



Factsheet

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Glass Boundaries.

Gendering the labor market - costs of occupational and vocational segregation

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Custos e fatores da segregação profissional e educativa para homens e mulheres

Occupational profile of men and women in Portugal. An analysis based on data from Quadros de Pessoal

The following analysis constitutes a first moment of characterization of the occupational profile of men and women in Portugal and its evolution in the period 2011-2018. The relevance of this exercise lies in the prevalence of sex segregation patterns in occupations that tend to remain stable, despite the profound changes in the status of women in Portuguese society in recent decades.

Occupational segregation based on sex is strongly determined by traditional social gender roles that continue to assign women the tasks and activities related to caring for people and/or those with strong relational content, leaving men with tasks and activities with greater technical content and use of technological tools, as well as positions of direction and leadership. This socio-cultural determination constitutes a “glass boundary” that results in a subordinate position for women, as a group, by keeping them away from the places of economic and business decision-making and heavily concentrated on low-paid activities and jobs, on average. The segregation in occupations based on sex is an important part of the justification for the gender wage gap, which was 14.4% in 2018, according to the *Barometer of Remuneration Differences between Women and Men* (GEP-MTSSS)¹.

Quadros de Pessoal [*Personnel Tables*] (GEP-MTSSS) data constitute a privileged source for analysing the employed population in Portugal by providing information on all private-sector employees as defined by the Labour Code. This means that public servants are excluded from the data. The geographical scope of the data is Continental Portugal, meaning indicating that the Autonomous Regions of Madeira and Azores are not included in this data.

This Factsheet considers data on the distribution of men and women by occupations, according to the Portuguese Classification of Occupations 2010 (CPP/2010), in 2011 and 2018. During this period, the participation of women in private-sector employment increased from 45.4% to 46.9%, and the intensity of occupational segregation between women and men decreased slightly. Still, the distribution of men and women by occupations remains strongly asymmetric, as shown hereinafter.

1. Occupational segregation by sex

We can get a first picture of the occupational segregation by sex simply by calculating the feminization rate of occupations, i.e., the share of women in the total number of people employed in each occupation.

Tables 1 to 3 present occupations aggregated into 3 different groups, according to the intensity of women’s share in the total employment of each occupation. The first group (table 1) includes all occupations where the share of women is less than 40%. The second group (table 2) covers occupations where female participation exceeds 60%. Finally, the third group (table 3) includes gender-balanced occupations, that is, occupations where men and women account for 40% to 60% of all workers.

¹ http://www.gep.mtsss.gov.pt/documents/10182/86981/Barometro2020_destaque_06_03_2020.pdf

Table 1 – Male-dominated occupations (feminization rate < 40%)

Major Group	Occupation	Feminization rate 2018 (%)	Feminization rate 2011 (%)	Variation 2011-2018 (p.p.)	Share in total employment, 2018 (%)
MANAGERS	112 - Managing Directors and Chief Executives	27.2	25.7	1.5	1.5
	121 - Business Services and Administration Managers	38.2	36.2	2.0	1.0
	122 - Sales, Marketing and Development Managers	31.1	28.1	3.0	0.6
	131 - Production Managers in Agriculture, Forestry and Fisheries	23.4	23.5	-0.1	0.1
	132 - Manufacturing, Mining, Construction and Distribution Managers	20.0	19.9	0.0	0.7
	133 - Information and Communications Technology Services Managers	14.7	13.2	1.5	0.1
	141 - Hotel and Restaurant Managers	34.9	35.7	-0.7	0.6
	142 - Retail and Wholesale Trade Managers	32.7	32.5	0.2	1.0
	143 - Other Services Managers	29.5	29.3	0.3	1.9
	<i>Total</i>				7.3
PROFESSIONALS	214 - Engineering Professionals (excluding Electrotechnology)	28.0	26.3	1.7	1.2
	215 - Electrotechnology Engineers	9.9	9.8	0.1	0.4
	251 - Software and Applications Developers and Analysts	22.0	20.0	2.0	1.3
	252 - Database and Network Professionals	19.3	14.3	5.0	0.2
	<i>Total</i>				3.1
TECHNICIANS AND ASSOCIATE PROFESSIONALS	311 - Science and Engineering Associate Professionals	19.4	17.6	1.8	1.6
	312 - Mining, Manufacturing and Construction Supervisors	16.0	13.2	2.9	0.9
	313 - Process Control Technicians	25.4	22.4	3.0	0.4
	315 - Ship and Aircraft Controllers and Technicians	8.7	7.4	1.3	0.1
	332 - Sales and Purchasing Agents and Brokers	37.5	32.6	4.9	1.0
	342 - Sports and Fitness Workers	27.8	28.9	-1.1	0.2
	351 - Information and Communications Technology Operations and User	24.0	20.2	3.8	0.7
352 - Telecommunications and Broadcasting Technicians	16.9	18.0	-1.2	0.3	
	<i>Total</i>				5.1
CLERICALS	432 - Material Recording and Transport Clerks	28.4	27.7	0.7	2.9
SERVICES AND SALES WORKERS	521 - Street and Market Salespersons	29.3	30.7	-1.4	0.2
	541 - Protective Services Workers	13.6	11.7	1.9	1.6
	<i>Total</i>				1.8
SKILLED AGRICULTURAL, FORESTRY AND FISHERY WORKERS	611 - Market Gardeners and Crop growers	22.9	27.9	-5.0	0.5
	613 - Mixed Crop and Animal Producers	28.1	38.0	-10.0	0.4
	621 - Forestry and Related Workers	4.1	6.6	-2.5	0.1
	622 - Fishery Workers, Hunters and Trappers	8.1	6.3	1.8	0.2
	<i>Total</i>				1.1
CRAFT AND RELATED TRADES WORKERS	711 - Building Frame and Related Trades Workers	1.1	1.1	0.0	2.8
	712 - Building Finishers and Related Trades Workers	0.8	1.3	-0.4	0.6
	713 - Painters, Building Structure Cleaners and Related Trades Workers	3.1	3.0	0.1	0.5
	721 - Sheet and Struc. Metal Workers, Moulders and Welders, and Related	3.1	3.0	0.1	1.5
	722 - Blacksmiths, Toolmakers and Related Trades Workers	9.6	9.2	0.3	1.2
	723 - Machinery Mechanics and Repairers	1.5	2.0	-0.5	1.1
	732 - Printing Trades Workers	23.6	24.0	-0.4	0.3
	741 - Electrical Equipment Installers and Repairers	2.6	3.1	-0.5	1.1
	742 - Electronics and Telecommunications Installers and Repairers	2.3	1.8	0.6	0.1
752 - Wood Treaters, Cabinet-makers and Related Trades Workers	16.9	18.1	-1.2	0.6	
	<i>Total</i>				9.9
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	811 - Mining and Mineral Processing Plant Operators	6.1	3.7	2.3	0.2
	812 - Metal Processing and Finishing Plant Operators	19.7	15.7	4.0	0.2
	813 - Chemical and Photographic Products Plant and Machine Operators	25.6	29.1	-3.5	0.2
	814 - Rubber, Plastic and Paper Products Machine Operators	27.1	29.3	-2.2	0.7
	817 - Wood Processing and Papermaking Plant Operators	14.1	16.5	-2.4	0.1
	818 - Other Stationary Plant and Machine Operators	37.0	38.7	-1.7	0.9
	831 - Locomotive Engine Drivers and Related Workers	3.0	3.2	-0.2	0.1
	832 - Car, Van and Motorcycle Drivers	6.0	5.5	0.5	0.9
	833 - Heavy Truck and Bus Drivers	2.6	1.8	0.8	2.4
	834 - Mobile Plant Operators	2.4	1.5	0.9	0.6
	835 - Ships Deck Crews and Related Workers	3.8	4.5	-0.7	0.0
	<i>Total</i>				6.2
ELEMENTARY OCCUPATIONS	921 - Agricultural, Forestry and Fishery Labourers	33.4	43.3	-10.0	1.0
	931 - Mining and Construction Labourers	1.3	1.9	-0.6	0.9
	933 - Transport and Storage Labourers	34.8	32.6	2.2	0.6
	951 - Street and Related Services Workers	23.5	23.9	-0.4	0.0
	952 - Street Vendors (excluding Food)	21.4	32.1	-10.7	0.1
	961 - Refuse Workers	39.5	37.8	1.7	0.4
	962 - Other Elementary Workers	37.4	33.8	3.6	3.1
	<i>Total</i>				6.1

Table 2 – Female-dominated occupations (Feminization rate >60%)

Major Group	Occupation	Feminization rate 2018 (%)	Feminization rate 2011 (%)	Variation 2011-2018 (p.p.)	Share in total employment, 2018 (%)
MANAGERS	-	-	-	-	0
				<i>Total</i>	<i>0</i>
PROFESSIONALS	212 - Mathematicians, Actuaries and Statisticians	63.7	58.3	5.5	0.0
	222 - Nursing and Midwifery Professionals	82.3	80.3	2.0	0.9
	225 - Veterinarians	71.3	61.8	9.5	0.1
	226 - Other Health Professionals	76.6	73.8	2.8	0.8
	233 - Secondary Education Teachers	69.3	67.7	1.6	0.3
	234 - Primary School and Early Childhood Teachers	95.7	94.8	0.9	0.6
	235 - Other Teaching Professionals	63.6	66.3	-2.7	0.2
	261 - Legal Professionals	69.7	63.3	6.4	0.1
	262 - Librarians, Archivists and Curators	67.4	63.2	4.2	0.0
	263 - Social and Religious Professionals	78.6	73.1	5.5	0.6
				<i>Total</i>	<i>3.63</i>
TECHNICIANS AND ASSOCIATE PROFESSIONALS	321 - Medical and Pharmaceutical Technicians	71.0	64.6	6.4	0.5
	322 - Nursing and Midwifery Associate Professionals	87.5	85.4	2.1	0.0
	323 - Traditional and Complementary Medicine Associate Professionals	70.8	70.8	0.0	0.0
	324 - Veterinary Technicians and Assistants	72.5	49.7	22.8	0.0
	325 - Other Health Associate Professionals	79.3	73.5	5.8	0.5
	331 - Financial and Mathematical Associate Professionals	66.7	64.1	2.6	0.8
	341 - Legal, Social and Religious Associate Professionals	81.5	81.7	-0.2	0.1
				<i>Total</i>	<i>2.0</i>
CLERICALS UP. WORKERS	411 - General Office Clerks	75.1	74.0	1.2	3.9
	412 - Secretaries (general)	84.1	85.7	-1.6	0.4
	422 - Client Information Workers	66.0	67.3	-1.2	2.4
	431 - Numerical Clerks	65.9	64.8	1.1	0.8
	441 - Other Clerical Support Workers	63.1	58.4	4.7	1.4
				<i>Total</i>	<i>9.0</i>
SERVICES AND SALES WORKERS	512 - Cooks	64.1	73.0	-8.9	1.4
	514 - Hairdressers, Beauticians and Related Workers	90.3	91.7	-1.5	0.5
	515 - Building and Housekeeping Supervisors	81.0	81.7	-0.7	0.3
	516 - Other Personal Services Workers	69.0	67.2	1.8	0.5
	522 - Shop Salespersons	67.7	67.5	0.2	2.9
	523 - Cashiers and Ticket Clerks	72.6	72.6	0.0	1.5
	524 - Other Sales Workers	60.4	62.3	-1.9	5.3
	531 - Child Care Workers and Teachers' Aides	96.0	94.8	1.2	0.9
	532 - Personal Care Workers in Health Services	92.1	92.0	0.1	2.3
				<i>Total</i>	<i>45</i>
SKILLED AGRICULTURAL, FORESTRY AND FISHERY WORKERS	-	-	-	-	0
				<i>Total</i>	<i>0</i>
CRAFT AND RELATED TRADES WORKERS	753 - Garment and Related Trades Workers	72.5	72.9	-0.4	1.7
				<i>Total</i>	<i>1.72</i>
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	815 - Textile, Fur and Leather Products Machine Operators	75.0	77.7	-2.7	2.5
				<i>Total</i>	<i>2.5</i>
ELEMENTARY OCCUPATIONS	911 - Domestic, Hotel and Office Cleaners and Helpers	91.8	93.2	-1.4	3.8
	912 - Vehicle, Window, Laundry and Other Hand Cleaning Workers	72.6	75.6	-3.0	0.7
	941 - Food Preparation Assistant	74.6	85.8	-11.2	1.4
				<i>Total</i>	<i>6.0</i>

The data confirms the solid male dominance in the *Management* occupations, with the sole exception of *Professional Services Managers*, where gender balance was achieved during the period under review (2011 - 2018).

Male dominance is also observable in the broad occupational groups: *Craft and Related Trades Workers* and *Plant and Machine Operators and Assemblers*, which include many occupations with female participation of less than 10%. The notable exceptions are *Craft Workers* and *Textile, Fur and Leather Products Machine Operators* sectors, where female participation exceeds 70%. There are also a small number of gender-balanced occupations in those broad occupational groups (table 3), namely those related to livestock farming, manufacturing of precision instruments, food production, and assembly of parts and components.

Table 3 – Gender-balanced occupations (feminization rate >40% and <60%)

Major Group	Occupation	Feminization rate 2018 (%)	Feminization rate 2011 (%)	Variation 2011-2018 (p.p.)	Share in total employment, 2018 (%)
MANAGERS	134 - Professional Services Managers	43.9	38.0	5.9	0.6
	<i>Total</i>				0.6
PROFESSIONALS	211 - Physical and Earth Science Professionals	50.3	46.0	4.4	0.1
	213 - Life Science Professionals	51.6	49.3	2.3	0.2
	216 - Architects, Planners, Surveyors and Designers	48.1	40.4	7.7	0.5
	221 - Medical Doctors	58.0	52.3	5.7	0.3
	223 - Traditional and Complementary Medicine Professionals	58.1	55.9	2.2	0.0
	224 - Paramedical Practitioners	60.0	85.7	-25.7	0.0
	231 - University and Higher Education Teachers	50.4	51.0	-0.6	0.1
	232 - Vocational Education Teachers	56.2	55.0	1.2	0.1
	241 - Finance Professionals	60.0	57.3	2.8	1.0
	242 - Administration Professionals	55.9	51.8	4.0	0.8
	243 - Sales, Marketing and Public Relations Professionals	52.9	46.0	6.9	0.7
	264 - Authors, Journalists and Linguists	56.0	54.3	1.6	0.2
	265 - Creative and Performing Artists	43.3	36.9	6.5	0.1
<i>Total</i>					4.0
TECHNICIANS AND ASSOCIATE PROFESSIONALS	314 - Life Science Technicians and Related Associate Professionals	46.9	51.9	-5.0	0.1
	333 - Business Services Agents	48.2	45.3	2.8	0.3
	334 - Administrative and Specialized Secretaries	58.2	53.0	5.2	1.7
	343 - Artistic, Cultural and Culinary Associate Professionals	56.0	57.1	-1.1	0.3
<i>Total</i>					2.3
CLERICAL SUP. WORKERS	413 - Keyboard Operators	54.7	58.1	-3.4	0.2
	421 - Tellers, Money Collectors and Related Clerks	55.9	50.3	5.6	0.5
<i>Total</i>					0.6
SERVICES AND SALES WORKERS	511 - Travel Attendants, Conductors and Guides	54.8	51.8	3.0	0.2
	513 - Waiters and Bartenders	54.8	55.2	-0.4	3.0
<i>Total</i>					3.2
SKILLED AGRICULTURAL, FORESTRY AND FISHERY	612 - Animal Producers	43.5	43.8	-0.3	0.1
<i>Total</i>					0.1
CRAFT AND RELATED TRADES WORKERS	731 - Handicraft Workers	55.3	47.9	7.4	0.4
	751 - Food Processing and Related Trades Workers	43.6	44.3	-0.7	1.4
	754 - Other Craft and Related Workers	46.2	47.3	-1.1	0.3
<i>Total</i>					2.1
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	816 - Food and Related Products Machine Operators	45.7	44.0	1.8	0.3
	821 - Assemblers	40.1	41.8	-1.7	1.2
<i>Total</i>					1.5
ELEMENTARY OCCUPATIONS	932 - Manufacturing Labourers	48.1	49.7	-1.6	1.7
	<i>Total</i>				1.7

Regarding *Professionals*, there is a striking contrast between, on the one hand, the engineering and ICT specialists (where over 70% are men) and, on the other hand, primary and secondary school teachers, nursing and other health occupations, social scientists, and veterinarians, which are firmly female dominated.

In *Legal Professionals, Librarians, Archivists and Curators, Other Teaching Professionals, and Mathematicians, Actuaries and Statisticians*, female dominance is also verifiable, although to a lesser extent. Within this group, there are a large and diverse number of gender-balanced occupations (table 3). Among these, paramedical professions stand out by the sharp reduction in the feminization rate, from 85.7% in 2011 to 60% in 2018.

Technicians and Associate Professionals broadly replicate that same pattern, although fewer of these occupations have a balanced distribution between the sexes. Standing out on the extremes are, on the one hand, *Nursing and Midwifery Associate Professionals* and *Legal, Social and Religious Associate Professionals* (feminization rate of 87.5% and 81.5%, respectively, in 2018) and, on the other hand, *Ship and Aircraft Controllers and Technicians* (8.7%), *Construction Supervisors* (16%), *Telecommunications and Broadcasting Technicians* (16.9%), and *Science and Engineering Associate Professionals* (19.4%).

It should be noted that, in the period under consideration, there was a general tendency to reinforce the feminization of those two groups of occupations (*Professionals*, and *Technicians and Associate Professionals*), even in occupations already heavily feminized.

Clerical Support Workers and *Services and Sales Workers* are intensely female-dominated: only 3 occupations in these groups are male-dominated. *Protective Services Workers* stand out with a feminization rate of only 13.6% in 2018. In the period under analysis, there was also an impressive increase in male participation in the cook profession, whose feminization rate fell from 73% to 64.1%.

Elementary Occupations are mostly male dominated, with a balanced situation only in manufacturing laborers. However, cleaning occupations and *Food Preparation Assistance* are strongly feminized. Standing out at the extremes are *Domestic, Hotel and Office Cleaners and Helpers* (feminization rate of 91.3% in 2018) and *Mining and Construction Labourers* (rate of 1.3%).

2. Occupational concentration in female and male employment

The intensity of gender segregation in employment can be captured by calculating the share of each gender in the occupations that respectively employ them the most. The following tables show the 22 occupations employing the highest share of men and women (tables 4 and 5, respectively).

Female employment is much more concentrated in a small number of occupations than male employment. In 2018, more than two-thirds of female employment was concentrated in only 22 occupations, and 10 occupations accounted for 50% of employment. The 3 occupations that employed the most women accounted for 20.5% of total female employment. The corresponding figures for male employment were only 55.4%, 38%, and 13.6%, respectively.

Comparing the situation in 2018 with that of 2011, concentration has decreased for both sexes when considering only the 3 occupations that employ more men or women (-1.2 p.p. for men and -2.2 p.p. for women), while remaining approximately stable for the 10 most employing professions (+0.3 p.p. for both sexes). However, regarding all the 22 occupations, the share increased especially for women (+0.8 p.p. for men, +1.4 p.p. for women).

Table 4 – Male-dominated occupations in 2018

Occupation	Share in male employment 2018 (%)	Share in male employment 2011 (%)	Variation 2011-2018 (p.p.)	Feminization rate 2018 (%)
711 - Building Frame and Related Trades Workers	5.2	6.4	-1.2	1.1
833 - Heavy Truck and Bus Drivers	4.4	4.5	-0.1	2.6
524 - Other Sales Workers	4.0	3.9	0.0	60.4
432 - Material Recording and Transport Clerks	3.8	3.2	0.6	28.4
962 - Other Elementary Workers	3.7	2.4	1.3	37.4
721 - Sheet and Structural Metal Workers, Moulders and Welders, and Related Workers	2.8	2.9	-0.1	3.1
541 - Protective Services Workers	2.6	2.9	-0.3	13.6
513 - Waiters and Bartenders	2.5	2.0	0.6	54.8
143 - Other Services Managers	2.5	2.5	0.0	29.5
311 - Physical and Engineering Science Technicians	2.4	2.7	-0.3	19.4
741 - Electrical Equipment Installers and Repairers	2.1	2.3	-0.3	2.6
722 - Blacksmiths, Toolmakers and Related Trades Workers	2.0	2.1	-0.1	9.6
112 - Managing Directors and Chief Executives	2.0	2.1	-0.1	27.2
723 - Machinery Mechanics and Repairers	2.0	2.0	-0.1	1.5
251 - Software and Applications Developers and Analysts	1.9	1.2	0.7	22.0
411 - General Office Clerks	1.8	2.1	-0.3	75.1
522 - Shop Salespersons	1.8	1.5	0.2	67.7
932 - Manufacturing Labourers	1.7	1.4	0.3	48.1
931 - Mining and Construction Labourers	1.7	2.1	-0.4	1.3
214 - Engineering Professionals (excluding Electrotechnology)	1.6	1.6	-0.1	28.0
422 - Client Information Workers	1.6	1.2	0.4	66.0
832 - Car, Van and Motorcycle Drivers	1.5	1.6	-0.1	6.0
% of those working in the 3 most employing professions	13.6	14.8		
% of those working in the 10 most employing professions	38.0	37.7		
% of those working in the 22 most employing professions	55.4	54.6		

Table 5 - Female-dominated occupations in 2018

Occupation	Share in female employment 2018 (%)	Share in female employment 2011 (%)	Variation 2011-2018 (p.p.)	Feminization rate 2018 (%)
911 - Domestic, Hotel and Office Cleaners and Helpers	7.5	7.7	-0.3	91.8
524 - Other Sales Workers	6.9	7.8	-0.9	60.4
411 - General Office Clerks	6.2	7.2	-1.0	75.1
532 - Personal Care Workers in Health Services	4.6	3.8	0.8	92.1
522 - Shop Salespersons	4.2	3.8	0.4	67.7
815 - Textile, Fur and Leather Products Machine Operators	3.9	4.3	-0.4	75.0
513 - Waiters and Bartenders	3.5	2.9	0.6	54.8
422 - Client Information Workers	3.4	2.9	0.5	66.0
753 - Garment and Related Trades Workers	2.7	2.8	-0.1	72.5
962 - Other Elementary Workers	2.5	1.5	1.0	37.4
523 - Cashiers and Ticket Clerks	2.3	2.6	-0.3	72.6
941 - Food Preparation Assistants	2.3	2.4	-0.1	74.6
334 - Administrative and Specialized Secretaries	2.1	2.1	-0.1	58.2
512 - Cooks	2.0	2.1	-0.1	64.1
441 - Other Clerical Support Workers	1.9	1.6	0.4	63.1
531 - Child Care Workers and Teachers' Aides	1.9	1.9	0.0	96.0
932 - Manufacturing Labourers	1.8	1.7	0.1	48.1
432 - Material Recording and Transport Clerks	1.7	1.5	0.2	28.4
222 - Nursing and Midwifery Professionals	1.6	1.2	0.4	82.3
226 - Other Health Professionals	1.4	1.1	0.3	76.6
751 - Food Processing and Related Trades Workers	1.3	1.5	-0.2	43.6
241 - Finance Professionals	1.3	1.2	0.1	60.0
% of those working in the 3 most employing professions	20.5	22.7		
% of those working in the 10 most employing professions	50.0	49.7		
% of those working in the 22 most employing professions	66.8	65.4		

3. Gender segregation in occupations in brief: the segregation index

The intensity of the differences in the distribution of men and women across occupations can be summarised using a “segregation index”. This index, first proposed by Duncan and Duncan (1955)², indicates the percentage of women (men) who would have to change occupations to attain a balanced distribution of men and women (50% men and women in all occupations).

The index also allows for a decomposition that makes it possible to analyse the evolution of the intensity of segregation over time. The changes in the value of the index are the result of two different effects: the effect resulting from changes in the share of participation of men and women in different occupations (sex composition effect) and the effect resulting from changes in the share of different occupations in the total volume of employment (occupational mix effect).

The box below presents the Duncan index and its decomposition.

Following the method first developed by Duncan and Duncan (1955), the index of segregation can be defined as

$$S_t = (0.5) \sum_i |h_{it} - m_{it}|$$

Where h_{it} (m_{it}) is the proportion of all working males (females), who are employed in occupation i at time t . This index is usually expressed as a percentage and indicates the proportion of women (or men) that would have to change occupations to have the occupation distribution of men and women be the same. A value of zero implies complete integration, while a value of 100 means complete segregation.

The index allows further analysis of the evolution of segregation over time by decomposing the value obtained into two distinct effects (Fuchs, 1975)³: the sex composition effect (which is due to changes in the sex composition of the occupations considered) and the occupational mix effect (due to changes in the relative share of occupations in total employment).

The segregation index at time t can be written as

$$S_t = (0.5) \sum_i |(q_{it} T_{it} / \sum_i q_{it} T_{it}) - (p_{it} T_{it} / \sum_i p_{it} T_{it})|$$

where p_{it} (q_{it}) is the percentage of women (men) in occupation i at time t . T_{it} is the total employment for occupation i at

time t . To study the changes in segregation between time periods 1 and 2, the decomposition can be carried out as follows:

$$\text{sex composition effect} = [(0.5) \sum_i |(q_{i2} T_{i1} / \sum_i q_{i2} T_{i1}) - (p_{i2} T_{i1} / \sum_i p_{i2} T_{i1})|] - S_1$$

$$\text{occupation mix effect} = S_2 - [(0.5) \sum_i |(q_{i2} T_{i1} / \sum_i q_{i2} T_{i1}) - (p_{i2} T_{i1} / \sum_i p_{i2} T_{i1})|].$$

² Duncan, Otis Dudley e Beverly Duncan. 1955. “A methodological analysis of segregation indexes.” *American Sociological Review*. Vol. 20, no. 2. p. 210–217.

³ Fuchs, Victor R. 1975. “A note on sex segregation in professional occupations.” *Explorations in Economic Research*. Vol. 2, no. 1. p. 105–111.

Applying the segregation index to the data we are considering and decomposing the two effects, we obtain the results shown in Table 6.

Table 6 - Sex segregation index of occupations and its decomposition 2011-2018

Segregation Index	
2011	50.6 %
2018	48.3 %
Variation	-2.3 p.p.
Decomposition	
Sex composition effect	-0.60 p.p.
Occupational mix effect	-1.68 p.p.

In 2011, 50.6% of employees would have to change occupation to achieve a balanced distribution of occupations between men and women. The intensity of segregation reduced between 2011 and 2018 since the index value decreased by 2.3 percentage points to 48.3%.

The decomposition of the variation shows that the contribution of the occupational mix effect was responsible for 73% of the verified reduction. This means that desegregation resulting from less traditional professional options of men and/or women was responsible for only 27% of the verified change.

Project

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