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TITULO	Coordinating the economy's needed graduates and their actual numbers: a relative index using an input-output methodology		
SUBTITULO			
AUTOR(ES) Apellidos, Nombres (Completos) del autor(es) del trabajo	**Cortés Ortiz Andrés Felipe**		
PALABRAS CLAVE (Mínimo 3 y máximo 6)	**matriz insumo-producto**		**competitividad**
	área de conocimiento		**coordinación**
	sector económico		
RESUMEN DEL CONTENIDO **(**Mínimo 80 máximo 120 palabras)	**El trabajo pretende crear un indicador que muestre la coordinación existente entre el número de graduados de la economía y las necesidades que se tienen de ellos en los diferentes sectores. Para esto, se utilizará una metodología que involucra a la matriz insumo-producto y que relaciona las áreas de educación de un país con las actividades que se desarrollan en los sectores económicos. Dado que es un indicador relativo, se calculará para Colombia y México. Finalmente, se compararán los resultados obtenidos con las condiciones económicas reales de cada país.**		

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Coordinating the economy's needed graduates and their actual numbers: A relative index using an input-output methodology.

1. Introduction

When students attend college in order to obtain higher levels of education and consequently increase their level of income, some of them may take into account the importance of job availability for the career they are choosing. If the economy has perfect flow of information, any student could instantly know which careers are being demanded by all the economic sectors and also the number of graduates by career. Thus, the decision of which career to choose could only result in efficient employment after graduation.

If such information was available, unemployment rates would easily drop down and national productivity rates would rise rapidly. First, individuals could easily know what careers are required by the economy and access them in order to obtain jobs faster. Then, if graduates work in the economic sectors where they are actually needed, each one of these sectors would efficiently increase productivity and competitiveness.

The World Economic Forum (2012) in the Global Competitiveness Report highlights the necessity of "workers who are able to perform complex tasks and adapt rapidly to their changing environment and the evolving needs of the economy". One of the points this organization evaluates in order to rank each country's competitiveness level is the labor market efficiency, and it states that it must guarantee that "workers are allocated to their most effective use in the economy''. This reflects the importance of coordinating the information of skill demand and supply in order to increase productivity.

The World Competitiveness Yearbook developed by IMD Business School also computes a well-known ranking for competitiveness. Using a certain set of factors, it evaluates each one of these factors in the corresponding country and then generates an index based on the results. It is possible to see the importance of the present work by realizing that these factors include: employment by sector, labor productivity, and availability of skills and education (IMD, 2013). Obtaining good results in such criteria would increase competitiveness significantly.

This work will contribute to this information by determining the proportions of each field of education that productive sectors demand and comparing this data to the actual graduates in the economy.

Although the significance of this information has already been addressed, no other study has used the present input-output matrix methodology in a similar way.

This article uses the national input-output matrix by economic sectors and the graduates by field of education data. First, the input-output matrix is used to calculate proportional relations between each sector, creating the *Proportion of Inputs Matrix*. Then, the *Sector-Field Relation Matrix* is created to determine which fields of education are related to the economic sectors. Using these two matrixes, the *Sector-Field Proportion Matrix* is calculated to indicate how each economic sector uses each field of education. Finally, the results obtained with the final matrix are compared to the graduates by field of education data in order to achieve pertinent conclusions.

The result corresponds to a difference between graduates by field of education and the actual field of education requirement in the economy. This difference represents a number that cannot mean anything by itself; it is hard to know if the number obtained shows good performance in field of education supply-demand correspondence. Thus, it is necessary to apply this methodology for two economies and analyze the results as a relative index.

The main country chosen for this methodology was Colombia, and because the input-output matrixes for both countries should have similar number of sectors[1], the other country is Mexico. Therefore, Mexico will only serve to this work as a comparing economy for the calculated relative index.

The importance of finding correspondence between the graduates in a country and the economy's availability to place them efficiently was previously commented by Barton (2008). He addressed the importance of finding the right number of graduates and their skills that the nation needs to produce in order to guarantee the nation's prosperity. He clearly also relates the importance of this information to national productivity matters. This study will attempt to reach this statement by using a methodology that finds the right proportion of graduates for each skill that the economy requires.

Manaconda, Sanchez-Paramo, & Schady (2010) analized relationships between the productive sector and education skills for Latin America, and they found how the input level of skills affected salaries in the economy. Valadkhani (2003), using the input-output matrix (with a different methodology) determined the high employment generating industries in Australia but did not extend to compare results to graduate data. Heon-Goo & Lee (1998) also used the input-output matrix to find changes in the productive sector according to educational changes. All of these studies contribute to the education supply-demand topic and some used the input-output matrix to do this,

[1] This will be discussed in the methodology section.

but none of them are trying to find how each field of education is required in the economy.

Johnson (1970) also compared the labor market and the graduates using econometric models to analyze labor demand by educational category. His work includes relationships between salaries, graduate supply, hiring decisions, levels of education, among other variables. Unlike the present study, conclusions in his study refer only to the effects of one variable on the other.

Bullock, Litzenberg, & Bessler (2002) questioned the necessary professionals for the agricultural, food, and natural resources sectors in the US. They used macroeconomic indicators and placement data to forecast the required human resources with an econometric methodology. Their work focused on the importance of these studies in terms of sector efficiency, and how inaccurate forecasts may result in adequate professionals not available when required. Although they highlight the significance of the educational system to meet different sector demands, their work only presents forecasting data.

Prais (1995), based on industry data collected during 10 years of research, analyzed the requirements of vocational training and education in order to meet the requirements of advanced technologies. He explained how this coordination reduces unemployment rates and increases productivity, but never used methods related to the input-output matrix that could obtain clear data regarding this topic on any economy.

Lau, Jamison, & Louat (1991) used an econometric model to study the channels through which education affected productivity, and how there must be skilled manpower to make efficient use of the national resources to push development forward. The present study adds to their work by using a methodology to determine how much of this skilled manpower is needed in the economy.

Bills (2003) discusses theories regarding how employers and job seekers acquire and use labor market information. He argues certain economic models that do not explain adequately the mechanisms of job placement, and indicates how transformations of the labor market can further create relationship between education and job assignment. In this study there is also the possibility of creating such relationship not by proposing transformation of the labor market, but by using a new input-output approach that can assess the current status of the relationship.

Harvey (2000) also debates the relationship between higher education and employment. He explores the implication of organizational change for graduates and considers the skills graduates will further need to enhance their abilities and easily adapt to employment with new characteristics. Harvey shows the importance of skill

training for future productivity, and this methodology will give a certain approach on how the economy is currently requiring such skills.

Finally, the input-output model has been used for different studies besides the productivity-education relationship because its applicability as an instrument for economic analysis is very wide (Hernández E. , 2005). The present study will put this statement to the test by using the input-output matrix to develop a methodology never seen in any other study.

Although the mentioned authors argued the importance of finding relationships between education and the productive sectors, and they highlight the impact of this relationship on employment efficiency and national productivity, none of them has yet reached an indicator that shows the level of education-production coordination. Also, there is no knowledge of any study regarding this topic applied for Colombia or Mexico.

This paper will contribute to these studies by overcoming the missing information regarding how the economy demands different graduates by field of education. It will be shown which fields are required by each economic sector in order to obtain an appropriate relative indicator for the education-production coordination.

2. Methodological strategy

2.1 Data

The input-output matrix was created by Wassly Leontief in 1966 with the purpose of integrating the empirical data with economic theory, ‘’on one side, we have a highly developed theory without facts to corroborate it. On the other, a large amount of data without any theory that integrates them’’ (Leontief, 1966). The matrix allows the user to analyze economic relationships between different sectors and use them for various purposes. In this study, the matrix will allow to obtain conclusions about field of education requirements for every economic sector.

The matrix is composed of three sub-matrixes: Intermediate demand, imports and value added, and final demand (Tenjo, Gracia, & Karl, 2006). In this study, only the intermediate demand will be used because the analysis only requires the flow of resources between sectors. In the intermediate demand matrix, the rows describe the distribution of production from one sector to the others and the columns describe the inputs required by one sector from the other sectors (Bonet, 2000). These means that the sum of the flows for one entire row shows the total output for the sector, and the sum of the flows for one entire column shows the total input for the sector.

For further information regarding the construction procedure of the matrix and its assumptions, see Hernández (2012).

This study was applied for Colombia and Mexico, and the results for each country were compared to obtain conclusions. The reason for choosing Mexico to be compared to Colombia is related to the similar number of sectors[2]. The matrix constructed for Colombia[3] has a total of 61 sectors (Departamento Administrativo Nacional de Estadística, 2013), and the matrix constructed for Mexico has a total of 79 sectors (Instituto Nacional de Estadística y Geografía, 2013). The methodology does not consider the effects of choosing matrixes that have large differences in the number of sectors. To omit such possible effects, a matrix with a similar number of sectors had to be chosen.

The fields of education used for this analysis correspond to the 8 fields established by the Colombian Ministry of Education and described in Observatorio Laboral (2011), which are the results of grouping programs with certain similarities. These 8 fields are:

- ✓ Agronomy, Veterinary, and related fields
- ✓ Arts

[2] The comparison was also made with USA, UK, Chile and Brazil. But due to their higher number of sectors (133, 97, 111 and 110 respectively), Mexico had to be chosen.

[3] See DANE (2012) for further information on the construction methodology for Colombia’s Input-Output matrix.

- ✓ Education
- ✓ Health and welfare
- ✓ Social sciences
- ✓ Economics, administration, accounting, and related fields
- ✓ Engineering, architecture, urbanism, and related fields
- ✓ Science and math

The number of graduates by each field of education is the number to be compared with the input-output matrix methodology. In Colombia, the data is collected from the Ministerio de Educación Nacional (2011) graduates report. For Mexico, the data is obtained from the OECD (2010) databases[4].

2.2 Methodology

The methodology consists of constructing three matrixes: the Proportion of Inputs Matrix (3.2), the Sector-Field Relation Matrix (3.3), and the Sector-Field Proportion Matrix (3.4). Then, results can be compared with the graduates by field of education data. But explaining the construction of the three matrixes for both countries using the actual data can be complicated due to their size. To achieve this purpose in a simpler way, an example input-output matrix of 4 economic sectors will be used:

SECTOR	AGRICULTURE	MANUFACTURING	SERVICES	GOVERNMENT
AGRICULTURE	60	70	20	50
MANUFACTURING	30	100	80	60
SERVICES	15	50	60	80
GOVERNMENT	45	30	45	55

The example input-output matrix shows cash flow between the economic sectors. Manufacturing has an input of 70 units from agriculture. Similarly, agriculture has an output of 70 units to manufacturing.

In addition, only 4 fields of education are used in the example: Agronomy, veterinary, and related fields; engineering, architecture, urbanism, and related fields; economics, administration, accounting, and related fields; and social sciences.

The example matrix is only used for explanatory purposes in points 3.2, 3.3, and 3.4. The results in point 3.5 contain the actual data using the input-output matrix for Colombia and Mexico. Formulas will also consider the actual data, where there are *n*

[4] The databases from OECD show graduates by 23 fields. This data was grouped in 8 fields to match the Colombian data.

economic sectors[5] and 8 fields of education. Matrixes with the actual data for Colombia can be seen in the annexes 1 - 5[6].

2.2.1 Proportion of Inputs Matrix

This matrix shows the inputs that each sector needs from all the other sectors in a proportional way.

First, let X_{ij} be the cash flow from sector i to sector j, n be the number of sectors and Z_j be the total input needed by each sector j:

SECTOR	AGRICULTURE	MANUFACTURING	SERVICES	GOVERNMENT
AGRICULTURE	60	70	20	50
MANUFACTURING	30	100	80	60
SERVICES	15	50	60	80
GOVERNMENT	45	30	45	55
Zj	150	250	205	245

Here, *services* has a total input of 205 units from all the other sectors.

$$Z_j = \sum_{i=1}^{n} X_{ij} \ and \ j = 1, 2, \dots, n$$

Now, let P_{ij} be the proportion of input that sector j requires from sector i, the Proportion of Inputs Matrix would be:

SECTOR	AGRICULTURE	MANUFACTURING	SERVICES	GOVERNMENT
AGRICULTURE	0,400	0,280	0,098	0,204
MANUFACTURING	0,200	0,400	0,390	0,245
SERVICES	0,100	0,200	0,293	0,327
GOVERNMENT	0,300	0,120	0,220	0,224

Of all the inputs agriculture requires, 10% come from services.

$$P_{ij} = \frac{X_{ij}}{Z_j} \ and \ i, j = 1, 2, 3, \dots, n$$

In the input-output matrix, every coefficient can be read as input and output. In the Proportion of Inputs Matrix, each coefficient can only be interpreted as input information. These coefficients will be used in section 3.4 to calculate the final matrix.

[5] n = 61 sectors for Colombia and n= 79 sectors for Mexico.

[6] If the reader is interested in the matrixes with the actual data for Mexico, please contact the author at andrescoor@unisabana.edu.co

2.2.2 Sector-Field Relation Matrix

The following matrix intends to show the relationship that each sector has with every field of education. Every sector requires certain skills in order to be functional and have productivity, and these skills must be related to educational disciplines.

Given the sectors and the fields of education, the process of finding the skills that successfully relates them is probably the hardest part of this work. Affirming that certain sector requires workers trained under certain discipline can be subjective and opened for discussion. Thus, any modification in this relationships caused by different points of view could change the results of the model significantly.

In addition, there is not only the difficulty of finding the correct sector-field relationship, but also the possibility that some sectors require more than one discipline in order to be functional and productive. And if these sectors require more than one discipline, should all relationships be treated with the same significance? Probably not, perhaps one field should have more importance if it is strictly related to the main activity of the sector. Proportions of each field in every sector could be found if they were to be rigorously investigated within the economy, but such approach would exceed the limits of this work.

In order to overcome the difficulties exposed and easily assign relationships between each sector and the fields, two assumptions where taken:

- The assigned fields of education must be directly related to the principal activity of the sector.
- Every sector that involves manufacturing is related to *Economics, administration, accounting and related fields*.

The following section will discuss the limitations of these assumptions.

Let R_{ij} be the existing sector i – field j relationship and C_i the number of relationships each sector i has with the fields of education.

SECTOR/FIELD	1. AGRONOMY, VETERINARY, AND RELATED FIELDS	2. ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	3. ECONOMICS, ADMINSTRATION, ACCOUNTING, AND RELATED FIELDS	4. SOCIAL SCIENCES	Ci
AGRICULTURE	1	0	0	0	1
MANUFACTURING	0	1	1	0	2
SERVICES	0	0	1	0	1
GOVERNMENT	0	0	0	1	1

Manufacturing skills are directly related to field 2. Also, the second assumption requires another relationship to field 3.

$$R_{ij} = 1: existing\ relationship$$

$$R_{ij} = 0: non\ existing\ relationship$$

$$C_i = \sum_{j=1}^{8} R_{ij}\ \forall\ i = 1, 2, 3, \dots, n$$

The first assumption states that fields which are not directly related to the sector´s principal activity must not be taken into account. This is not necessarily true. There is a possibility of finding any discipline on any sector (e.g. a lawyer working in manufacturing as legal advisor). Further research would be needed in order to find proportional relations for every sector to make this matrix more accurate.

The second assumption states that every manufacturing process requires administration skills and so must have a relationship with field 3. Again, research could determine how these relationships are present in reality, but such approximation would require large amounts of time and effort if every sector is to be evaluated.

It is clear that both assumptions can be debated. This is the main reason why the methodology was applied for two countries. The assumptions taken to create the Sector-Field Relation Matrix generate discussion, but the reader will verify different and intuitive results for both countries in the following pages.

2.2.3 Sector-Field Proportion Matrix

The matrixes from sections 3.2 and 3.3 must now work together to calculate the Sector-Field Proportion Matrix. This is where every economic sector shows the proportion of input it uses from each field of education.

Let Y_{ij} be the proportion of inputs that each sector i requires from field j.

Sector/Field	AGRICULTURE	MANUFACTURING	SERVICES	GOVERNMENT	Wi
1. AGRONOMY, VETERINARY, AND RELATED FIELDS	0.400	0.280	0.098	0.204	0.98
2. ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	0.100	0.200	0.195	0.122	0.62
3. ECONOMICS, ADMINSTRATION, ACCOUNTING, AND RELATED FIELDS	0.200	0.400	0.488	0.449	1.54
4. SOCIAL SCIENCES	0.300	0.120	0.220	0.224	0.86

Agriculture needs 40% from field 1.

$$Y^{7} = {P_{ij}}/{C_i}$$

$$W_i = \sum_{j=1}^{n} Y_{ij} \ \forall\, i = 1, 2, 3, \dots, 8$$

$$\sum_{i=1}^{8} Y_{ij} = 1 \ \forall\, j = 1, 2, 3, \dots, n$$

W_i is the sum of the proportions of inputs that each sector requires from all the fields of education. Thus, W_i allows comparing the input-output matrix data with the graduates in the economy.

3. Results and discussion

Using W_i, the percentage of each field of education required in the economy $\%W_i$ can be calculated. This percentage is afterwards compared to the actual percentage of graduates by field of education $\%V_i$ through a simple difference.

RESULTS: COLOMBIA				
FIELDS OF EDUCATION	W_i	$\%W_i$	$\%V_i$	$\lvert\%W_i - \%V_i\rvert$
AGRONOMY, VETERINARY, AND RELATED FIELDS	6.01	10.19%	1.35%	8.84%
ARTS	0.56	0.95%	3.44%	2.48%
EDUCATION	0.52	0.88%	13.70%	12.82%
HEALTH AND WELFARE	0.26	0.44%	7.98%	7.54%
SOCIAL SCIENCES	3.44	5.83%	20.41%	14.58%
ECONOMICS, ADMINISTRATION, ACCOUNTING AND RELATED FIELDS	25.87	43.85%	30.81%	13.04%
ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	17.21	29.17%	20.65%	8.52%
SCIENCE AND MATH	5.12	8.69%	1.66%	7.02%
			α	**74.86%**

[7] The basic procedure to calculate Y is shown in the equation, but Y also had to be assigned to $Ci = k$ different fields where there are existing relationships. This procedure was carried out by an algorithm. For further information, please contact the author at andrescoor@unisabana.edu.co.

RESULTS: MEXICO				
FIELDS OF EDUCATION	W_i	$\%W_i$	$\%V_i$	$\lvert\%W_i - \%V_i\rvert$
AGRONOMY, VETERINARY, AND RELATED FIELDS	3.81	4.89%	2.16%	2.73%
ARTS	1.78	2.28%	1.43%	0.85%
EDUCATION	4.00	5.13%	16.79%	11.67%
HEALTH AND WELFARE	1.51	1.94%	10.63%	8.69%
SOCIAL SCIENCES	12.53	16.07%	15.30%	0.77%
ECONOMICS, ADMINISTRATION, ACCOUNTING AND RELATED FIELDS	27.77	35.60%	26.44%	9.16%
ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	18.19	23.32%	16.11%	7.21%
SCIENCE AND MATH	8.40	10.77%	11.13%	0.36%
			α	**41.43%**

Where,

$$\%W_i = \frac{W_i}{\sum_{i=1}^{8} W_i}$$

$$\alpha = \sum_{i=1}^{8} |\%W_i - \%V_i|$$

From these results, α describes the sum of all differences between the graduates by field of education required in the economy and the actual graduate percentage.

According to these results, Colombia has a total difference of 74.86% between the required field percentage and the actual data, and Mexico has a total difference of 41.43%.

The objective of this methodology was to find an indicator that showed the education-production coordination in a certain economy, and that is the definition of α. The indicator is composed by the sum of the differences between the required field percentage by all sectors and the current field graduation percentage.

For example, the Colombian productive sectors require that 8.69% of the labor force is specialized in science and math. But the actual data shows that only 1.66% of the total graduates did specialize in this field. Thus, there is a 7.02% difference only for science and math. In the case of Mexico, this difference is 0.36%. The lower difference for Mexico could reflect a more efficient assignment of science and math graduates in the economy.

The sum of these differences for each one of the 8 fields shows the total difference found between the requirements of the economy and the actual graduates, which represents the α indicator. Hence, lower values of α result from low differences in every field of education, and this could show efficient employment and consequent productivity.

5. Conclusions

The methodology shows that Colombia has a statistically[8] higher difference between the field of education percentage required in the economy and the actual graduate by field data than Mexico. This graduate supply and field requirements disparity may be a sign of national productivity problems.

Efficiency for the coordination between the educational sector and the productive sectors would require certain flow of information that allows students to decide what careers to study in order to supply all the economic sectors where these fields are required, allowing α to be lower. In other words, high productivity is marked by low values for α that describe economies where graduates by field of education match the requirements of the economic sectors.

The World Economic Forum (2012) shows in the Global Competitiveness Report that Mexico's GDP per capita is 30% higher than Colombia's, similar to the difference found between the α for each country[9]. This does not mean that α can be used as a GDP per capita difference proxy, but it certainly supports the results of this methodology: Mexico is more productive than Colombia.

Other competitiveness reports also sustain the results of this model by ranking Mexico in a higher position than the position given to Colombia. The World Competitiveness Scoreboard 2013 (IMD, 2013) ranked Mexico in the 37th position while Colombia was given the 52th for the 2012 scoreboard; as to 2013, Mexico was given the 32th position while Colombia was ranked in the 48th.

The International Competitiveness Index calculated by the Mexican Institute for Competitiveness (IMCO, 2013) also puts Mexico in a better position than Colombia. The index is composed of 10 factors that evaluated together can give a general indicator for competitiveness, and the importance of human capital correctly allocated in the economy is taken into account to generate the index. Mexico has the 32th position while Colombia ranks below in the 41th position.

[8] The test for difference shows that $\tilde{\alpha}_{Mexico} - \tilde{\alpha}_{Colombia} \neq 0$ with a confidence of 90% (See annex 6)

[9] $\alpha_{Colombia} - \alpha_{Mexico} = 33.43\%$

Further studies can improve this methodology by creating an indicator that reflects the fields of education relationships with economic sectors more accurately. For example, every sector can be studied to obtain precise information regarding the participation of each field of education on the sector activity. This would certainly reduce the error caused by the assumptions of sector-field relationships.

Also, given that the input-output matrixes for every country usually have different number of sectors, further research could allow the comparison between matrixes of different size without compromising the results of W_i

Nevertheless, the calculation of α using national data such as the input-output matrix addresses the importance of finding coordination between the education disciplines required by all the economic sectors and the actual graduates in the economy. This coordination is important to guarantee fast and efficient employment that allows increase of productivity for the country.

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Annex 1: Sectors (Colombia)

No.	Sector
1	Cultivo de café
2	Cultivo de otros productos agrícolas
3	Producción pecuaria y caza incluyendo las actividades veterinarias
4	Silvicultura, extracción de madera y actividades conexas
5	Pesca, producción de peces en criaderos y granjas piscícolas; actividades de servicios relacionadas con la pesca
6	Extracción de carbón, carbón lignítico y turba
7	Extracción de petróleo crudo y de gas natural; actividades de servicios relacionadas con la extracción de petróleo y de gas, excepto las actividades de prospección; extracción de minerales de uranio y de torio
8	Extracción de minerales metalíferos
9	Extracción de minerales no metálicos
10	Producción, transformación y conservación de carne y pescado
11	Elaboración de aceites y grasas animales y vegetales
12	Elaboración de productos lácteos
13	Elaboración de productos de molinería, de almidones y productos derivados del almidón y alimentos preparados para animales; elaboración de productos de panadería, macarrones, fideos, alcuzcuz y productos farináceos similares
14	Elaboración de productos de café
15	Ingenios, refinerías de azúcar y trapiches
16	Elaboración de cacao, chocolate y productos de confitería
17	Elaboración de otros productos alimenticios n.c.p.
18	Elaboración de bebidas
19	Fabricación de productos de tabaco
20	Preparación e hilatura de fibras textiles; Tejedura de productos textiles; acabado de productos textiles no producidos en la misma unidad de producción
21	Fabricación de otros productos textiles
22	Fabricación de tejidos y artículos de punto y ganchillo; fabricación de prendas de vestir; preparado y teñido de pieles
23	Curtido y preparado de cueros; fabricación de calzado; fabricación de artículos de viaje, maletas, bolsos de mano y similares; artículos de talabartería y guarnicionería
24	Transformación de la madera y fabricación de productos de madera y de corcho, excepto muebles; fabricación de artículos de cestería y espartería
25	Fabricación de papel, cartón y productos de papel y cartón
26	Actividades de edición e impresión y de reproducción de grabaciones
27	Coquización, fabricación de productos de la refinación del petróleo y combustible nuclear
28	Fabricación de sustancias y productos químicos
29	Fabricación de productos de caucho y de plástico
30	Fabricación de otros productos minerales no metálicos
31	Fabricación de productos metalúrgicos básicos; fabricación de productos elaborados de metal, excepto maquinaria y equipo
32	Fabricación de maquinaria y equipo n.c.p.
33	Fabricación de maquinaria de oficina, contabilidad e informática; fabricación de maquinaria y aparatos eléctricos n.c.p.; fabricación de equipo y aparatos de radio, televisión y comunicaciones; fabricación de instrumentos médicos, ópticos y de precisión y fabricación de relojes
34	Fabricación de vehículos automotores, remolques y semirremolques; fabricación de otros tipos de equipo de transporte
35	Fabricación de muebles
36	Industrias manufactureras n.c.p.

For further information regarding the sectors, check the CIIU (Clasificación Industrial Internacional Uniforme) at www.dane.gov.co

Annex 1: Sectors (Colombia)

No.	Sector
37	Reciclaje
38	Generación, captación y distribución de energía eléctrica
39	Fabricación de gas; distribución de combustibles gaseosos por tuberías; suministro de vapor y agua caliente
40	Captación, depuración y distribución de agua
41	Construcción de edificaciones completas y de partes de edificaciones; acondicionamiento de edificaciones
42	Construcción de obras de ingeniería civil
43	Comercio
44	Mantenimiento y reparación de vehículos automotores; reparación de efectos personales y enseres domésticos
45	Hoteles restaurantes, bares y similares
46	Transporte por vía terrestre
47	Transporte por vía acuática
48	Transporte por vía aérea
49	Actividades complementarias y auxiliares al transporte; actividades de agencias de viajes
50	Correo y telecomunicaciones
51	Intermediación financiera
52	Actividades inmobiliarias y alquiler de vivienda
53	Actividades empresariales y de alquiler
54	Administración pública y defensa; seguridad social de afiliación obligatoria
55	Educación de mercado
56	Educación de no mercado
57	Servicios sociales y de salud de mercado
58	Eliminación de desperdicios y aguas residuales, saneamiento y actividades similares
59	Actividades de asociaciones n.c.p.; actividades de esparcimiento y actividades culturales y deportivas; otras actividades de servicios de mercado
60	Actividades de asociaciones n.c.p.; actividades de esparcimiento y actividades culturales y deportivas; otras actividades de servicios de no mercado
61	Hogares privados con servicio doméstico

For further information regarding the sectors, check the CIIU (Clasificación Industrial Internacional Uniforme) at www.dane.gov.co

Annex 2: Input-Output Matrix (Colombia)

Sector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	0	0	0	0	0	0	0	0	0	0	0	0	1	3262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	28	422	137	0	0	0	0	0	0	1	582	14	1966	0	1404	136	120	0	132	220	10	18	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1173	0	0
3	0	41	691	0	0	0	0	0	0	6990	0	2566	62	0	0	2	5	0	0	0	0	12	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	356	0	0
4	0	8	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	258	36	0	0	15	5	1	0	0	0	0	8	5	0	0	0	0	101	182	0	0	0	0	0
5	0	0	0	0	75	0	0	0	0	392	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	141	0	0
6	0	0	0	0	0	79	0	32	6	3	5	1	7	0	10	2	1	7	0	12	1	7	1	1	17	0	27	10	0	74	26	0	0	0	0	0	0	49	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	1689	0	0	2	1	4	3	2	0	1	1	6	0	8	0	7	1	1	17	0	4331	9	1	25	18	0	0	0	0	0	0	258	527	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1387	0	0	34	0	0	0	0	0	0	0	0	0	0	0	1	0
9	1	1	3	0	1	53	0	16	11	0	4	0	4	0	0	0	0	1	0	1	0	0	0	0	2	0	0	60	1	344	9	6	1	0	0	9	0	0	0	0	321	481	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	775	0	2	117	0	0	0	45	0	0	0	0	13	315	17	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1607	0	0
11	0	1	11	0	0	0	0	0	0	20	799	15	272	0	0	15	36	0	0	0	0	0	0	0	0	0	0	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	248	0	0
12	0	0	0	0	0	0	0	0	0	0	7	106	112	0	0	27	23	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	432	0	0
13	0	3	2306	0	59	0	0	0	0	10	0	14	1321	0	1	56	62	55	0	12	0	0	0	1	9	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1071	0	0
14	0	0	0	0	0	0	0	0	0	0	0	29	1	545	0	4	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	133	0	0
15	0	0	0	0	0	0	0	0	0	0	0	38	100	0	35	118	55	396	1	0	0	0	0	0	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	183	0	0
16	0	0	0	0	0	0	0	0	0	0	0	11	26	0	0	9	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143	0	0
17	0	0	0	0	0	0	0	0	0	36	1	45	74	0	0	5	130	100	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	348	0	0
18	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	4	1	207	0	0	0	0	0	0	1	0	1	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	1565	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	470	154	1087	167	2	19	1	0	10	4	2	3	0	2	6	245	3	0	0	0	0	1	0	0	70	0	0	0
21	25	48	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	39	100	19	14	27	8	0	2	36	0	1	2	1	12	11	7	0	0	0	0	35	0	0	0	89	0	0
22	0	0	11	0	0	30	3	9	4	0	0	0	2	0	0	0	0	0	0	0	2	1402	6	15	9	0	0	1	14	0	0	0	0	1	3	1	0	0	0	0	0	0	71	13	43	9	0
23	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	318	77	0	2	0	0	3	0	0	0	0	2	6	5	0	0	0	0	0	0	0	2	0	1	0
24	0	51	19	16	0	0	1	37	13	0	0	2	1	0	0	2	0	0	0	0	0	1	0	104	1	1	0	4	11	8	19	8	8	5	358	4	0	0	0	0	661	218	97	2	5	1	0
25	0	42	13	0	3	12	1	0	1	62	27	64	57	9	17	88	87	87	39	15	11	58	20	19	912	603	10	217	87	125	39	25	55	12	37	31	0	0	0	0	2	2	155	11	11	3	0
26	0	3	0	0	0	3	2	0	0	14	11	35	32	3	2	33	31	80	1	3	2	29	5	2	38	140	3	144	16	12	14	11	8	6	4	9	0	13	4	8	1	2	847	37	42	2	0
27	9	57	100	0	9	49	24	52	23	9	6	10	25	3	27	3	4	5	2	9	6	28	6	3	13	8	110	129	19	269	24	7	9	4	28	132	0	13	1	7	18	57	170	56	62	2741	132
28	124	765	298	14	12	31	6	36	12	10	0	10	165	0	14	30	60	38	8	58	120	34	117	23	156	100	0	2262	1233	136	30	93	77	76	42	62	0	5	5	14	341	65	28	141	33	3	0
29	10	112	0	0	32	12	0	18	7	166	98	222	168	8	26	90	78	231	3	8	16	79	12	27	142	17	20	438	259	42	41	61	227	25	56	29	0	66	0	0	479	485	454	21	17	267	0
30	3	19	16	0	1	0	2	0	7	0	0	7	1	8	6	0	18	215	0	0	1	0	1	0	1	0	1	35	2	682	51	23	14	62	14	1	0	1	0	6	3272	2342	0	75	34	0	0
31	22	48	28	22	10	0	0	66	21	32	1	27	15	2	0	5	27	192	2	0	2	15	9	40	4	3	5	72	1	29	2002	682	274	173	53	222	0	0	0	0	1563	1305	0	142	52	4	0
32	0	2	31	0	10	38	3	3	11	8	9	13	19	1	12	4	11	29	2	11	5	30	3	4	16	15	9	67	21	61	31	131	8	71	20	8	0	0	0	0	65	111	3	206	0	12	37
33	0	0	0	0	0	0	0	20	0	6	3	4	11	0	6	2	3	9	0	5	1	8	1	1	10	0	6	15	13	20	23	58	193	42	5	2	0	135	7	27	230	391	32	62	0	86	0
34	0	10	0	0	0	0	0	1	0	2	1	1	3	0	2	1	1	3	0	2	0	2	0	1	4	2	2	7	4	7	4	2	2	512	0	1	0	0	0	0	0	0	22	110	0	63	16
35	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	91	182	2	0	0	0	0	493	0	0	10	0	0	0
36	0	0	0	0	0	0	0	36	0	0	0	6	0	0	0	0	0	0	1	0	1	47	1	0	0	5	0	8	1	0	0	0	8	0	0	34	0	0	0	0	19	0	0	0	0	1	0
37	0	0	0	0	0	0	0	0	0	0	1	0	1	0	47	0	0	0	0	1	2	0	1	1	284	0	0	11	13	49	402	13	15	2	1	1	0	0	0	0	0	0	0	0	0	0	0
38	2	2	49	0	9	30	9	173	28	50	34	50	135	5	125	19	30	70	4	63	29	106	30	27	214	50	43	279	191	309	206	27	27	0	31	28	0	4488	3	157	1	37	611	194	176	38	0
39	0	0	0	1	0	0	0	0	0	14	17	17	49	4	0	7	15	31	0	21	5	17	3	5	57	0	0	132	18	167	48	5	6	3	2	3	0	1	1	1	0	0	22	2	133	0	0
40	3	56	0	0	3	0	1	1	3	10	3	7	15	1	3	3	7	27	1	15	2	28	6	2	7	7	3	22	6	8	12	3	3	3	4	3	0	14	3	11	5	12	88	29	116	2	0
41	0	5	0	0	0	0	0	0	1	1	1	1	2	0	1	0	2	3	0	1	0	5	1	1	1	2	0	14	2	12	4	3	1	1	1	2	0	17	4	7	121	2	5	8	82	0	1
42	1	78	36	4	0	238	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	281	62	172	0	364	0	0	0	42	0
43	96	710	438	18	25	36	11	67	17	533	51	382	547	109	122	111	154	297	31	47	35	236	101	207	329	203	21	1000	317	202	500	178	192	680	142	101	0	45	5	12	1320	929	476	487	1745	769	21
44	3	33	17	2	0	129	15	111	50	35	14	22	23	6	71	10	18	48	2	23	10	38	11	8	52	17	29	78	53	89	70	12	14	8	7	5	0	6	1	6	24	42	847	56	64	2424	0
45	4	4	3	0	0	34	15	21	1	19	14	9	29	3	8	4	16	10	2	14	8	46	8	11	25	22	47	141	31	40	40	16	11	9	6	11	0	43	4	25	30	36	607	41	192	3	0
46	10	421	135	38	1	233	1240	122	2	115	106	168	392	7	174	83	116	526	8	69	84	230	65	66	222	154	92	818	284	524	362	102	98	117	96	73	0	204	280	18	459	575	1644	109	122	32	0
47	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	26	88
48	0	21	0	0	0	1	0	0	4	3	2	8	1	2	2	3	2	1	2	2	8	2	1	5	6	3	23	7	9	7	2	3	5	1	2	0	7	0	2	1	12	512	25	40	0	0
49	0	0	0	0	182	0	110	22	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	80	0	0	2	0	0	0	0	0	0	20	0	4	0	0	551	23	19	1202	33
50	1	48	16	2	1	0	3	2	0	12	5	10	36	2	3	5	8	10	1	7	6	39	10	5	14	26	3	31	17	17	26	10	7	10	11	9	0	53	12	18	7	38	1038	181	277	128	1
51	17	185	73	5	4	71	81	17	11	94	34	38	87	28	28	14	41	42	5	39	19	126	28	14	78	44	79	208	70	102	97	34	27	30	26	33	0	519	56	102	296	257	581	60	196	678	8
52	0	3	0	0	3	2	1	3	2	28	9	15	69	2	5	0	15	9	1	12	36	174	42	7	16	102	2	35	40	24	61	17	24	14	59	40	0	34	5	18	35	66	2212	259	794	3	0
53	0	278	6	1	1	89	16	133	37	260	172	195	337	60	128	134	275	387	17	212	161	1524	168	80	438	688	77	1524	517	614	616	242	205	138	139	144	0	718	92	339	663	1952	3949	221	540	217	16
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	10	0	0	20	0	0	2	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	19	0	0	0	0	2	0	0	8	2	4	10	0	2	2	6	9	0	6	2	20	4	1	4	6	3	13	5	4	9	2	2	2	3	3	0	1	0	3	0	22	53	40	74	0	0
59	0	34	0	0	0	0	0	4	0	23	20	50	41	3	7	22	49	117	2	9	8	52	10	4	61	27	9	247	27	29	28	16	10	53	9	19	0	0	0	4	0	0	296	57	77	93	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Σ	359	3,536	4,439	186	261	1,351	3,149	1,092	290	9,747	2,041	4,216	6,351	4,076	2,289	1,053	1,557	3,250	268	1,375	781	5,651	1,493	1,055	3,241	2,259	5,064	8,466	3,331	4,044	6,213	1,791	1,532	2,209	1,610	1,051	-	6,998	1,075	971	10,564	9,985	15,443	2,751	12,435	8,853	353

Annex 2: Input-Output Matrix (Colombia)

Sector	48	49	50	51	52	53	54	55	56	57	58	59	60	61
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	67	0	0	0	1	1	0	0
3	0	0	0	0	0	0	24	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	83	0	0	0	0	0	0	0
11	0	0	0	0	0	0	19	0	0	0	0	0	0	0
12	0	0	0	0	0	0	32	0	0	0	0	0	0	0
13	0	0	0	0	0	3	71	0	0	0	0	0	0	0
14	0	0	2	3	0	4	9	0	1	1	0	5	5	0
15	0	0	1	7	1	25	20	0	0	0	0	3	2	0
16	0	0	0	0	0	0	6	0	0	0	0	0	0	0
17	0	0	0	0	0	0	61	0	0	0	0	0	0	0
18	4	0	0	0	0	0	6	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	124	0	0	5	0	25	0	0
22	2	0	64	9	0	0	81	16	13	1	0	97	0	0
23	1	0	1	0	0	1	72	14	0	0	0	32	0	0
24	0	0	3	0	0	0	7	0	0	0	0	0	0	0
25	8	13	245	140	7	237	96	43	19	45	2	20	11	0
26	8	12	181	111	23	280	156	63	17	36	6	140	39	0
27	375	54	76	1	0	151	274	8	3	15	28	5	0	0
28	4	0	3	43	2	83	81	23	1	1184	3	122	0	0
29	69	0	14	6	1	83	16	0	2	14	3	94	5	0
30	0	0	3	0	0	0	14	0	0	0	5	0	0	0
31	0	0	0	13	0	0	25	11	0	1	0	0	1	0
32	0	60	139	0	0	0	436	0	2	0	0	2	11	0
33	0	41	24	6	0	78	50	132	85	365	3	40	3	0
34	10	0	12	1	0	0	125	0	0	1	2	0	1	0
35	0	0	6	11	0	0	0	0	0	0	0	0	0	0
36	0	0	0	1	0	0	10	124	61	0	0	243	0	0
37	0	0	0	1	0	0	0	0	0	5	0	0	0	0
38	5	195	385	265	8	179	609	114	68	225	13	69	8	0
39	0	38	43	10	0	0	145	22	15	19	0	26	4	0
40	6	75	31	17	1	67	36	45	21	47	13	54	1	0
41	5	27	19	134	855	72	357	165	187	26	7	46	31	0
42	0	60	55	0	0	0	1020	0	0	0	124	0	104	0
43	96	14	182	123	7	182	299	103	43	507	14	287	14	0
44	52	15	135	4	26	264	223	52	11	85	23	57	7	0
45	70	41	63	62	8	438	232	224	284	176	14	95	84	0
46	62	70	326	36	72	418	85	1	18	77	33	30	28	0
47	0	22	0	0	0	0	133	0	0	0	0	0	0	0
48	107	50	91	179	5	138	160	34	7	12	2	18	13	0
49	341	173	4	10	2	354	168	0	0	4	3	35	0	0
50	19	194	1331	442	48	878	243	163	111	346	15	303	8	0
51	53	77	749	2606	1461	1027	2575	71	73	207	73	117	28	0
52	2	197	649	643	155	816	164	363	268	43	21	124	1	0
53	216	548	1514	2342	856	2642	2033	700	295	1220	276	924	467	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	1	0	14	11	0	5	150	51	25	56	5	8	10	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	1	0	0	5067	0	27	0	0
58	0	18	27	15	0	4	75	0	1	19	7	19	6	0
59	7	21	367	15	23	254	60	60	64	39	1	934	43	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Σ	1,523	2,015	6,759	7,267	3,561	8,683	10,733	2,602	1,695	9,848	697	4,002	935	-

Annex 3: Proportion of Inputs Matrix (Colombia)

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.8003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0780	0.1193	0.0309	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.2852	0.0033	0.3096	0.0000	0.6134	0.1292	0.0771	0.0000	0.4925	0.1600	0.0128	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0943	0.0000
3	0.0000	0.0116	0.1557	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7171	0.0000	0.6086	0.0098	0.0000	0.0000	0.0019	0.0032	0.0000	0.0000	0.0000	0.0000	0.0021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0286	0.0000
4	0.0000	0.0023	0.0000	0.3172	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.0000	0.0007	0.2445	0.0111	0.0000	0.0000	0.0018	0.0015	0.0002	0.0000	0.0000	0.0000	0.0000	0.0050	0.0048	0.0000	0.0000	0.0000	0.0000	0.0096	0.0182	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.2874	0.0000	0.0000	0.0000	0.0000	0.0402	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0113	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0585	0.0000	0.0293	0.0207	0.0003	0.0024	0.0002	0.0011	0.0000	0.0044	0.0019	0.0006	0.0022	0.0000	0.0087	0.0013	0.0012	0.0007	0.0009	0.0052	0.0000	0.0053	0.0012	0.0000	0.0183	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5364	0.0000	0.0000	0.0002	0.0005	0.0009	0.0005	0.0005	0.0000	0.0009	0.0006	0.0018	0.0000	0.0058	0.0000	0.0012	0.0007	0.0009	0.0052	0.0000	0.8553	0.0011	0.0003	0.0062	0.0029	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0369	0.4902	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.2232	0.0000	0.0000	0.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
9	0.0028	0.0003	0.0007	0.0000	0.0038	0.0392	0.0000	0.0147	0.0379	0.0000	0.0020	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0071	0.0003	0.0851	0.0014	0.0034	0.0007	0.0000	0.0000	0.0086	0.0000	0.0000	0.0000	0.0000	0.0304	0.0482	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0795	0.0000	0.0005	0.0184	0.0000	0.0000	0.0000	0.0289	0.0000	0.0000	0.0000	0.0000	0.0023	0.2110	0.0161	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1292	0.0000
11	0.0000	0.0003	0.0025	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0021	0.3915	0.0036	0.0428	0.0000	0.0000	0.0142	0.0231	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0246	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0199	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0034	0.0251	0.0176	0.0000	0.0000	0.0256	0.0148	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0347	0.0000
13	0.0000	0.0008	0.5195	0.0000	0.2261	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0033	0.2080	0.0000	0.0004	0.0532	0.0398	0.0169	0.0000	0.0087	0.0000	0.0000	0.0000	0.0009	0.0028	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0861	0.0000
14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0069	0.0002	0.1337	0.0000	0.0038	0.0006	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0107	0.0000
15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0090	0.0157	0.0000	0.0153	0.1121	0.0353	0.1218	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0058	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0147	0.0000
16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026	0.0041	0.0000	0.0000	0.0085	0.0013	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0115	0.0000
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0005	0.0107	0.0117	0.0000	0.0000	0.0047	0.0835	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0067	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0280	0.0000
18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0005	0.0000	0.0000	0.0038	0.0006	0.0637	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0002	0.0020	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.1259	0.0000
19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.3418	0.1972	0.1924	0.1119	0.0019	0.0059	0.0004	0.0000	0.0012	0.0012	0.0005	0.0005	0.0000	0.0013	0.0027	0.1522	0.0029	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0254	0.0000	0.0000
21	0.0696	0.0136	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0499	0.0177	0.0127	0.0133	0.0083	0.0035	0.0000	0.0002	0.0108	0.0000	0.0002	0.0011	0.0007	0.0054	0.0068	0.0067	0.0000	0.0000	0.0000	0.0000	0.0033	0.0000	0.0000	0.0000	0.0072	0.0000
22	0.0000	0.0000	0.0025	0.0000	0.0000	0.0222	0.0010	0.0082	0.0138	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026	0.2481	0.0040	0.0142	0.0028	0.0000	0.0000	0.0001	0.0042	0.0000	0.0000	0.0000	0.0000	0.0005	0.0019	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0046	0.0047	0.0035	0.0010
23	0.0000	0.0000	0.0005	0.0000	0.0077	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0039	0.2130	0.0730	0.0000	0.0009	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0009	0.0037	0.0048	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0001
24	0.0000	0.0144	0.0043	0.0860	0.0000	0.0000	0.0003	0.0339	0.0448	0.0000	0.0000	0.0005	0.0002	0.0000	0.0000	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0986	0.0003	0.0004	0.0000	0.0005	0.0033	0.0020	0.0031	0.0045	0.0052	0.0023	0.2224	0.0038	0.0000	0.0000	0.0000	0.0000	0.0626	0.0218	0.0063	0.0007	0.0004	0.0001
25	0.0000	0.0119	0.0029	0.0000	0.0115	0.0089	0.0003	0.0000	0.0034	0.0064	0.0132	0.0152	0.0090	0.0022	0.0074	0.0836	0.0559	0.0268	0.1455	0.0109	0.0141	0.0103	0.0134	0.0180	0.2814	0.2669	0.0020	0.0256	0.0261	0.0309	0.0063	0.0140	0.0359	0.0054	0.0230	0.0295	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002	0.0100	0.0040	0.0009	0.0003
26	0.0000	0.0008	0.0000	0.0000	0.0000	0.0022	0.0006	0.0000	0.0000	0.0014	0.0054	0.0083	0.0050	0.0007	0.0009	0.0313	0.0199	0.0246	0.0037	0.0022	0.0026	0.0051	0.0033	0.0019	0.0117	0.0620	0.0006	0.0170	0.0048	0.0030	0.0023	0.0061	0.0052	0.0027	0.0025	0.0086	0.0000	0.0019	0.0037	0.0082	0.0001	0.0002	0.0548	0.0134	0.0034	0.0002
27	0.0251	0.0161	0.0225	0.0000	0.0345	0.0363	0.0076	0.0476	0.0793	0.0009	0.0029	0.0024	0.0039	0.0007	0.0118	0.0028	0.0026	0.0015	0.0075	0.0065	0.0077	0.0050	0.0040	0.0028	0.0040	0.0035	0.0217	0.0152	0.0057	0.0665	0.0039	0.0039	0.0059	0.0018	0.0174	0.1256	0.0000	0.0019	0.0009	0.0072	0.0017	0.0057	0.0110	0.0204	0.0050	0.3096
28	0.3454	0.2163	0.0671	0.0753	0.0460	0.0229	0.0019	0.0330	0.0414	0.0010	0.0000	0.0024	0.0260	0.0000	0.0061	0.0285	0.0385	0.0117	0.0299	0.0422	0.1536	0.0060	0.0784	0.0218	0.0481	0.0443	0.0000	0.2672	0.3702	0.0336	0.0048	0.0519	0.0503	0.0344	0.0261	0.0590	0.0000	0.0007	0.0047	0.0144	0.0323	0.0065	0.0018	0.0513	0.0027	0.0003
29	0.0279	0.0317	0.0000	0.0000	0.1226	0.0089	0.0000	0.0165	0.0241	0.0170	0.0480	0.0527	0.0265	0.0020	0.0114	0.0855	0.0501	0.0711	0.0112	0.0058	0.0205	0.0140	0.0080	0.0256	0.0438	0.0075	0.0039	0.0517	0.0778	0.0104	0.0066	0.0341	0.1482	0.0113	0.0348	0.0276	0.0000	0.0094	0.0000	0.0000	0.0453	0.0486	0.0294	0.0076	0.0014	0.0302
30	0.0084	0.0054	0.0036	0.0000	0.0038	0.0000	0.0006	0.0000	0.0241	0.0000	0.0000	0.0017	0.0002	0.0020	0.0026	0.0000	0.0116	0.0662	0.0000	0.0000	0.0013	0.0000	0.0007	0.0000	0.0003	0.0000	0.0002	0.0041	0.0006	0.1686	0.0082	0.0128	0.0091	0.0281	0.0087	0.0010	0.0000	0.0001	0.0000	0.0062	0.3097	0.2346	0.0000	0.0273	0.0027	0.0000
31	0.0613	0.0136	0.0063	0.1183	0.0383	0.0000	0.0000	0.0604	0.0724	0.0033	0.0005	0.0064	0.0024	0.0005	0.0000	0.0047	0.0173	0.0591	0.0075	0.0000	0.0026	0.0027	0.0060	0.0379	0.0012	0.0013	0.0010	0.0085	0.0003	0.0072	0.3222	0.3808	0.1789	0.0783	0.0329	0.2112	0.0000	0.0000	0.0000	0.0000	0.1480	0.1307	0.0000	0.0516	0.0042	0.0005
32	0.0000	0.0006	0.0070	0.0000	0.0383	0.0281	0.0010	0.0027	0.0379	0.0008	0.0044	0.0031	0.0030	0.0002	0.0052	0.0038	0.0071	0.0089	0.0075	0.0080	0.0064	0.0053	0.0020	0.0038	0.0049	0.0066	0.0018	0.0079	0.0063	0.0151	0.0050	0.0731	0.0052	0.0321	0.0124	0.0076	0.0000	0.0000	0.0000	0.0000	0.0062	0.0111	0.0002	0.0749	0.0000	0.0014
33	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0183	0.0000	0.0006	0.0015	0.0009	0.0017	0.0000	0.0026	0.0019	0.0019	0.0028	0.0000	0.0036	0.0013	0.0014	0.0007	0.0009	0.0031	0.0000	0.0012	0.0018	0.0039	0.0049	0.0037	0.0324	0.1260	0.0190	0.0031	0.0019	0.0000	0.0193	0.0065	0.0278	0.0218	0.0392	0.0021	0.0225	0.0000	0.0097
34	0.0000	0.0028	0.0000	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000	0.0002	0.0005	0.0002	0.0005	0.0000	0.0009	0.0009	0.0006	0.0009	0.0000	0.0015	0.0000	0.0004	0.0000	0.0009	0.0012	0.0009	0.0004	0.0008	0.0012	0.0017	0.0006	0.0011	0.0013	0.2318	0.0000	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0400	0.0000	0.0071
35	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0038	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0412	0.1130	0.0019	0.0000	0.0000	0.0000	0.0000	0.0467	0.0000	0.0000	0.0036	0.0000	0.0000
36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0330	0.0000	0.0000	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0013	0.0083	0.0007	0.0000	0.0000	0.0022	0.0000	0.0009	0.0003	0.0000	0.0000	0.0000	0.0052	0.0000	0.0000	0.0324	0.0000	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0001
37	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0002	0.0000	0.0205	0.0000	0.0000	0.0000	0.0000	0.0007	0.0026	0.0000	0.0007	0.0009	0.0876	0.0000	0.0000	0.0013	0.0039	0.0121	0.0647	0.0073	0.0098	0.0009	0.0006	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	0.0056	0.0006	0.0110	0.0000	0.0345	0.0222	0.0029	0.1584	0.0966	0.0051	0.0167	0.0119	0.0213	0.0012	0.0546	0.0180	0.0193	0.0215	0.0149	0.0458	0.0371	0.0188	0.0201	0.0256	0.0660	0.0221	0.0085	0.0330	0.0573	0.0764	0.0332	0.0151	0.0176	0.0000	0.0193	0.0266	0.0000	0.6413	0.0028	0.1617	0.0001	0.0037	0.0396	0.0705	0.0142	0.0043
39	0.0000	0.0000	0.0000	0.0054	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0083	0.0040	0.0077	0.0010	0.0000	0.0066	0.0096	0.0095	0.0000	0.0153	0.0064	0.0030	0.0020	0.0047	0.0176	0.0000	0.0000	0.0156	0.0054	0.0413	0.0077	0.0028	0.0039	0.0014	0.0012	0.0029	0.0000	0.0001	0.0009	0.0010	0.0000	0.0000	0.0014	0.0007	0.0107	0.0000
40	0.0084	0.0158	0.0000	0.0000	0.0115	0.0000	0.0003	0.0009	0.0103	0.0010	0.0015	0.0017	0.0024	0.0002	0.0013	0.0028	0.0045	0.0083	0.0037	0.0109	0.0026	0.0050	0.0040	0.0019	0.0022	0.0031	0.0006	0.0026	0.0018	0.0020	0.0019	0.0017	0.0020	0.0014	0.0025	0.0029	0.0000	0.0020	0.0028	0.0113	0.0005	0.0012	0.0057	0.0105	0.0093	0.0002
41	0.0000	0.0014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0034	0.0001	0.0005	0.0002	0.0003	0.0000	0.0004	0.0000	0.0013	0.0009	0.0000	0.0007	0.0000	0.0009	0.0007	0.0009	0.0003	0.0009	0.0000	0.0017	0.0006	0.0030	0.0006	0.0017	0.0007	0.0005	0.0006	0.0019	0.0000	0.0024	0.0037	0.0072	0.0115	0.0002	0.0003	0.0029	0.0066	0.0000
42	0.0028	0.0221	0.0081	0.0215	0.0000	0.1762	0.0073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0402	0.0577	0.1771	0.0000	0.0365	0.0000	0.0000	0.0000	0.0047
43	0.2674	0.2008	0.0987	0.0968	0.0958	0.0266	0.0035	0.0614	0.0586	0.0547	0.0250	0.0906	0.0861	0.0267	0.0533	0.1054	0.0989	0.0914	0.1157	0.0342	0.0448	0.0418	0.0676	0.1962	0.1015	0.0899	0.0041	0.1181	0.0952	0.0500	0.0805	0.0994	0.1253	0.3078	0.0882	0.0961	0.0000	0.0064	0.0047	0.0124	0.1250	0.0930	0.0308	0.1770	0.1403	0.0869
44	0.0084	0.0093	0.0038	0.0108	0.0000	0.0955	0.0048	0.1016	0.1724	0.0036	0.0069	0.0052	0.0036	0.0015	0.0310	0.0095	0.0116	0.0148	0.0075	0.0167	0.0128	0.0067	0.0074	0.0076	0.0160	0.0075	0.0057	0.0092	0.0159	0.0220	0.0113	0.0067	0.0091	0.0036	0.0043	0.0048	0.0000	0.0009	0.0009	0.0062	0.0023	0.0042	0.0548	0.0204	0.0051	0.2738
45	0.0111	0.0011	0.0007	0.0000	0.0000	0.0252	0.0048	0.0192	0.0034	0.0019	0.0069	0.0021	0.0046	0.0007	0.0035	0.0038	0.0103	0.0031	0.0075	0.0102	0.0102	0.0081	0.0054	0.0104	0.0077	0.0097	0.0093	0.0167	0.0093	0.0099	0.0064	0.0089	0.0072	0.0041	0.0037	0.0105	0.0000	0.0061	0.0037	0.0257	0.0028	0.0036	0.0393	0.0149	0.0154	0.0003
46	0.0279	0.1191	0.0304	0.2043	0.0038	0.1725	0.3938	0.1117	0.0069	0.0118	0.0519	0.0398	0.0617	0.0017	0.0760	0.0788	0.0745	0.1618	0.0299	0.0502	0.1076	0.0407	0.0435	0.0626	0.0685	0.0682	0.0182	0.0966	0.0853	0.1296	0.0583	0.0570	0.0640	0.0530	0.0596	0.0695	0.0000	0.0292	0.2605	0.0185	0.0434	0.0576	0.1065	0.0396	0.0098	0.0036
47	0.0000	0.0000	0.0000	0.0215	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0000	0.0029
48	0.0000	0.0059	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0004	0.0015	0.0005	0.0013	0.0002	0.0009	0.0019	0.0019	0.0006	0.0037	0.0015	0.0026	0.0014	0.0013	0.0009	0.0015	0.0027	0.0006	0.0027	0.0021	0.0022	0.0011	0.0011	0.0020	0.0023	0.0006	0.0019	0.0000	0.0010	0.0000	0.0021	0.0001	0.0012	0.0332	0.0091	0.0032	0.0000
49	0.0000	0.0000	0.0000	0.0000	0.0000	0.1347	0.0000	0.1007	0.0759	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0009	0.0000	0.0000	0.0000	0.0094	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0029	0.0000	0.0041	0.0000	0.0000	0.0357	0.0084	0.0015	0.1358
50	0.0028	0.0136	0.0036	0.0108	0.0038	0.0000	0.0010	0.0018	0.0000	0.0012	0.0024	0.0024	0.0057	0.0005	0.0013	0.0047	0.0051	0.0031	0.0037	0.0051	0.0077	0.0069	0.0067	0.0047	0.0043	0.0115	0.0006	0.0037	0.0051	0.0042	0.0042	0.0056	0.0046	0.0045	0.0068	0.0086	0.0000	0.0076	0.0112	0.0185	0.0007	0.0038	0.0672	0.0658	0.0223	0.0145
51	0.0474	0.0523	0.0164	0.0269	0.0153	0.0526	0.0257	0.0156	0.0379	0.0096	0.0167	0.0090	0.0137	0.0069	0.0122	0.0133	0.0263	0.0129	0.0187	0.0284	0.0243	0.0223	0.0188	0.0133	0.0241	0.0195	0.0156	0.0246	0.0210	0.0252	0.0156	0.0190	0.0176	0.0136	0.0161	0.0314	0.0000	0.0742	0.0521	0.1050	0.0280	0.0257	0.0376	0.0218	0.0158	0.0766
52	0.0000	0.0008	0.0000	0.0000	0.0115	0.0015	0.0003	0.0027	0.0069	0.0029	0.0044	0.0036	0.0109	0.0005	0.0022	0.0000	0.0096	0.0028	0.0037	0.0087	0.0461	0.0308	0.0281	0.0066	0.0049	0.0452	0.0004	0.0041	0.0120	0.0059	0.0098	0.0095	0.0157	0.0063	0.0366	0.0381	0.0000	0.0049	0.0047	0.0185	0.0033	0.0066	0.1432	0.0941	0.0639	0.0003
53	0.0000	0.0786	0.0014	0.0054	0.0038	0.0659	0.0051	0.1218	0.1276	0.0267	0.0843	0.0463	0.0531	0.0147	0.0559	0.1273	0.1766	0.1191	0.0634	0.1542	0.2061	0.2697	0.1125	0.0758	0.1351	0.3046	0.0152	0.1800	0.1552	0.1518	0.0991	0.1351	0.1338	0.0625	0.0863	0.1370	0.0000	0.1026	0.0856	0.3491	0.0628	0.1955	0.2557	0.0803	0.0434	0.0245
54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
55	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0028	0.0103	0.0000	0.0000	0.0013	0.0000	0.0000	0.0002
56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
58	0.0000	0.0054	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0008	0.0010	0.0009	0.0016	0.0000	0.0009	0.0019	0.0039	0.0028	0.0000	0.0044	0.0026	0.0035	0.0027	0.0009	0.0012	0.0027	0.0006	0.0015	0.0015	0.0010	0.0014	0.0011	0.0013	0.0009	0.0019	0.0029	0.0000	0.0001	0.0000	0.0031	0.0000	0.0022	0.0034	0.0145	0.0060	0.0000
59	0.0000	0.0096	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0024	0.0098	0.0119	0.0065	0.0007	0.0031	0.0209	0.0315	0.0360	0.0075	0.0065	0.0102	0.0092	0.0067	0.0038	0.0188	0.0120	0.0018	0.0292	0.0081	0.0072	0.0045	0.0089	0.0065	0.0240	0.0056	0.0181	0.0000	0.0000	0.0000	0.0041	0.0000	0.0000	0.0192	0.0207	0.0062	0.0105
60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Σ	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1

Annex 3: Proportion of Inputs Matrix (Colombia)

No.	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0062	0.0000	0.0000	0.0000	0.0014	0.0002	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0077	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0066	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000	0.0003	0.0004	0.0000	0.0005	0.0008	0.0000	0.0006	0.0001	0.0000	0.0012	0.0053	0.0000
15	0.0000	0.0000	0.0000	0.0001	0.0010	0.0003	0.0029	0.0019	0.0000	0.0000	0.0000	0.0000	0.0007	0.0021	0.0000
16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0057	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	0.0000	0.0026	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0116	0.0000	0.0000	0.0005	0.0000	0.0062	0.0000	0.0000
22	0.0000	0.0013	0.0000	0.0095	0.0012	0.0000	0.0000	0.0075	0.0061	0.0077	0.0001	0.0000	0.0242	0.0000	0.0000
23	0.0000	0.0007	0.0000	0.0001	0.0000	0.0000	0.0001	0.0067	0.0054	0.0000	0.0000	0.0000	0.0080	0.0000	0.0000
24	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	0.0000	0.0053	0.0065	0.0362	0.0193	0.0020	0.0273	0.0089	0.0165	0.0112	0.0046	0.0029	0.0050	0.0118	0.0000
26	0.0000	0.0053	0.0060	0.0268	0.0153	0.0065	0.0322	0.0145	0.0242	0.0100	0.0037	0.0086	0.0350	0.0417	0.0000
27	0.3739	0.2462	0.0268	0.0112	0.0001	0.0000	0.0174	0.0255	0.0031	0.0018	0.0015	0.0402	0.0012	0.0000	0.0000
28	0.0000	0.0026	0.0000	0.0004	0.0059	0.0006	0.0096	0.0075	0.0088	0.0006	0.1202	0.0043	0.0305	0.0000	0.0000
29	0.0000	0.0453	0.0000	0.0021	0.0008	0.0003	0.0096	0.0015	0.0000	0.0012	0.0014	0.0043	0.0235	0.0053	0.0000
30	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	0.0000	0.0072	0.0000	0.0000	0.0000
31	0.0000	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0023	0.0042	0.0000	0.0001	0.0000	0.0000	0.0011	0.0000
32	0.1048	0.0000	0.0298	0.0206	0.0000	0.0000	0.0000	0.0406	0.0000	0.0012	0.0000	0.0000	0.0005	0.0118	0.0000
33	0.0000	0.0000	0.0203	0.0036	0.0008	0.0000	0.0090	0.0047	0.0507	0.0501	0.0371	0.0043	0.0100	0.0032	0.0000
34	0.0453	0.0066	0.0000	0.0018	0.0001	0.0000	0.0000	0.0116	0.0000	0.0000	0.0001	0.0029	0.0000	0.0011	0.0000
35	0.0000	0.0000	0.0000	0.0009	0.0015	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0009	0.0477	0.0360	0.0000	0.0000	0.0607	0.0000	0.0000
37	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000
38	0.0000	0.0033	0.0968	0.0570	0.0365	0.0022	0.0206	0.0567	0.0438	0.0401	0.0228	0.0187	0.0172	0.0086	0.0000
39	0.0000	0.0000	0.0189	0.0064	0.0014	0.0000	0.0000	0.0135	0.0085	0.0088	0.0019	0.0000	0.0065	0.0043	0.0000
40	0.0000	0.0039	0.0372	0.0046	0.0023	0.0003	0.0077	0.0034	0.0173	0.0124	0.0048	0.0187	0.0135	0.0011	0.0000
41	0.0028	0.0033	0.0134	0.0028	0.0184	0.2401	0.0083	0.0333	0.0634	0.1103	0.0026	0.0100	0.0115	0.0332	0.0000
42	0.0000	0.0000	0.0298	0.0081	0.0000	0.0000	0.0000	0.0950	0.0000	0.0000	0.0000	0.1779	0.0000	0.1112	0.0000
43	0.0595	0.0630	0.0069	0.0269	0.0169	0.0020	0.0210	0.0279	0.0396	0.0254	0.0515	0.0201	0.0717	0.0150	0.0000
44	0.0000	0.0341	0.0074	0.0200	0.0006	0.0073	0.0304	0.0208	0.0200	0.0065	0.0086	0.0330	0.0142	0.0075	0.0000
45	0.0000	0.0460	0.0203	0.0093	0.0085	0.0022	0.0504	0.0216	0.0861	0.1676	0.0179	0.0201	0.0237	0.0898	0.0000
46	0.0000	0.0407	0.0347	0.0482	0.0050	0.0202	0.0481	0.0079	0.0004	0.0106	0.0078	0.0473	0.0075	0.0299	0.0000
47	0.2493	0.0000	0.0109	0.0000	0.0000	0.0000	0.0000	0.0124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48	0.0000	0.0703	0.0248	0.0135	0.0246	0.0014	0.0159	0.0149	0.0131	0.0041	0.0012	0.0029	0.0045	0.0139	0.0000
49	0.0935	0.2239	0.0859	0.0006	0.0014	0.0006	0.0408	0.0157	0.0000	0.0000	0.0004	0.0043	0.0087	0.0000	0.0000
50	0.0028	0.0125	0.0963	0.1969	0.0608	0.0135	0.1011	0.0226	0.0626	0.0655	0.0351	0.0215	0.0757	0.0086	0.0000
51	0.0227	0.0348	0.0382	0.1108	0.3586	0.4103	0.1183	0.2399	0.0273	0.0431	0.0210	0.1047	0.0292	0.0299	0.0000
52	0.0000	0.0013	0.0978	0.0960	0.0885	0.0435	0.0940	0.0153	0.1395	0.1581	0.0044	0.0301	0.0310	0.0011	0.0000
53	0.0453	0.1418	0.2720	0.2240	0.3223	0.2404	0.3043	0.1894	0.2690	0.1740	0.1239	0.3960	0.2309	0.4995	0.0000
54	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
55	0.0000	0.0007	0.0000	0.0021	0.0015	0.0000	0.0006	0.0140	0.0196	0.0147	0.0057	0.0072	0.0020	0.0107	0.0000
56	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.5145	0.0000	0.0067	0.0000	0.0000
58	0.0000	0.0000	0.0089	0.0040	0.0021	0.0000	0.0005	0.0070	0.0000	0.0006	0.0019	0.0100	0.0047	0.0064	0.0000
59	0.0000	0.0046	0.0104	0.0543	0.0021	0.0065	0.0293	0.0056	0.0231	0.0378	0.0040	0.0014	0.2334	0.0460	0.0000
60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
61	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
∑	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

Annex 4: Sector-Field Relation Matrix (Colombia)

	Fields of Education								
No.	1	2	3	4	5	6	7	8	**Ci**
1	1	0	0	0	0	0	0	0	1
2	1	0	0	0	0	0	0	0	1
3	1	0	0	0	0	0	0	0	1
4	1	0	0	0	0	0	0	0	1
5	1	0	0	0	0	0	0	0	1
6	0	0	0	0	0	0	1	1	2
7	0	0	0	0	0	0	1	1	2
8	0	0	0	0	0	0	1	1	2
9	0	0	0	0	0	0	1	1	2
10	0	0	0	0	0	0	1	0	1
11	0	0	0	0	0	0	1	1	2
12	0	0	0	0	0	1	1	1	3
13	1	0	0	0	0	1	1	1	4
14	0	0	0	0	0	1	1	0	2
15	0	0	0	0	0	1	1	0	2
16	0	0	0	0	0	1	1	0	2
17	0	0	0	0	0	1	1	0	2
18	0	0	0	0	0	1	1	0	2
19	0	0	0	0	0	1	1	0	2
20	0	0	0	0	0	0	1	0	1
21	0	0	0	0	0	1	1	0	2
22	0	0	0	0	0	1	1	0	2
23	0	0	0	0	0	1	1	0	2
24	0	0	0	0	0	1	1	0	2
25	0	0	0	0	0	1	1	0	2
26	0	1	0	0	0	0	0	0	1
27	0	0	0	0	0	1	1	0	2
28	0	0	0	0	0	1	1	1	3
29	0	0	0	0	0	1	1	1	3
30	0	0	0	0	0	1	1	1	3
31	0	0	0	0	0	1	1	0	2
32	0	0	0	0	0	1	1	0	2
33	0	0	0	0	0	1	1	0	2
34	0	0	0	0	0	1	1	0	2
35	0	0	0	0	0	1	1	0	2
36	0	0	0	0	1	1	1	0	3
37	0	0	0	0	0	0	1	1	2
38	0	0	0	0	0	0	1	1	2
39	0	0	0	0	0	1	1	1	3
40	0	0	0	0	0	0	1	1	2
41	0	0	0	0	0	0	1	0	1
42	0	0	0	0	0	0	1	0	1
43	0	0	0	0	1	1	0	0	2
44	0	0	0	0	0	0	1	0	1
45	0	0	0	0	1	1	0	0	2
46	0	0	0	0	0	1	1	0	2
47	0	0	0	0	0	1	1	0	2
48	0	0	0	0	0	1	1	0	2
49	0	0	0	0	0	1	0	0	1
50	0	0	0	0	0	1	1	0	2
51	0	0	0	0	0	1	0	0	1
52	0	0	0	0	0	1	0	0	1
53	0	0	0	0	0	1	0	0	1
54	0	0	0	1	1	1	0	0	3
55	0	0	1	0	0	0	0	0	1
56	0	0	1	0	0	0	0	0	1
57	0	0	0	1	1	0	0	0	2
58	0	0	0	0	0	0	1	0	1
59	0	0	1	0	1	0	0	0	2
60	0	0	1	0	1	0	0	0	2
61	0	0	0	0	0	0	0	0	0

Annex 5: Sector-Field Proportion Matrix (Colombia)

	Field / Sector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	AGRONOMY, VETERINARY, AND RELATED FIELDS	0.0780	0.1334	0.3164	0.3172	0.3439	0.0000	0.0000	0.0000	0.0000	0.7577	0.2852	0.6128	0.3715	0.8003	0.6135	0.1443	0.0902	0.0042	0.4925	0.1622	0.0141	0.0053	0.0007
2	ARTS	0.0000	0.0008	0.0000	0.0000	0.0000	0.0022	0.0006	0.0000	0.0000	0.0014	0.0054	0.0083	0.0050	0.0007	0.0009	0.0313	0.0199	0.0246	0.0037	0.0022	0.0026	0.0051	0.0033
3	EDUCATION	0.0000	0.0048	0.0000	0.0000	0.0000	0.0000	0.0000	0.0037	0.0000	0.0012	0.0049	0.0059	0.0032	0.0004	0.0015	0.0104	0.0157	0.0180	0.0037	0.0033	0.0051	0.0046	0.0033
4	HEALTH AND WELFARE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	SOCIAL SCIENCES	0.1393	0.1058	0.0497	0.0484	0.0479	0.0259	0.0041	0.0531	0.0310	0.0295	0.0208	0.0528	0.0486	0.0141	0.0299	0.0651	0.0703	0.0652	0.0665	0.0255	0.0331	0.0323	0.0401
6	ECONOMICS, ADMINISTRATION, ACCOUNTING AND RELATED FIELDS	0.4071	0.4239	0.2609	0.3280	0.2615	0.4251	0.2387	0.4515	0.4385	0.0891	0.1809	0.1854	0.2619	0.1076	0.1663	0.4163	0.4629	0.4801	0.2705	0.2804	0.4663	0.5305	0.3795
7	ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	0.2400	0.2381	0.2125	0.2796	0.2079	0.4762	0.4859	0.3736	0.4178	0.1100	0.2754	0.0962	0.1974	0.0743	0.1407	0.2515	0.2654	0.3336	0.1399	0.4669	0.3965	0.4013	0.5303
8	SCIENCE AND MATH	0.1356	0.0932	0.1605	0.0269	0.1389	0.0706	0.2706	0.1181	0.1126	0.0111	0.2274	0.0386	0.1124	0.0026	0.0472	0.0810	0.0756	0.0742	0.0230	0.0596	0.0824	0.0208	0.0428

	Field / Sector	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
1	AGRONOMY, VETERINARY, AND RELATED FIELDS	0.2448	0.0118	0.0000	0.0000	0.0027	0.0015	0.0002	0.0000	0.0000	0.0000	0.0000	0.0050	0.0048	0.0000	0.0000	0.0000	0.0000	0.0096	0.0182	0.0000	0.0000	0.1558	0.0000
2	ARTS	0.0019	0.0117	0.0620	0.0006	0.0170	0.0048	0.0030	0.0023	0.0061	0.0052	0.0027	0.0025	0.0086	0.0000	0.0019	0.0037	0.0082	0.0001	0.0002	0.0548	0.0134	0.0034	0.0002
3	EDUCATION	0.0019	0.0094	0.0060	0.0009	0.0146	0.0041	0.0036	0.0023	0.0045	0.0033	0.0120	0.0028	0.0090	0.0000	0.0010	0.0028	0.0124	0.0000	0.0000	0.0109	0.0104	0.0031	0.0055
4	HEALTH AND WELFARE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	SOCIAL SCIENCES	0.1052	0.0640	0.0565	0.0076	0.0823	0.0564	0.0335	0.0457	0.0586	0.0713	0.1679	0.0488	0.0731	0.0000	0.0063	0.0042	0.0211	0.0645	0.0483	0.0446	0.1063	0.0810	0.0489
6	ECONOMICS, ADMINISTRATION, ACCOUNTING AND RELATED FIELDS	0.3854	0.4471	0.6203	0.0757	0.4855	0.4698	0.4297	0.3818	0.5389	0.5203	0.5026	0.4606	0.5414	0.0000	0.2237	0.2879	0.5402	0.4550	0.5084	0.6411	0.4986	0.3649	0.4664
7	ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	0.2280	0.3352	0.2254	0.4790	0.2492	0.2803	0.3443	0.3931	0.3443	0.3144	0.2808	0.4457	0.3135	0.0000	0.4201	0.4516	0.3244	0.3263	0.3018	0.2150	0.3018	0.3311	0.4665
8	SCIENCE AND MATH	0.0328	0.1208	0.0299	0.4362	0.1487	0.1831	0.1857	0.1749	0.0476	0.0855	0.0339	0.0348	0.0496	0.0000	0.3471	0.2498	0.0937	0.1446	0.1231	0.0335	0.0695	0.0606	0.0125

	Field / Sector	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	Wi
1	AGRONOMY, VETERINARY, AND RELATED FIELDS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0101	0.0000	0.0000	0.0000	0.0014	0.0002	0.0000	0.0000	6.0097
2	ARTS	0.0000	0.0053	0.0060	0.0268	0.0153	0.0065	0.0322	0.0145	0.0242	0.0100	0.0037	0.0086	0.0350	0.0417	0.0000	0.5624
3	EDUCATION	0.0000	0.0030	0.0052	0.0292	0.0025	0.0032	0.0152	0.0168	0.0311	0.0336	0.0077	0.0079	0.1187	0.0337	0.0000	0.5179
4	HEALTH AND WELFARE	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2573	0.0000	0.0034	0.0000	0.0000	0.2607
5	SOCIAL SCIENCES	0.0297	0.0568	0.0189	0.0453	0.0138	0.0053	0.0503	0.0279	0.0903	0.1273	0.2939	0.0208	0.1880	0.0754	0.0000	3.4389
6	ECONOMICS, ADMINISTRATION, ACCOUNTING AND RELATED FIELDS	0.5793	0.6654	0.6388	0.6244	0.8446	0.7158	0.7106	0.5897	0.6014	0.5636	0.2697	0.6215	0.4604	0.6305	0.0000	25.8736
7	ENGINEERING, ARCHITECTURE, URBANISM, AND RELATED FIELDS	0.3909	0.2501	0.2579	0.2405	0.1016	0.2676	0.1709	0.2994	0.2167	0.2356	0.1126	0.3159	0.1587	0.2107	0.0000	17.2119
8	SCIENCE AND MATH	0.0000	0.0196	0.0733	0.0339	0.0222	0.0015	0.0206	0.0415	0.0363	0.0298	0.0553	0.0239	0.0355	0.0080	0.0000	5.1250

Annex 6: Test for α difference[1]

Two-sample T for MEX vs COL
ALL SECTORS
N Mean StDev SE Mean
MEX 8 0.0518 0.0450 0.016
COL 8 0.0936 0.0396 0.014
Difference = mu (MEX) - mu (COL)
Estimate for difference: -0.0418
95% CI for difference: (-0.0876, 0.0040)
T-Test of difference = 0 (vs not =): T-Value = -1.97 **P-Value** = 0.070 DF = 13

[1] Using Minitab: Statistical Software