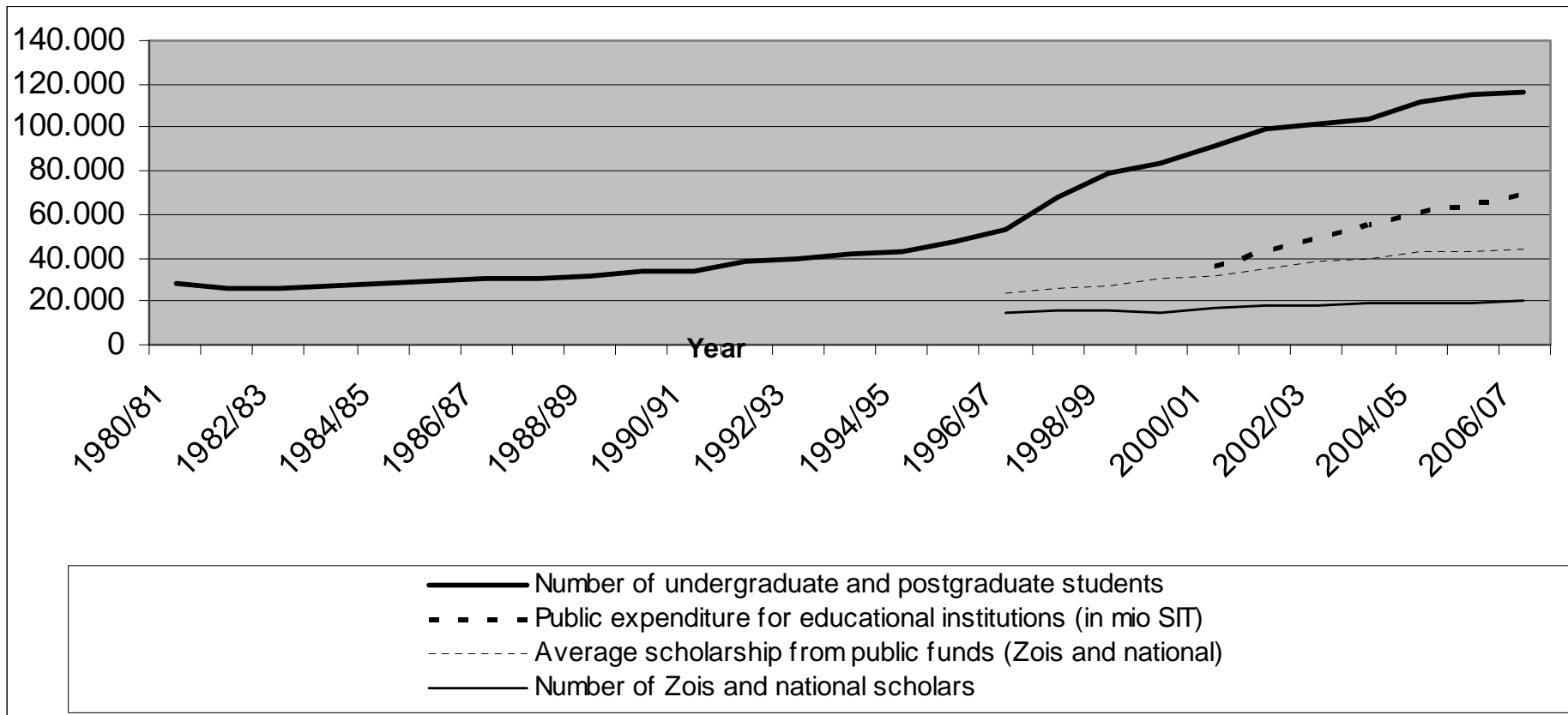
$$E_{\text{NEH/NSC}} = 0.73$$

**Adjusted R Square = 0.978    Standard Error = 3541.50**

**F-test = 151.92    Number of observations = 25**

# DEMAND FOR HE AND PUBLIC FINANCING – SLOVENIA

## Number of undergraduate and postgraduate students and public expenditure, Slovenia, 1980/81 – 2006/07



# DEMAND FOR HE AND PUBLIC FINANCING – SLOVENIA

**The Spearman correlation coefficient between the number of undergraduate and postgraduate students, the average publicly funded scholarship and the number of publicly funded scholars in Slovenia, 1996/97 – 2006/07**

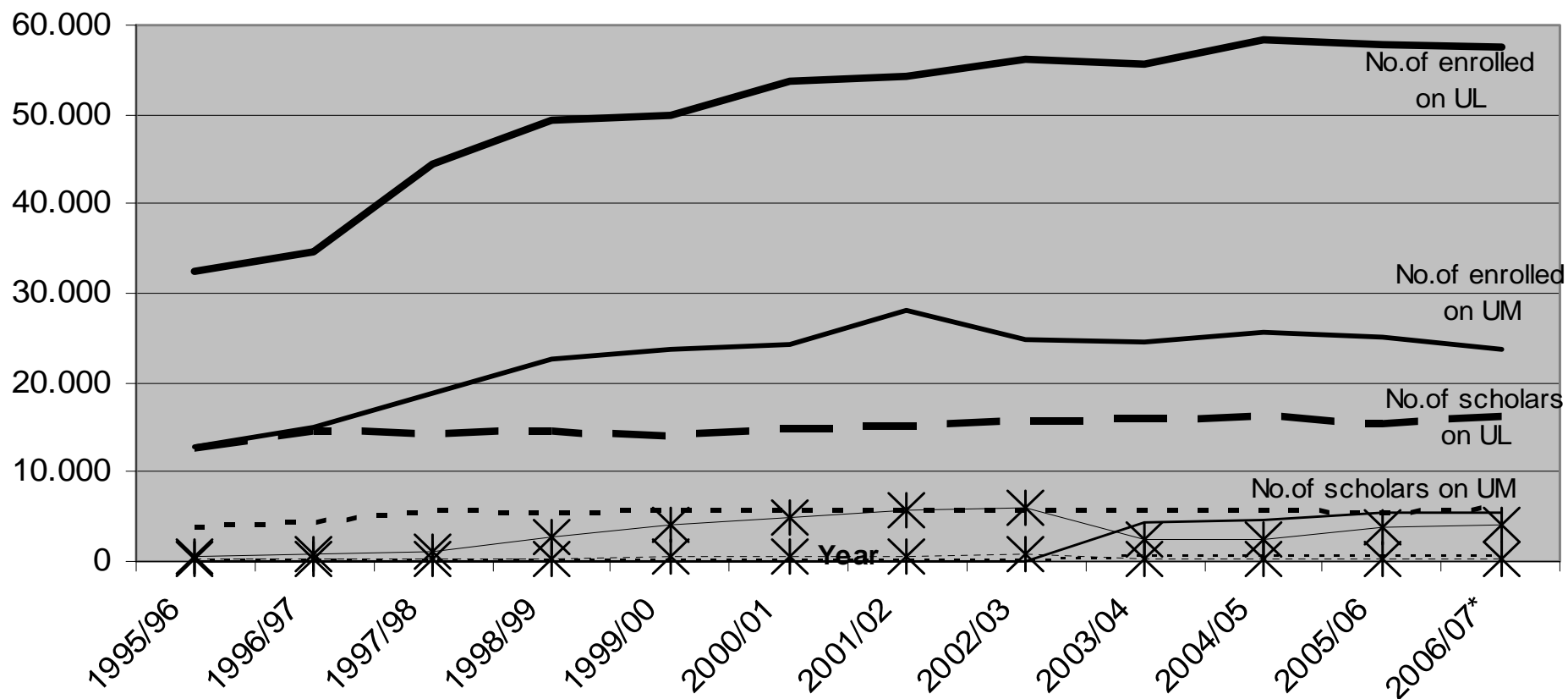
Correlation matrix	Number of undergraduate and postgraduate students
Number of scholars (Zois and national)	0.9576
Average scholarship (Zois and national)	0.9664



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# DEMAND FOR HE AND PUBLIC FINANCING – UNIVERSITIES

The number of undergraduate students and the number of scholars  
at the Slovenian universities, 1995/96–2006/07



— No. of scholars on UL    - - - No. of scholars on UM    ..... No. of scholars on UP    --- \* --- No. of scholars on FHEI  
— No. of enrolled on UL    — No. of enrolled on UM    — No. of enrolled on UP    — \* — No. of enrolled on FHEI

# DEMAND FOR HE AND PUBLIC FINANCING – UNIVERSITIES

**The Spearman correlation coefficient between the number of undergraduate students and the number of scholars at the Slovenian universities, 1995/96 – 2006/07**

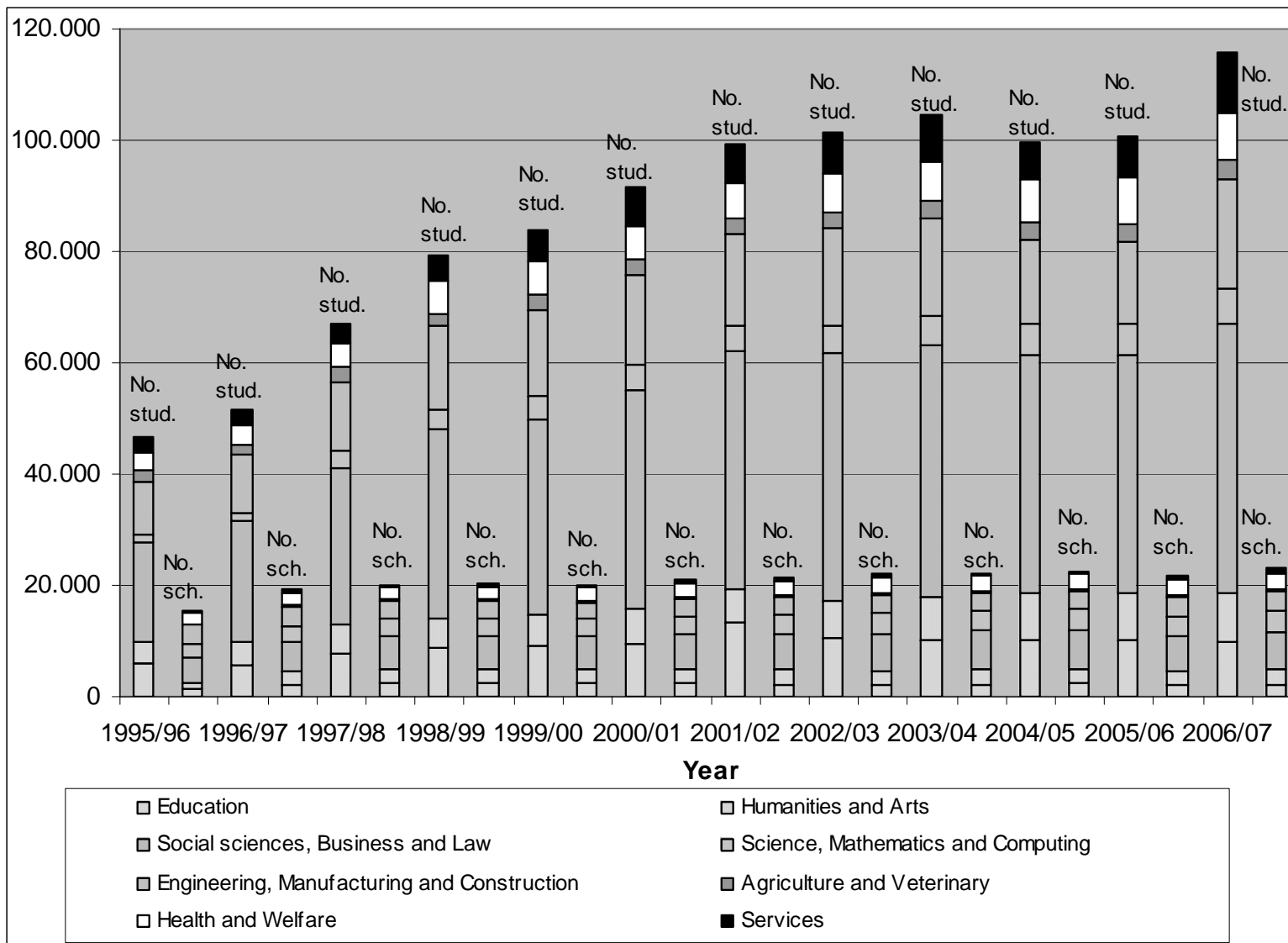
University	Correlation coefficient (r)
University of Ljubljana	0.8225
University of Maribor	0.8774
University of Primorska	0.7060
Freestanding higher education institutions	0.9717



# **DEMAND FOR HE AND PUBLIC FINANCING – FIELDS OF EDUCATION BY ISCED97 CLASSIFICATION**



# The number of undergraduate and postgraduate students and the number of scholars by the fields of education in Slovenia, 1995/96–2006/07



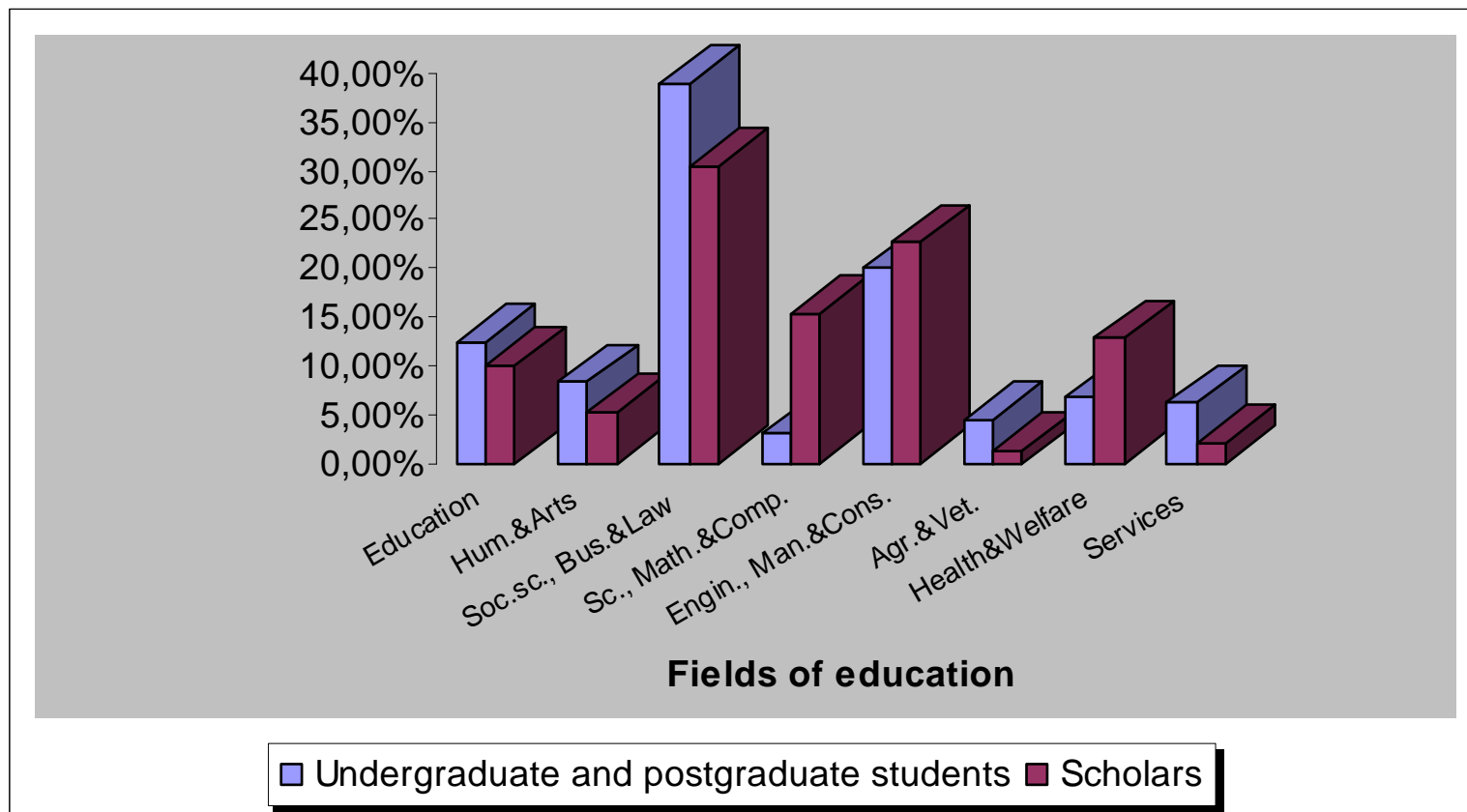
# DEMAND FOR HE AND PUBLIC FINANCING – FIELDS OF EDUCATION by ISCED97

**The Spearman correlation coefficient between the number of undergraduate and postgraduate students and the number of scholars by the fields of education in Slovenia, 1995/96 - 2006/07**

Field of education (by ISCED 97)	Correlation coefficient (r)
Education	0.3085
Humanities and Arts	0.6598
Social Sciences, Business and Law	0.9424
Science	0.9370
Engineering, Manufacturing and Construction	-0.2818
Agriculture	0.3660
Health and Welfare	0.8805
Services	0.8333

# FIELDS OF EDUCATION 1995/96

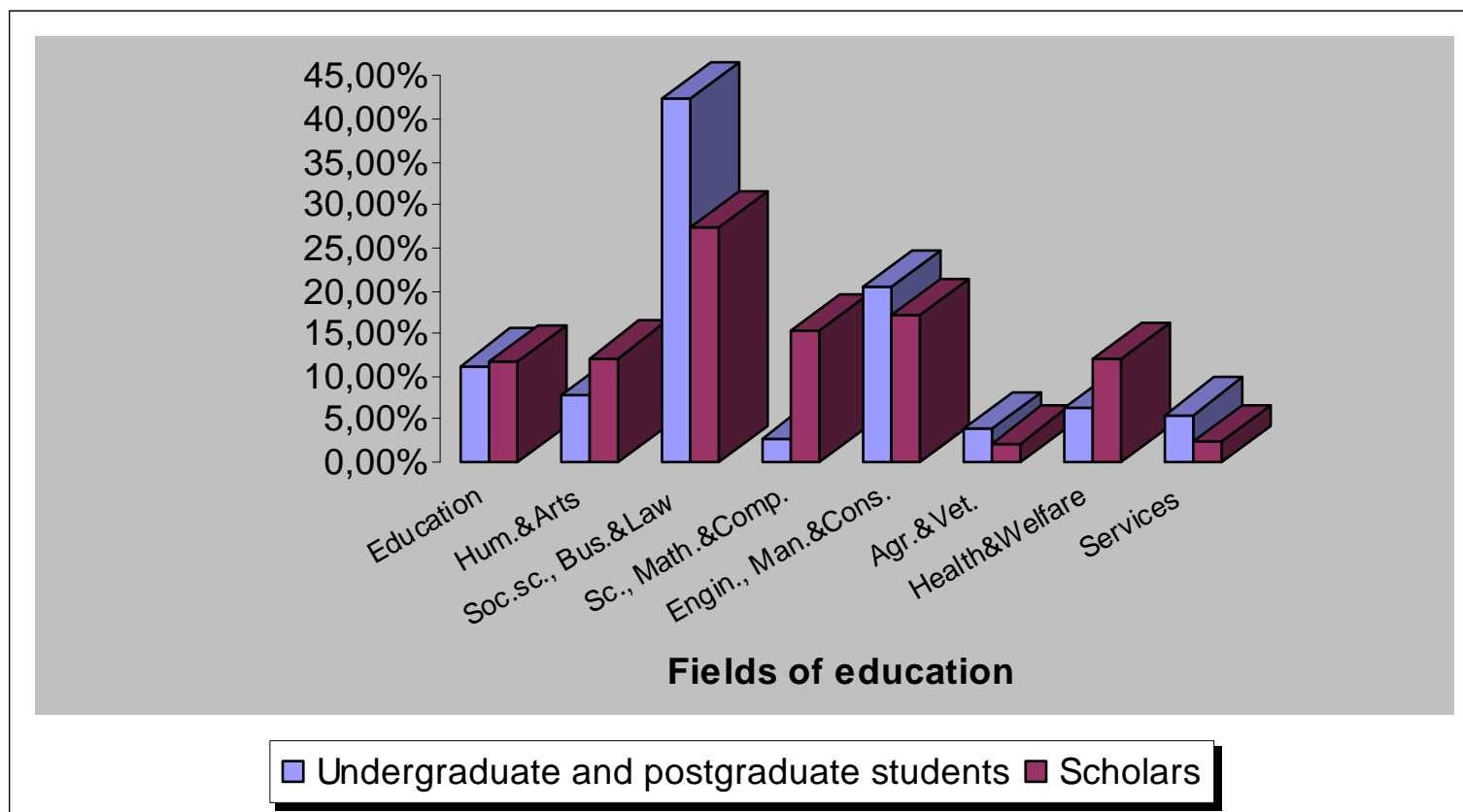
Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 1995/96, Slovenia





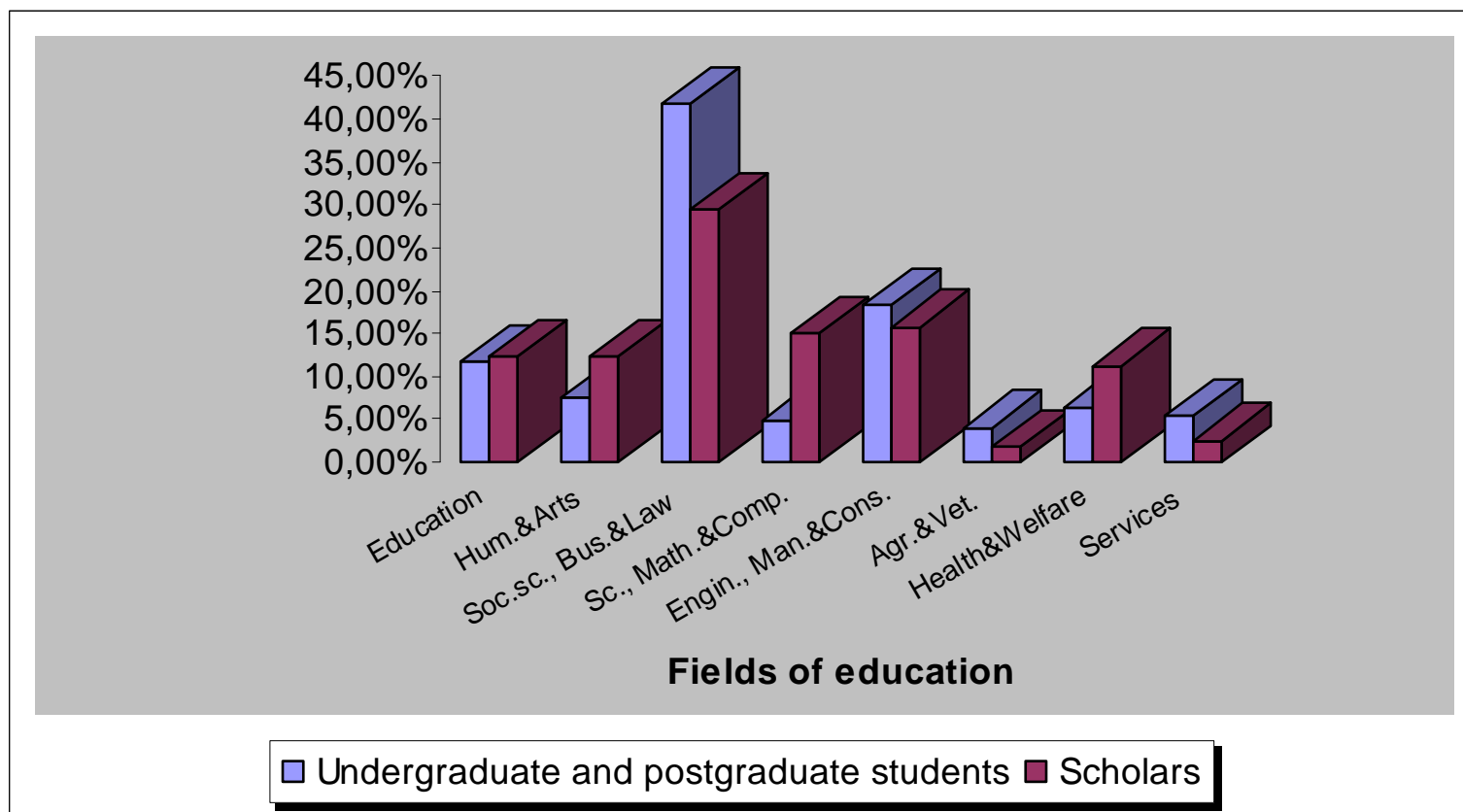
# FIELDS OF EDUCATION 1996/97

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 1996/97, Slovenia



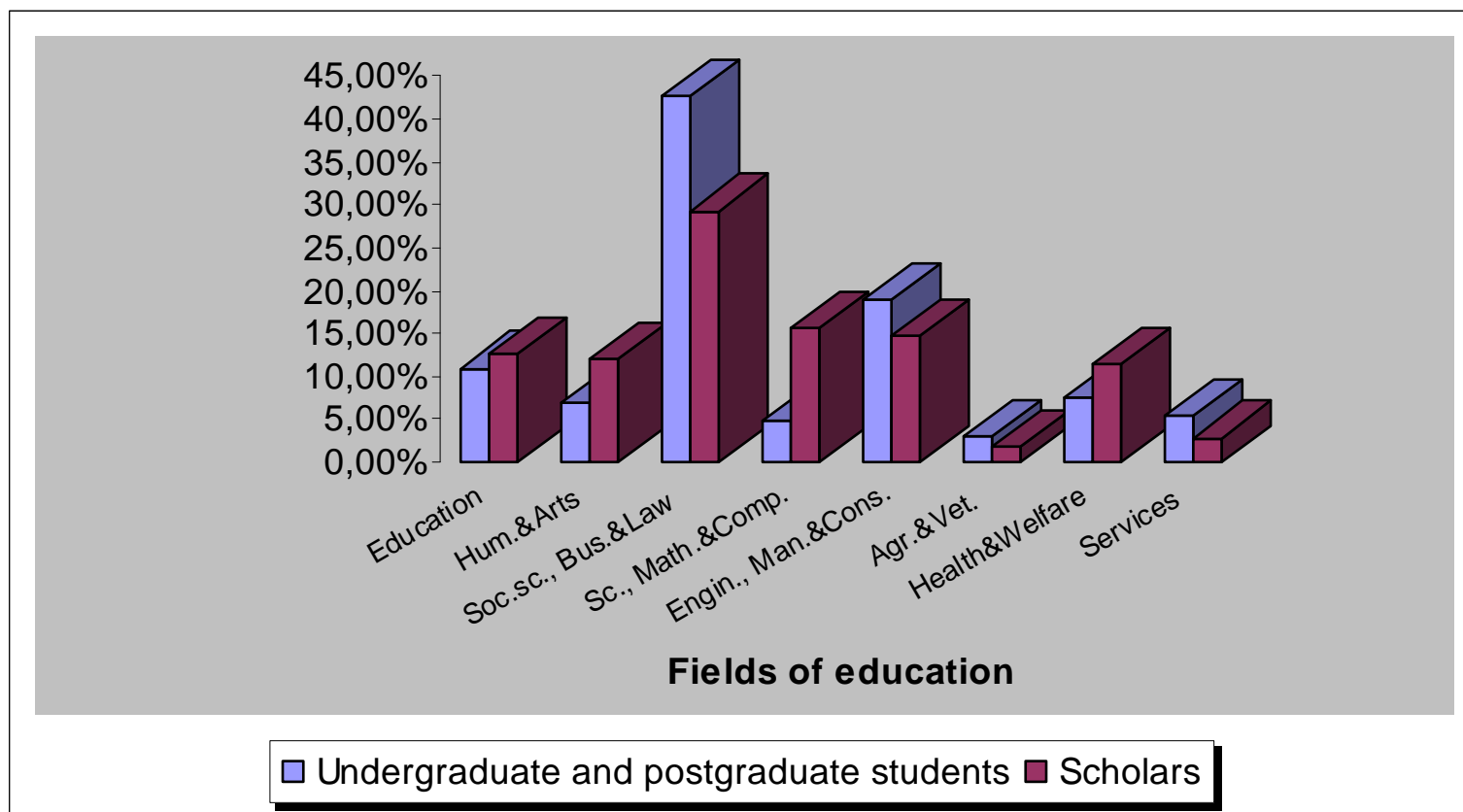
# FIELDS OF EDUCATION 1997/98

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 1997/98, Slovenia



# FIELDS OF EDUCATION 1998/99

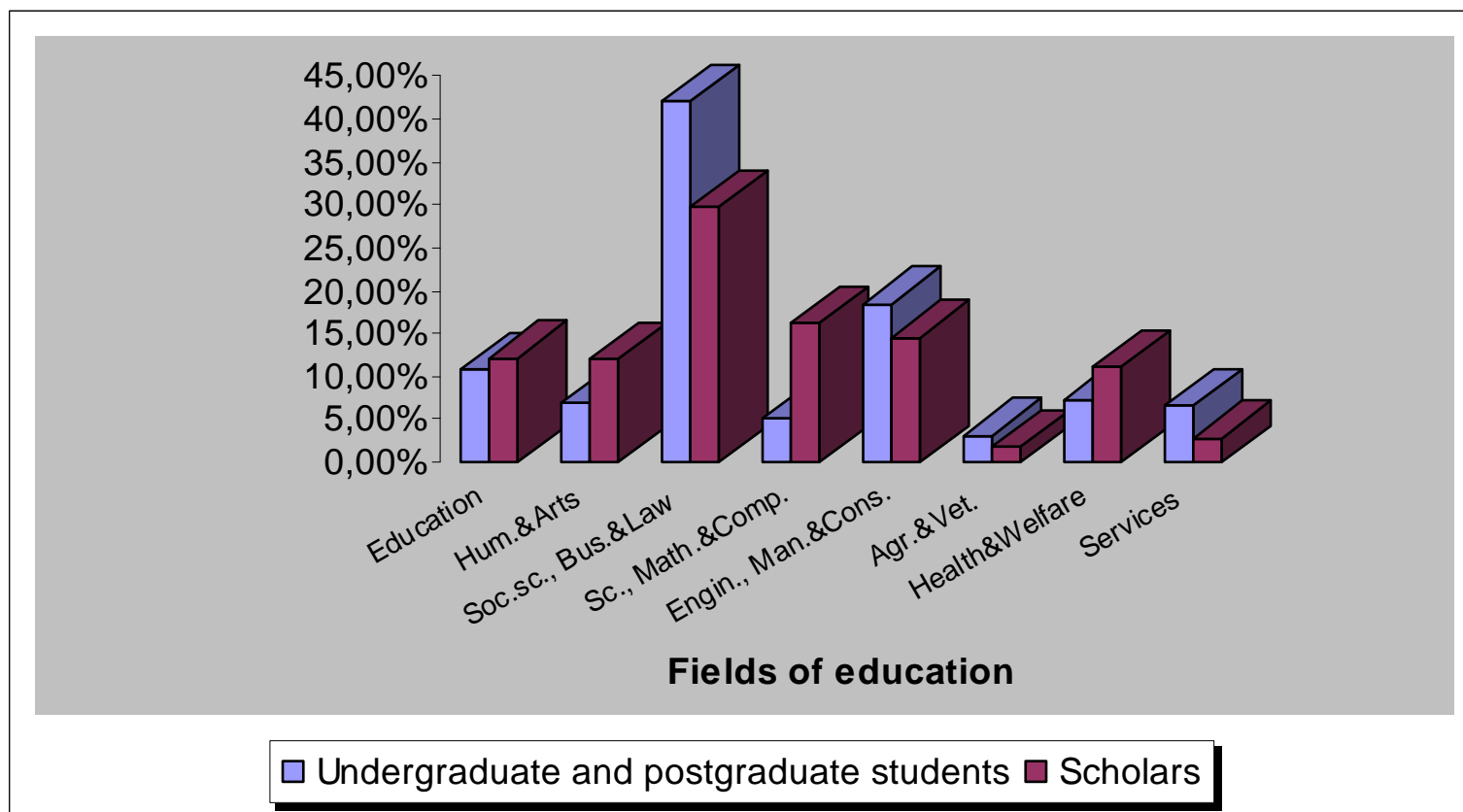
Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 1998/99, Slovenia





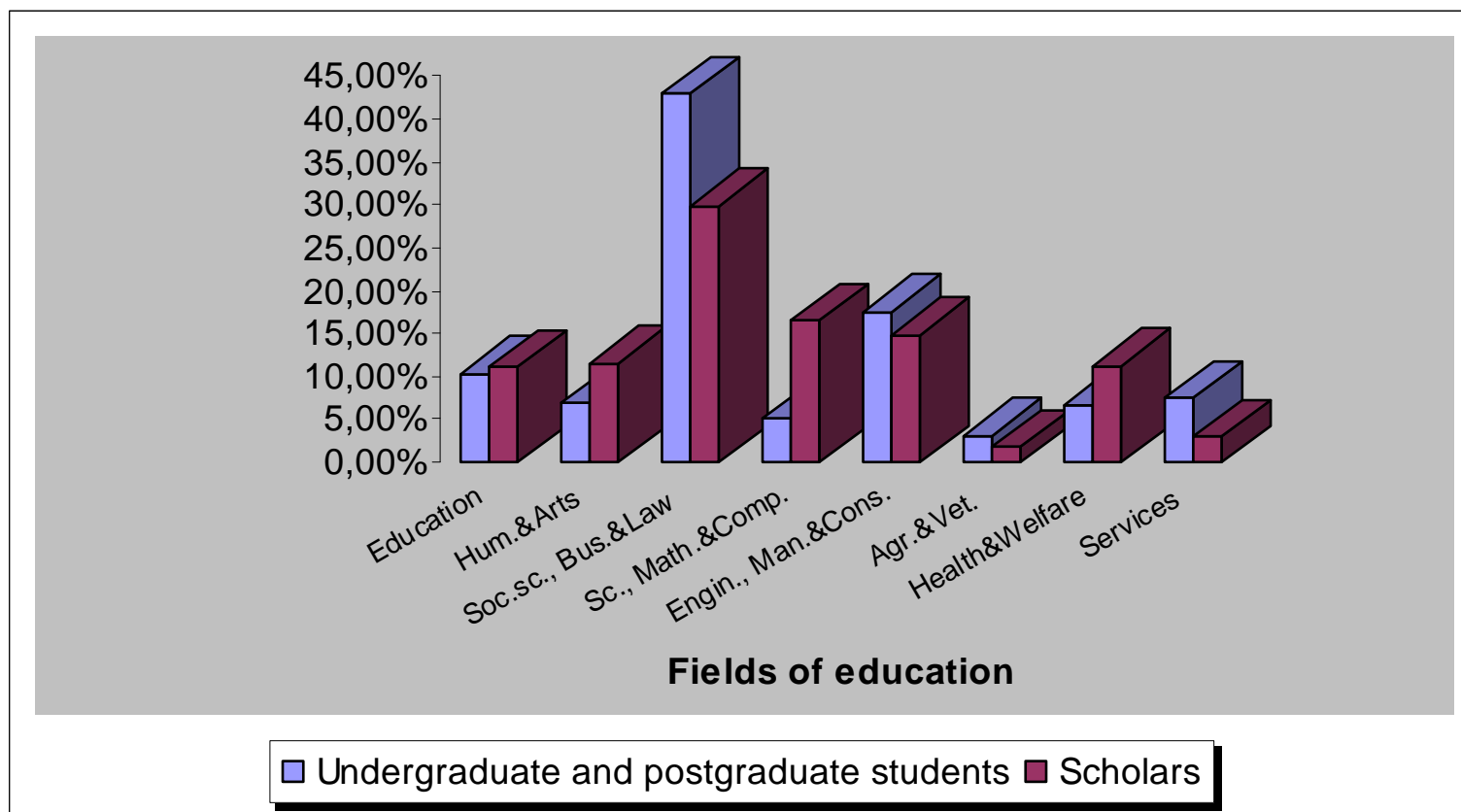
# FIELDS OF EDUCATION 1999/00

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 1999/00, Slovenia



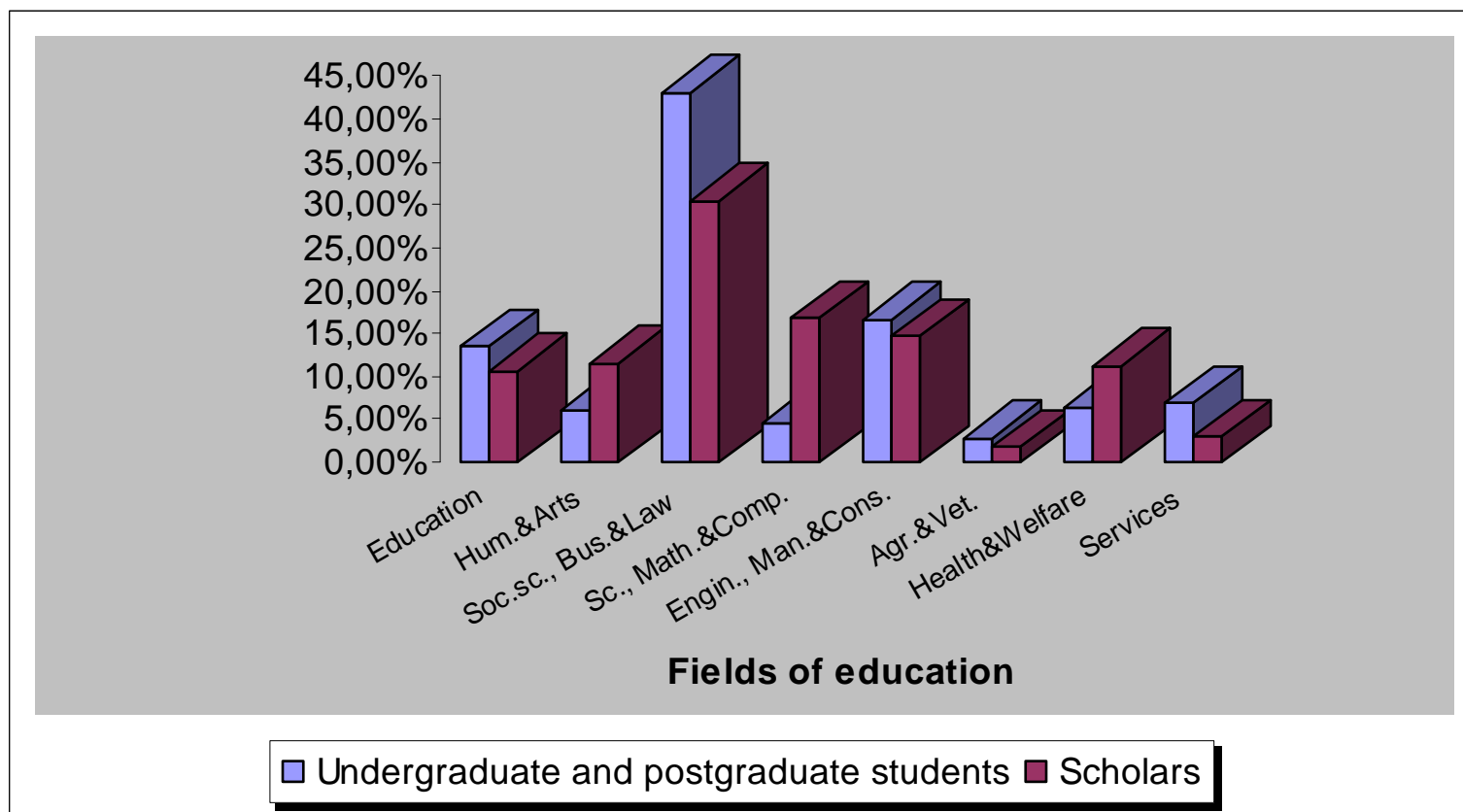
# FIELDS OF EDUCATION 2000/01

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2000/01, Slovenia



# FIELDS OF EDUCATION 2001/02

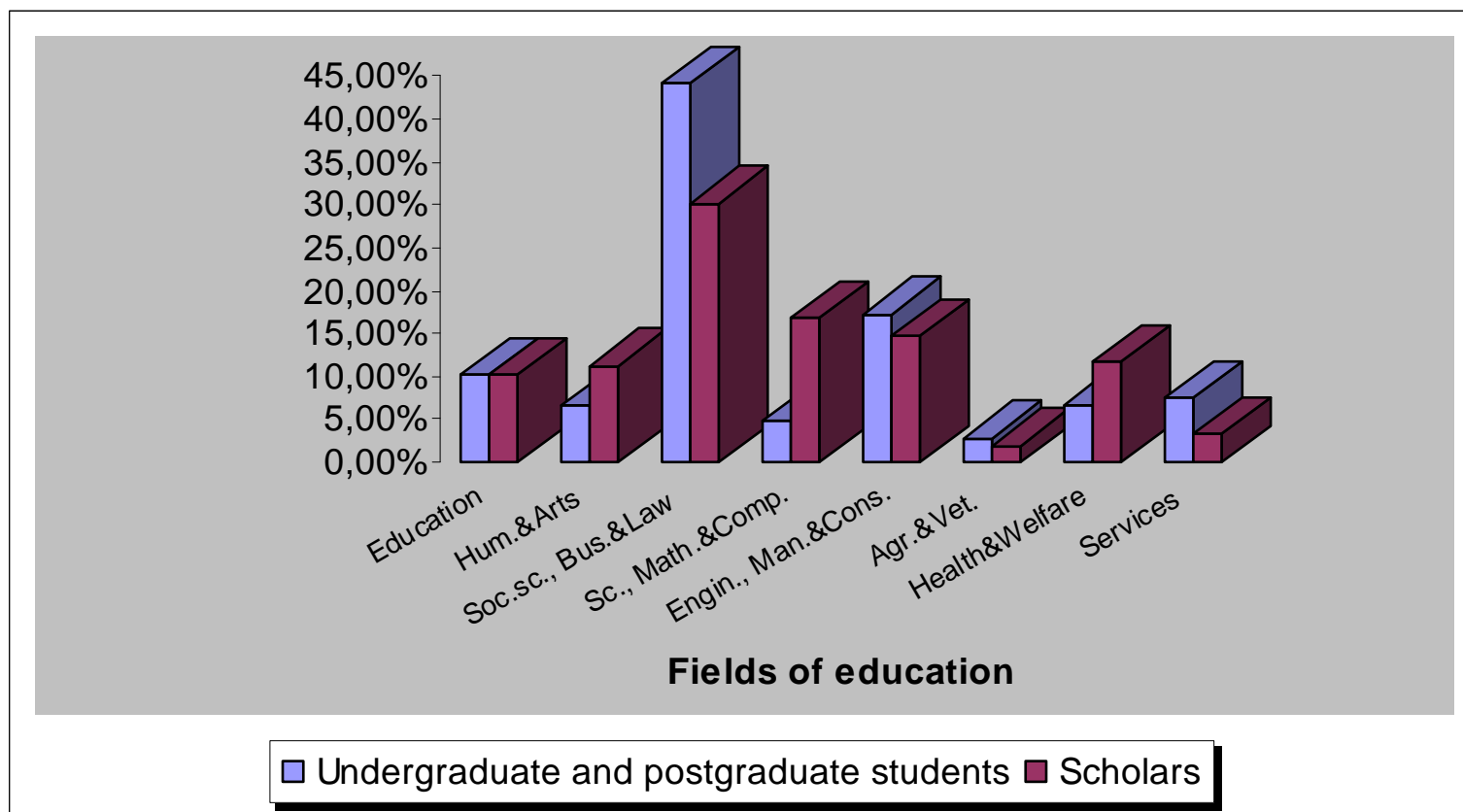
Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2001/02, Slovenia





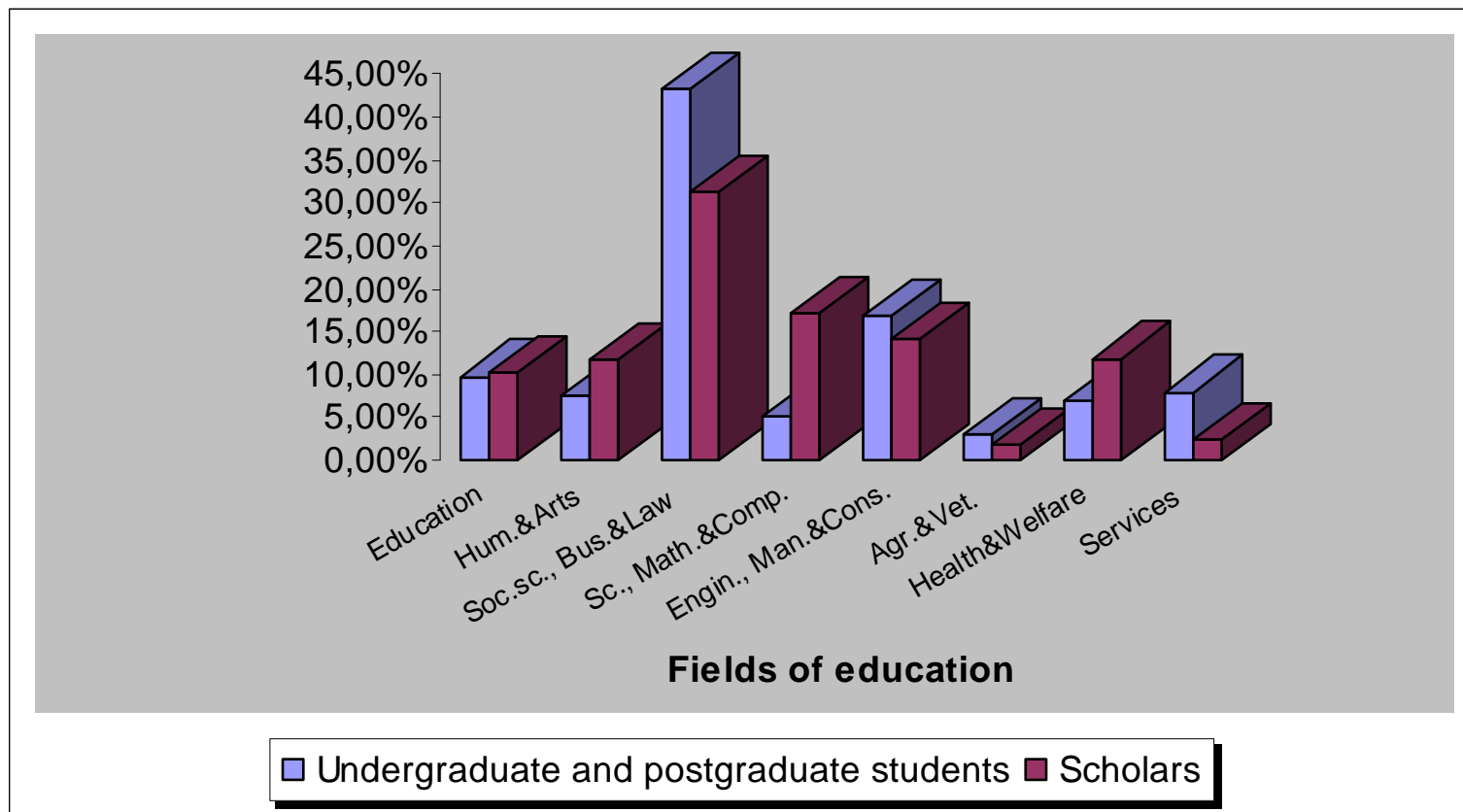
# FIELDS OF EDUCATION 2002/03

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2002/03, Slovenia



# FIELDS OF EDUCATION 2003/04

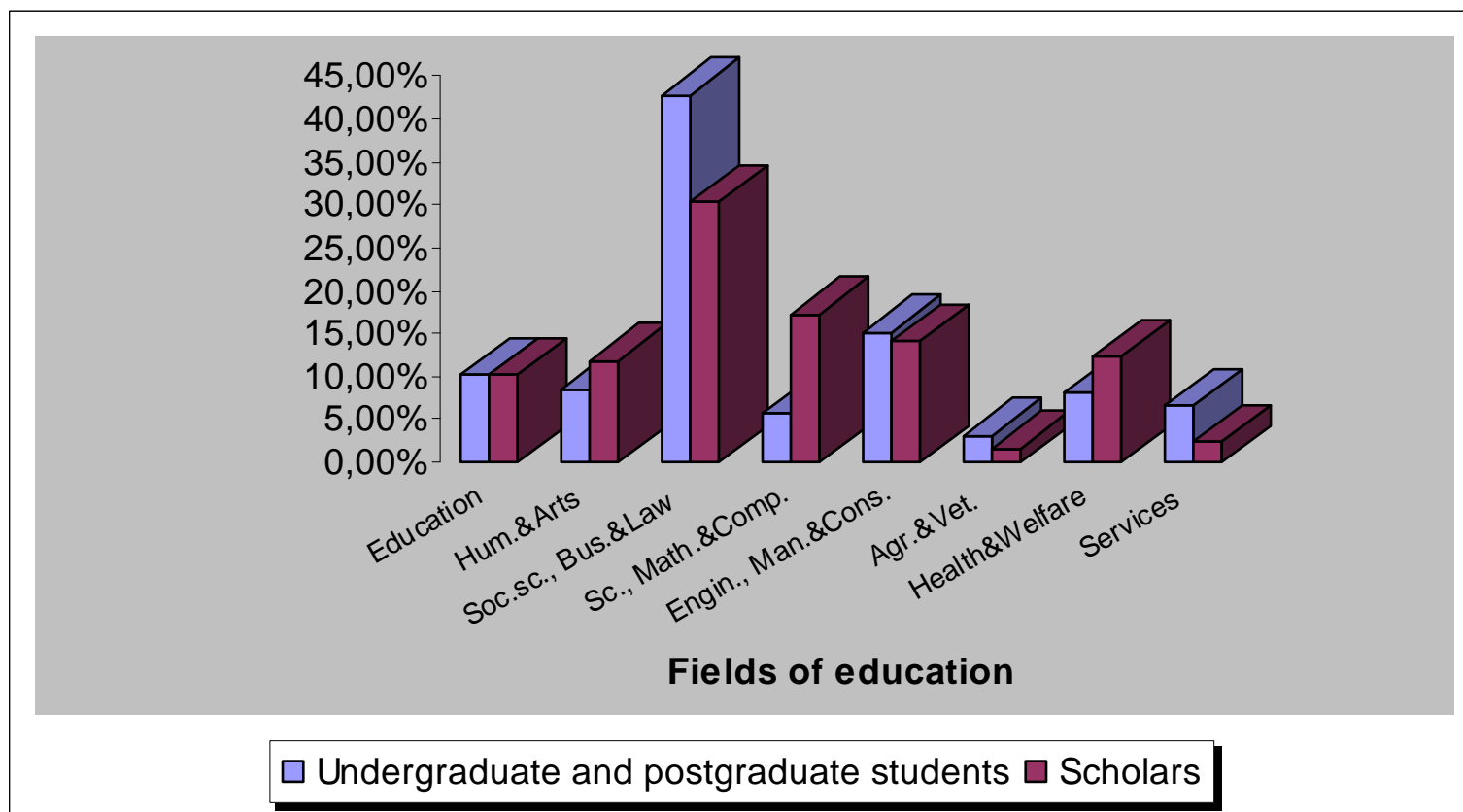
Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2003/04, Slovenia





# FIELDS OF EDUCATION 2004/05

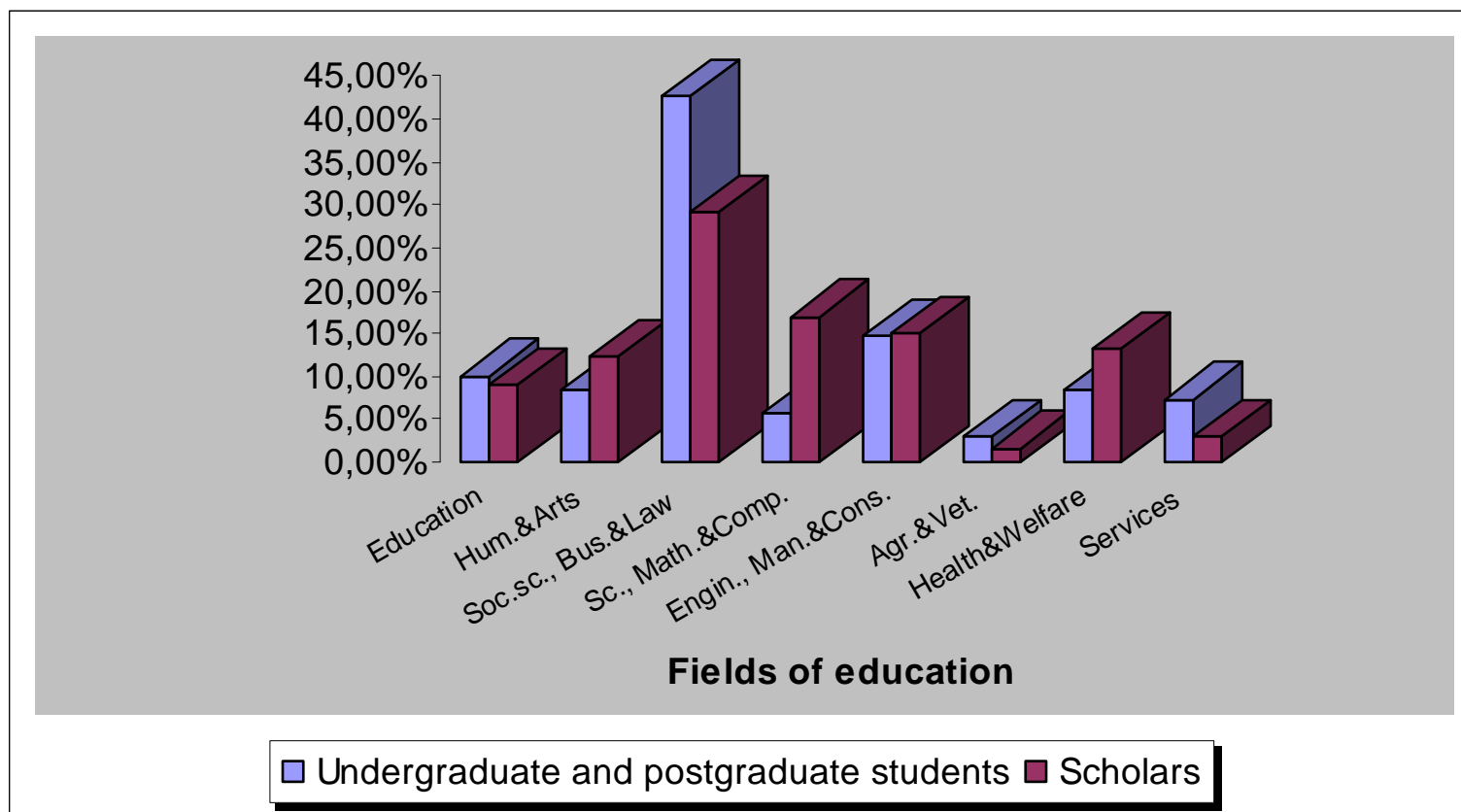
Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2004/05, Slovenia





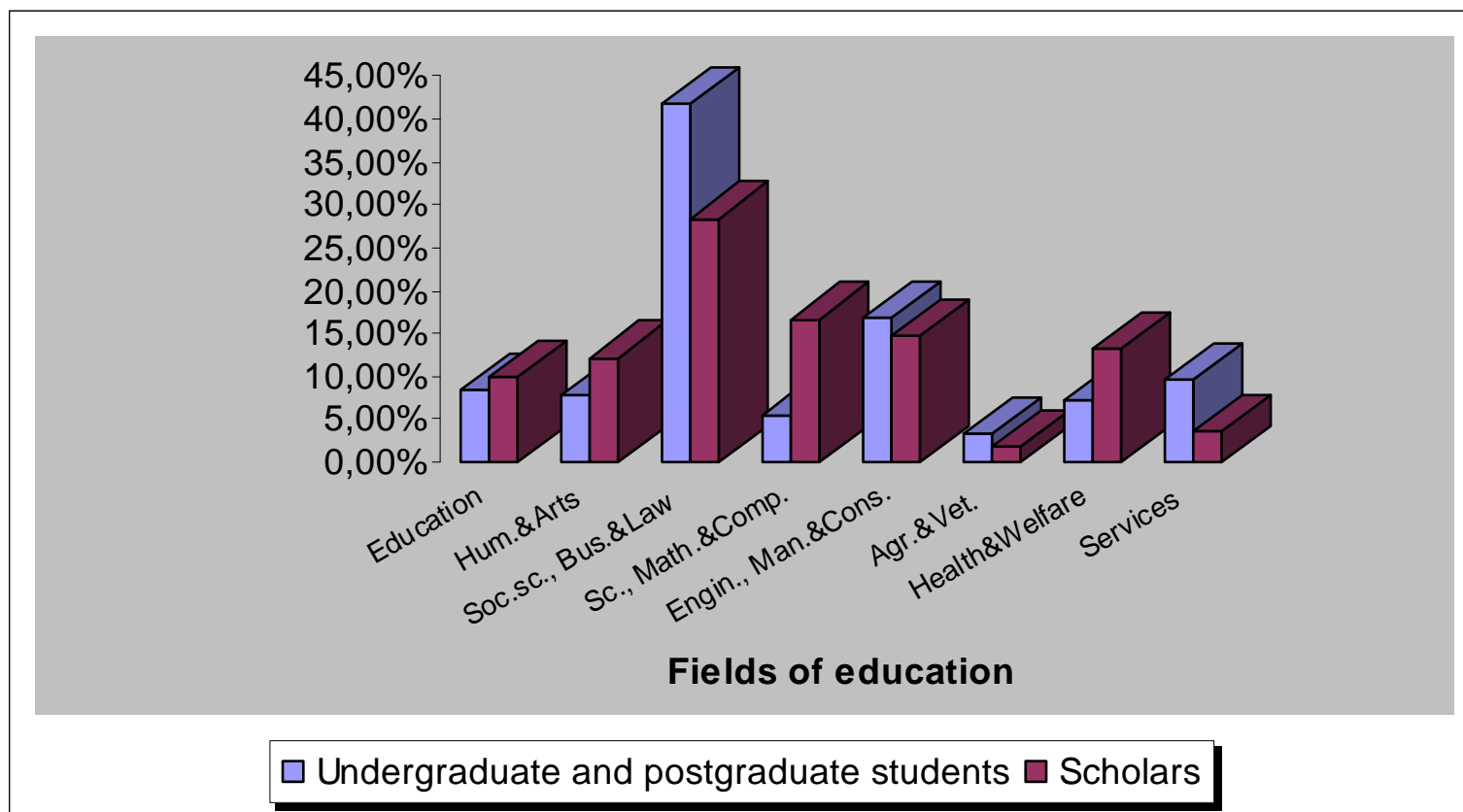
# FIELDS OF EDUCATION 2005/06

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2005/06, Slovenia



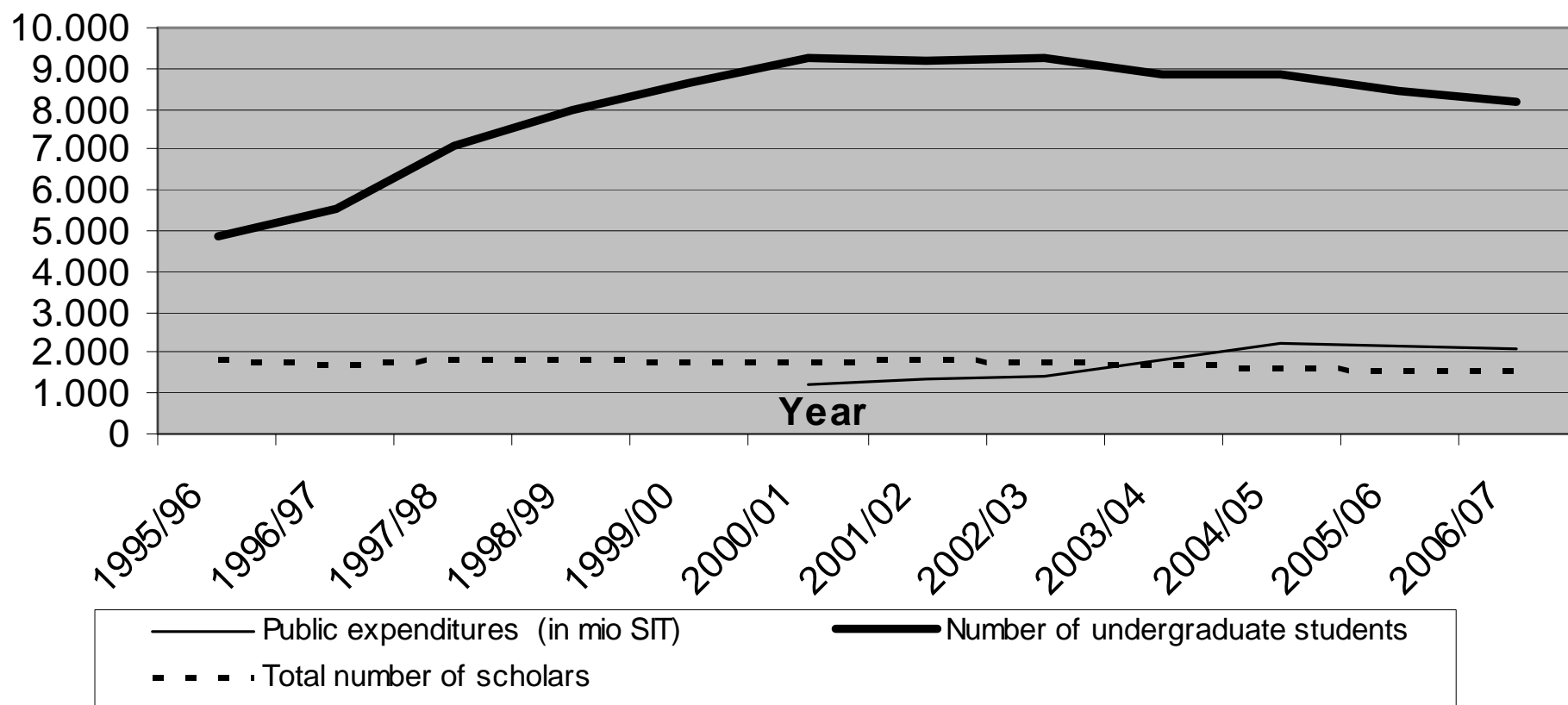
# FIELDS OF EDUCATION 2006/07

Relative frequency distribution of undergraduate & postgraduate students and scholars by fields of education in the study year 2006/07, Slovenia



# DEMAND FOR HE AND PUBLIC FINANCING – CASE STUDY OF THE FACULTY OF ECONOMICS

**The number of undergraduate students and public expenditures for the Faculty of Economics at the University of Ljubljana, 1995/96–2006/07**



## Regression analysis of the enrolled students at the Faculty of Economics at the University of Ljubljana

$$NUS = \beta_0 + \beta_1 * NSR + \beta_2 * t + \varepsilon$$

Explanatory variable	Intercept	Number of scholars (NSR)	Linear trend (t)
Regression coefficient	-18155	13.10837	552.7308
p-value (significance)	0.005728	0.000918	4.48E-05

$$\text{Adjusted } R^2 = 0.826145$$

$$\text{F-test (significance)} = 0.000154$$

$$E_{NUS/NSR} = 2.8$$

*NUS* - number of undergraduate students  
*NSR* - number of scholars

# CONCLUSION - 1

## General HE demand model:

- **the role of public financing measured by the number of scholarships is significant and positive ( $\beta_{NSC}=1.37$ )**
- **elasticity of the demand for HE on the public financing (number of scholarships) is substantial ( $E_{NEH/NSC}=0.73$ )**



## **CONCLUSION – 2 & 3**

- **On all the observed levels we confirmed a strong and positive association between:**
  - **the demand for HE (measured with absolute number of enrolled students) and**
  - **public financing (measured with total public expenditures or number of scholars).**
  
- **However public financing is not the only factor of demand for HE, its effects impact the HE demand with a certain time lag and can not prevail over all the other negative trends which are causing the decline in absolute demand for HE in general.**



## **CONCLUSION – 4**

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- **On another hand, public financing can still at least slow down if not reverse the negative trends in Slovenian HE as a whole.**
- **More importantly it can significantly impact the structure of demand for HE by fields of education and help to drive that structure towards the more desirable structure which is reflected in the labour market demand structure by the corresponding fields.**

# **Funding, Equity and Efficiency of Higher Education**

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**Thank you for your attention**