WAGE GAP BY GENDER: PUERTO RICO AND OTHER COUNTRIES

By

Angel L. Ruiz
Professor
School of Economics
Metropolitan Campus
Inter American University of Puerto Rico

Angel Rivera
Assistant Professor
Faculty of Business Administration
Río Piedras Campus
University of Puerto Rico

INTRODUCTION

The main objective of this article is to analyse the trends in mean wage by gender and to establish if in Puerto Rico, as in many countries, there exists a gender wage gap. The main source of data was the Census of Population of Puerto Rico.

In most countries there is a wage differential between men and women. Although in the last 40 years this gap has been closing, it is still persistent. Some explanations have been offered for these phenomena that range from cultural factors to plain discrimination. For example, in the United States wage gaps have been closing substantially between men and women, since the passing of the 1963 Equal Pay Act1, but there is still a significant gap that cannot be explained away by differences in experience between male and female workers in the labour market, and by the characteristics in the nature of the jobs undertaken.

After maintaining around a 60% gender pay ratio from half of the 1950 decade to 1960, the median proportion of wages received by women, to those received by men started to increase in the last years of 1960 to 1970 and achieved nearly a 70% ratio in 1990. For 1997, the gender pay ratio increased to 75%. However, for the last four decades, the gender wag gap

[1] In 1963 President Kennedy signed the "Equal Pay Act" and passed it as law. It made illegal unequal payment between men and women in the same workplace for substantially similar positions.

(GWG) has been declining. The increase of accumulated experience and learning achieved by women in the labour force and their movement toward higher paid occupations, have played a very important role in the increase of their mean wage, compared to males. Changes in family status, in industrial structure and collective bargaining have also been significant factors in the reduction of the GWG. In spite of a decrease in the wage gap, there still persists a gap that remains without explanation. Many scholars in the field attribute this gap to plain and simple sex discrimination in the job market. The evidence points that discrimination still exists in the labour market, although it is very difficult to determine with precision how much the difference in the ratio of female wage to male wage can be explained by discrimination and how much can be explained by differences in choices and preferences of males and females. The unexplained difference in the gap can be an indirect and crude measure of said discrimination gap. Some studies have tried a direct measure of this factor, assessing the pay differences between the sexes for similar tasks or jobs or comparing pay with specific productivity measures. These studies point towards a consistent evidence for discrimination in the labour market and support the conclusion that women still face a differential treatment in the jobs undertaken. Gender discrimination in the labour force can take many forms, ranging from practices that diminish women's' opportunities to be hired to pay differentials for both sexes working side by side, performing the same tasks and equally well.

There is a great variety of theories about how and why women face discrimination in the labour force. A particular employer dislikes female employees or underestimates their skills; customers from a particular business dislike female employees and their male co-workers can resent and resist working alongside them. These attitudes may not be directed towards all female employees, but probably towards women in power positions. For example, male workers may not object to have female co-workers but they do object those on a higher hierarchical level, as their superiors. Also, many employers can incur in what is known as statistical discrimination that means that they suppose that an individual female has the same characteristics as the average of all women. For example, women on average have a highest job turnover rate, compared to men, so employers suppose that a specific female job candidate has a higher probability of leaving the firm than a male candidate. Statistical discrimination is illegal, as all other forms in most countries. It is required from an employer, to base all pay and hiring

decisions, on specific information about an individual candidate and based on gender based presumptions.

The wage gap: a global phenomenon

European Union and the United States

As discussed before, the phenomena of the gender wage gap (GWG) is universal. A brief overview of the existing literature on selected countries will be enough to support the assumption of the universal prevalence of these phenomena. On October 8, 2002 Eurostat and the Commission's DG Employment and Social Policy Affairs published an extensive research2. This research exposed numerous statistics about gender differentials, including incomes and presence in managerial posts. One of the findings of this repost is that Germany is the member state with the highest gender wage gap, in both the public and the private sectors. In 1998, mean hourly income for women were 77% compared to men in the private sector and 73% in the German private sector. This compares unfavourably with that existing gap for the European Union, where that gap is 87% and 82% in the public and private sector, respectively. In the case of Germany, the study points that he probability that a German woman achieves a managerial position is only 50% compared to men. In the year 2006, 6.4% of employed males were classified as company managers, but only 3% were females. The mean for the European Union is 10.15% and 5.7%, respectively. The wage gap is not restricted to some countries inside the European Union, but is persistent for all member countries of the Union. The same report provides statistical information related to employment by gender for the European Union. One of the most striking data shown in the study is that, as in Germany, the gender wage gap in the Union is highly significant since mean hourly wage for women is 87% that for men in the public sector and 82% in the private sector. Throughout the Union, men are employed with double probability than women, to fill a managerial position. In total, 10.1% of men were employed in what is considered managerial occupations, compared to women in the year 2000. The widest difference in the percentage of male and female managers is in the Netherlands (16.1% for men and 7.3% for women), Denmark (10.3% for men compared to 3.7% for women) and Finland (13% for men compared to 5% for women). The following Table 1, taken from the

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2 Commission's DG Employment and Social Policy Affairs, The Life of Women and Men in Europe, October 2002.

fore mentioned study, shows the GWG for the European Union members. Table 2 depict the differential in managerial positions, by gender.

Table 1

Female Average Income Per Hour, Private and Public Sectors as Percentage of Male Income

	Public Sector	Privante Sector
Countries	(%)	(%)
European Union	87.0	82.0
Austria	92.0	76.0
Belgium	92.0	88.0
Denmark	97.0	92.0
Finland	83.0	85.0
France	89.0	84.0
Germany	77.0	73.0
Greece	91.0	79.0
Ireland	90.0	82.0
Italia	101.0	89.0
Luxemburg	NA	NA
Netherland	79.0	81.0
Portugal	108.0	79.0
Spain	93.0	83.0
Sweden	NA	NA
United Kingdom	83.0	85.0

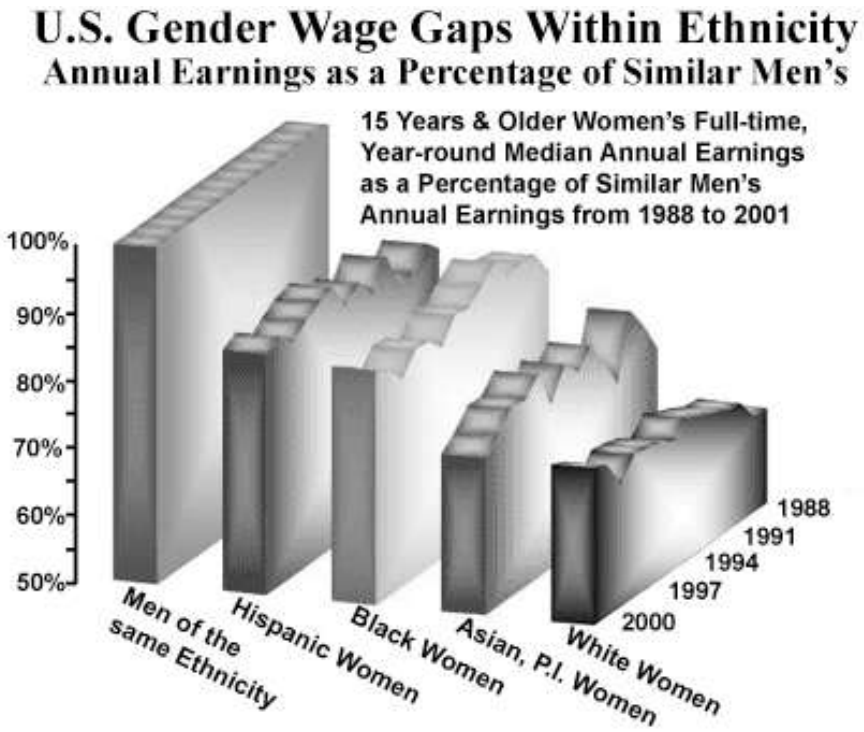
Table 2

Percentage of Male and Female Employment in Managerial Occupations (as % total number of employees)

	Managerial Occupations Total	
	Male	Female
Countries	(%)	(%)
European Union	10.1	5.7
Austria	9.7	5.4
Belgium	11.8	7.6
Denmark	10.3	3.7
Finland	13.0	5.0
France	10.6	6.0
Germany	6.4	3.0
Greece	12.1	6.8
Ireland	12.6	9.6
Italia	3.7	1.3
Luxemburg	7.5	4.3
Netherland	16.1	7.3
Portugal	8.2	4.6
Spain	9.1	6.8
Sweden	6.2	2.8
United Kingdom	18.4	11.0

As in the case for the United States, as already explained, after maintaining this differential around 60% from half of the 1950 decade to 1960, the proportion of the median wage earned by women compared to men (gender pay ratio) started to increase during the last years of 1960 to 1970 and achieved 70% by 1990. In 1997, the ratio increased to 75%. A study realized by the Council of Economic Advisers already mentioned, presented some interesting ethnic based data. According to this study, the wage gap decreased substantially at a faster rate for younger women than for married women with children. The data allows for desegregation by demographic groups, showing that the total pay ratio of females to males increased from 57% in 1969, to 68% in 1996 (the last year published for this study). By contrast, for women under forty years, the gender pay ratio increased from 58% in 1969 to 74% in 1996. Regarding married women with children, the GPR (related to all male workers) increased from 53% in 1969 to 68% in 1996. Related to total male wages, the wage gains for non-Hispanic white and black women have been faster than the same for Hispanic women. It is of interest to reproduce a graph that shows the ethnic relationships that appear in this study.

Figure 1



Wage gaps in other countries

Spain

In a published report of the European Observatory of Labour Relations (EOLR), evidence has been found concerning the wage gap in Spain. According to this report, in general terms, there is a general agreement about the discriminatory status afflicting Spanish women in the labour force. Any of the items usually used to measure the labour situation of people, is negative concerning women. Females have less presence in the labour force, they experience greater levels of unemployment, are over-represented in temporary jobs and earn inferior wages to those earned by males. In this last aspect, however, is a matter of measuring the causes and magnitude that explain these wage differentials. Different researches undertaken starting form this statistical base, show a significant gender wage gap. Mean female salary can range, according to these studies, between 33% and 25% under the mean male wage. It is interesting to emphasise that this inequality persists over a long time; since this magnitude is maintained for different researches realized based on different information sources. For studies based on information with public sector wages, it has been proven that, given that wage inequalities in the public sector is smaller than in the private sector (differences range from 13% to 15%), the weight of this sector is not enough to reduce substantially the size of the total differentials.

Latin America

In a study made for the Inter American Development Bank (IDB) Ugo Panizza analysed the gender wage gap for a group of Latin American countries.3 According to the data, Latin American women earn, on average, 30% less than men with similar skills. Greater still is the fact that there are no differences across these countries in the private sector wage gap. The study points out that almost every country studied (with the exception of Nicaragua) has a high gender wage gap that range between 20% (Colombia) to 43% in Honduras. The situation is different when applied to the public sector. Related to this sector, it is revealed that a high gap (up to 36%) exists and highly significantly gaps for countries like Bolivia, Brazil, Costa Rica, Chile, Colombia, Panama, Uruguay and Venezuela. Other eight countries included in the study show smaller gaps in the public sector, amongst them El Salvador, Guatemala, Honduras,

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3 Ugo Panizza, The Public Sector Premium and the Gender Gap in Latin America: Evidence for the 1980s and 1990s. Inter American Development Bank, Working Paper 3 431, August 2000.

Nicaragua and the Dominican Republic. In summary, the study finds that the wage gap in the private sector is substantially greater than in the public sector. More than half of this differential is explained by the lack of access for women to the formal sector of the economy.

Japan

In Japan, as the same for other developed economies, there is also a gender wage gap and in this case, is quite significant. In the year 2001, the Ministry of Health, Human Resources and Welfare established a committee to study the gender wage gap, the main causes behind this and the possible measures to reduce the existing gap. In 2002, the committee submitted a report and one of the main points was the following:

"In terms of the gender wage gap in Japan, it was found that if wages earned by male employees were set as 100%, women earned 65.3% (in 2001) of male wages. Although there is a diminishing trend of this gap, the existing one is substantial from an international perspective."4

Canada

A very recent Canadian study 5 reveals a persistent existence of a gender wage gap that in average can be estimated around 17.1%. However, this gap has been decreasing. In 1961 the gap was around 46%, for 1991 it was reduced to a 32.3%, a 30% decrease. According to these authors: "the most precise measure of the GWG is the one based on the hourly wage rate for full-time workers. This shows a GWG of 17.1% for 1997-1998." In another paper Marie Drolet, using a measure based on hourly wages, finds that the hourly female-male wage rate is greater between younger workers (85%). According to this author, the wage gap in Canada is smaller for unionised workers and college graduates.6

Russia

Women in Russia have been and are still way behind their male counterparts concerning wages. The gender wage gap has widened in the last years instead of reducing like in the rest of European countries. Whilst in the 1980's female wages were an average 70% of those earned

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4 The report can be accessed thru the Internet.

5 Nicole M. Fortín y Michael Huberman, Occupational Gender Segregation and Women's Wage in Canada: An Historical Perspective, Centre Interuniversitaire de Recherche en Analyse des Organisations (CIRANO) Montreal, March 2002

6 Marie Drolet, The Persistent Gap: New Evidence on the Canadian Gender Wage Gap, Statistic Canada No. 157, 2001

by males, by the end of 1999 the ratio was reduced to 52%. Most women work for the public sector in the national economy. According to Elena Mezentseva: "in the social services, that is the sector that employs around 65 to 80% of women, the wage level is less than 60% of the minimum subsistence level and represents nearly 60-70% of the national mean".7

The Gender Wage Gap in Puerto Rico

The Census of Population in Puerto Rico published by the Federal Bureau of the Census, contain a vast volume of detailed statistics such as mean incomes by gender, aggregated as well as by occupation and by wage scales. In this part of this research, these data were analysed with the objective of answering the following questions: a) Is there a gender wage gap in Puerto Rico?, b) if data analysis proves that there is a GWG, how big is the magnitude at an aggregated level and by main occupational group?, and c) if a GWG exists, how has it behaved using the Census data from 1960 to the year 2000?

An extensive literary survey shows that there are no formal studies of this subject in Puerto Rico, at least at the level of detail included in the present research.8

Gender Wage Gap in Puerto Rico: the Macro Level

Analysed data answers our first question above in the affirmative. Table 3 below summarises the median income by gender and shows an estimation of the GWG[9]

Table 3
Median Income, Puerto Rico, Census Years, 1960, 1980 y 2000

Año	Male Income (dollars)	Female Income (dollars)	Percentage of Female Income From Male Income	Wage Gap by Gender
1960	1,105	943	85.35	14.65%
1980	7,847	6,550	83.47	16.53%
2000	19,385	17,061	87.96	12.04%

7 Elena Mezentseva ...s? (Available thru the Internet). Also refer ...ferentials in Eastern Europe and the Former Sov

8 Although data cor ...upational groups, data for the year 2000 are presented for more than 500 occupations in the Statistical Appendix and these constitute an original contribution to this research.

9 The wage gap is measured by dividing the median female income by the median male income.

As can be appreciated the GWG increased from 1960 to 1980 but decreased from 1980 to 2000. The gap compares favourably with the existing ones in the United States and European countries. For example, the median female income respect to male income for the European Union is 82% (an 18% gap) at the beginning of de 2000 decade. The GWG in countries such as Austria, Germany, Greece and Portugal is wider than in Puerto Rico (refer to Table 1).

Wage gap by main occupational group

Analysis by occupational groups and wages are the medullar parts of this research and one of the main contributions as well. A greater part of the literature around this subject, include this kind of analysis. To measure the gap it is necessary to estimate the median income or the mean income for men and women for each occupation. In this case, both measures are used due to data incompatibility published in different Census. From 1960 to 1980 the median income is used because the 1960 Census does not include the mean income estimates. From 1980 to 2000, the mean income is used because the median income was not available for the 2000 Census, but the mean income was available. Therefore, the analysis is divided in two periods, 1960 to 1980 using the median income and 1980 to 2000 using the mean income. This really does not bias the results.

This section also offers estimations by main occupational groups, although in the case of professional occupational categories there has been some desegregation. The Statistical Appendix of this work offers estimated of mean income and wage gap for more than 400 occupations for the year 2000.

Period from 1960 to 1980

This part of the study offers an analysis of the wage gap by gender and occupation during the period of 1960 to 1980, using the median income as published by the Census of

Population in the volume of statistical details. Table 4 shows the median income for men and women for census years of 1960, 1970 and 1980 and Table 5 shows the GWG for the same years.

Table 4
Median Income by Occupation and Gender, Censuses of 1960, 1970 Y 1980

	1960		1970		1980	
OCCUPATIONS	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Excecutive, Administrative & Managerial Occupations	**2,280**	**1,809**	**5,508**	**4,085**	**11,283**	**8,586**
Professional Specialty Occupations	**3,332**	**2,138**	**6,034**	**4,357**	**9,542**	**7,528**
Accountants and Auditors	3,789	2,667	7,110	4,580	10,887	8,575
Writers, Artists & Entretaniners	3,500	2,800	4,721	4,181	6,869	6,255
Religious Workers	1,663	915	3,588	2,153	6,133	3,565
Lawyers and Judges	8,460	5,076	10,000	6,000	19,605	12,354
Engineers	4,407	1,542	10,000	4,000	16,861	6,927
Electrical & Electronic Engineers	7,267	2,543	10,000	3,800	17,137	6,857
Mechanical Engineers	7,209	2,667	10,000	3,800	17,534	6,938
Physicians and Surgeons	7,903	3,556	10,000	4,700	23,726	11,579
Dentists	7,984	2,954	10,000	3,900	24,775	10,091
Pharmacists	3,543	2,657	7,898	6,318	11,430	9,521
Teachers	2,162	2,153	4,894	4,735	8,197	7,611
Surveying and Mapping Scientists	3,504	3,434	4,734	4,687	7,220	11,000
Technicians & Related Support Occupations	**2,781**	**1,917**	**6,068**	**4,292**	**8,221**	**6,455**
Sales workers	**1,305**	**987**	**2,980**	**2,158**	**6,377**	**4,450**
Administrative Support Occupations						
Secretaries, Administrative Assistants and other office workers	**2,080**	**1,843**	**3,715**	**3,141**	**6,681**	**5,990**
Service Occupations	**1,272**	**749**	**2,695**	**1,805**	**5,028**	**3,525**
Service Occupations, Except domestic	1,272	749	2,695	1,805	4,508	3,621
Domestic Service Occupations	394	339	1,088	766	3,222	1,743
Farming, Forestry, and Fishing Occupations	**554**	**573**	**1,099**	**1,076**	**2,203**	**2,191**
Farm Operators and Managers	667	891	1,283	1,167	2,436	2,750
Farm Occupations Except Managerial	440	254	**915**	**985**	2,009	2,157
Precision Production, Craft and Repair Occupations	**1,492**	**1,721**	**2,936**	**2,621**	**5,468**	**5,449**
Operators	1,328	923	2,658	2,192	4,641	4,776
Repair Occupations	1,782	1,337	3,279	2,689	6,064	5,900
Automobile Mechanic & Repairmen (including body)	1,545	1,004	2,804	1,963	4,610	3,403
Other Mechanics and Repairers	2,058	1,544	3,561	2,849	7,031	6,104
Transportation Equipment Operators	1,423	1,138	2,622	2,257	4,574	3,526
Laborers, Except Farm workers	**901**	**638**	**2,003**	**2,056**	**4,337**	**4,173**
Workers in Cleaning Services and Other Laborers	**1,071**	**899**	**2,695**	**1,837**	**4,426**	**3,486**
Construction and Other Related workers	**862**	**629**	**1,939**	**1,454**	**3,388**	**2,659**

With the table above, the GWG can be estimated. This gap can be interpreted in two ways: (1) as the percentage of female median income respect to the male median income or (2) subtracting to 100% (equalling both) the percentage that constitutes the median female income. Both methods are included in Table 5, which represents the wage gap existing between the median female income and the median male income. Analysis of Tables 4 and 5 (period 1960 to 1980) conveys the most important findings:

Table 5
Wage Gap by Occupation and Gender, Census data, Estimates Based on Median Income

	1960		1970		1980	
OCCUPATIONS	Female Employment as Percentage of Male	Wage Gap	Female Employment as Percentage of Male	Wage Gap	Female Employment as Percentage of Male	Wage Gap
Excecutive, Administrative & Managerial Occupations	**79.3%**	**20.7%**	**74.2%**	**25.8%**	**76.1%**	**23.9%**
Professional Specialty Occupations	**64.2%**	**35.8%**	**72.2%**	**27.8%**	**78.9%**	**21.1%**
Accountants and Auditors	70.4%	29.6%	64.4%	35.6%	78.8%	21.2%
Writers, Artists & Entretaniners	80.0%	20.0%	88.6%	11.4%	91.1%	8.9%
Religious Workers	55.0%	45.0%	60.0%	40.0%	58.1%	41.9%
Lawyers and Judges	60.0%	40.0%	60.0%	40.0%	63.0%	37.0%
Engineers	35.0%	65.0%	40.0%	60.0%	41.1%	58.9%
Electrical & Electronic Engineers	35.0%	65.0%	38.0%	62.0%	40.0%	60.0%
Mechanical Engineers	37.0%	63.0%	38.0%	62.0%	39.6%	60.4%
Physicians and Surgeons	45.0%	55.0%	47.0%	53.0%	48.8%	51.2%
Dentists	37.0%	63.0%	39.0%	61.0%	40.7%	59.3%
Pharmacists	75.0%	25.0%	80.0%	20.0%	83.3%	16.7%
Teachers	99.6%	0.4%	96.7%	3.3%	92.9%	7.1%
Surveying and Mapping Scientists	98.0%	2.0%	99.0%	1.0%	152.4%	-52.4%
Technicians & Related Support Occupations	**68.9%**	**31.1%**	**70.7%**	**29.3%**	**78.5%**	**21.5%**
Sales workers	**75.6%**	**24.4%**	**72.4%**	**27.6%**	**69.8%**	**30.2%**
Secretaries, Administrative Assistants and other office workers	**88.6%**	**11.4%**	**84.5%**	**15.5%**	**89.7%**	**10.3%**
Service Occupations	**58.9%**	**41.1%**	**67.0%**	**33.0%**	**70.1%**	**29.9%**
Service Occupations, Except domestic	58.9%	41.1%	67.0%	33.0%	80.3%	19.7%
Domestic Service Occupations	86.0%	14.0%	70.4%	29.6%	54.1%	45.9%
Farming, Forestry, and Fishing Occupations	**103.4%**	**-3.4%**	**97.9%**	**2.1%**	**99.5%**	**0.5%**
Farm Operators and Managers	133.6%	-33.6%	91.0%	9.0%	112.9%	-12.9%
Farm Occupations Except Managerial	57.7%	42.3%	107.7%	-7.7%	107.4%	-7.4%
Precision Production, Craft and Repair Occupations	**115.3%**	**-15.3%**	**89.3%**	**10.7%**	**99.7%**	**0.3%**
Operators	69.5%	30.5%	82.5%	17.5%	102.9%	-2.9%
Repair Occupations	75.0%	25.0%	82.0%	18.0%	97.3%	2.7%
Automobile Mechanic & Repairmen (including body)	65.0%	35.0%	70.0%	30.0%	73.8%	26.2%
Other Mechanics and Repairers	75.0%	25.0%	80.0%	20.0%	86.8%	13.2%
Transportation Equipment Operators	80.0%	20.0%	86.1%	13.9%	77.1%	22.9%
Laborers, Except Farm workers	**70.8%**	**29.2%**	**102.6%**	**-2.6%**	**96.2%**	**3.8%**
Workers in Cleaning Services and Other Laborers	**83.9%**	**16.1%**	**68.2%**	**31.8%**	**78.8%**	**21.2%**
Construction and Other Related workers	**73.0%**	**27.0%**	**75.0%**	**25.0%**	**78.5%**	**21.5%**

For the period of 1960 to 1980 median income increases in practically all main occupational groups for both genders. Although the gender wage gap decreases by the year 1980, it still remains significant. For example, from 1960 to 1980, professional occupational categories registered a median income increase from $3,332 to $9,542 for male workers and $2,138 to $7,528 for female workers. On the other hand the wage gap in this occupational category was 35.8% in 1960, decreasing to 21.1% in 1980. This latter gap is still considerably high.

In professional occupational categories, the widest gap in terms of median income is shown for engineers. The wage gap in 1980 for this occupation was 59.8%, a huge one considering the social and economic transformation undergone by the Island from 1950 to 1980. Tables 15 and 16 show that in professional categories, occupations like lawyers and judges, doctors and dentists have the highest median income. But for 1980, the wage gap for these occupations remained at high levels.

There are some occupational groups where the wage gap is low and others where this gap is negative, the latter meaning that female median income is higher than for male workers. However, these occupations have an overall low median income and some of them can be classified as low categories. Amongst them can be listed artisans, forepersons and analogous, agricultural jobs, less skilled workers except those in farms, repairers, teachers and land surveyors.

Similar to a great number of countries the GWG in occupations such as executives and administrators remained high, at least until 1980. Furthermore, for these occupations the wage gap increased from 20.7% in 1960 to 23.9% in 1980.

The main conclusion derived from the 1960 to 1980 data is that, in spite that the GWG decreased by 1980, it remained quite high and the most significant, and perhaps contrary to expectations, the widest gap in professional occupations were registered in such professions as lawyers, judges, doctors and dentists.

Period from 1980 to 2000.

This research present, for the first time, the GWG for the year 2000. This gap is estimated using the mean income instead of the median income because no median data was available for that year. Then a comparison was made between this year and the year 1980, because median income data was also available for that year, as well as mean income by gender and occupational groups.

Tables 6 and 7 show the estimates of mean income and the wage gap for that period.

TABLA 6

Average Income by Gender, Puerto Rico, Censuses of 1980 Y 2000.

	1980		2000	
	Male	Female	Male	Female
Excecutive, Administrative & Managerial Occupations	**14,162**	**9,124**	**30,352**	**24,678**
Professional Specialty Occupations	**14,296**	**7,799**	**28,346**	**20,041**
Accountants and Auditors	12,186	9,007	23,293	19,116
Writers, Artists & Entretaniners	8,928	7,505	15,956	11,844
Religious Workers	6,236	4,558	16,390	9,776
Lawyers and Judges	26,198	13,085	48,456	37,738
Engineers	18,431	8,940	39,804	28,596
Electrical & Electronic Engineers	18,379	7,678	42,647	28,661
Mechanical Engineers	18,398	9,102	37,494	21,250
Physicians and Surgeons	31,696	15,284	43,548	35,406
Dentists	29,079	13,318	25,384	25,064
Pharmacists	14,775	9,993	35,204	21,779
Teachers	9,083	7,567	16,250	10,630
Surveying and Mapping Scientists	7,829	10,585	22,106	22,250
Technicians & Related Support Occupations	**9,584**	**6,864**	**19,347**	**16,376**
Sales workers	**8,533**	**4,916**	**17,647**	**12,543**
Administrative Support Occupations				
Secretaries, Administrative Assistants and other office workers	**7,837**	**6,123**	**16,556**	**12,331**
Service Occupations	**5,428**	**3,690**	**11,693**	**9,130**
Service Occupations, Except domestic	**4,903**	**3,766**	**10,562**	**9,318**
Domestic Service Occupations	**3,278**	**2,280**	**7,062**	**5,641**
Farming, Forestry, and Fishing Occupations	**3,356**	**3,045**	**10,734**	**9,043**
Farm Operators and Managers	6,320	3,558	7,931	4,849
Farm Occupations Except Managerial	2,625	2,878	4,806	3,416
Precision Production, Craft and Repair Occupations	**6,474**	**5,556**	**15,373**	**12,068**
Operators	**5,095**	**4,543**	**9,987**	**7,790**
Repair Occupations	6,653	5,925	15,373	12,068
Automobile Mechanic & Repairmen (including body)	5,186	4,407	12,768	8,047
Other Mechanics and Repairers	7,598	6,209	22,458	12,591
Transportation Equipment Operators	5,181	3,631	13,342	9,167
Laborers, Except Farm workers	4,608	4,032	9,296	5,222
Workers in Cleaning Services and Other Laborers	4,601	3,475	10,280	7,534
Construction and Other Related workers	3,641	2,873	6,643	4,137

The wage gap is estimated using data from Table 6 and is shown in Table 7 below:

Table 7

Wage Gap by Occupation and Gender, Census data, Estimates Based on Average Income

	1980		2000	
	Female Employment as Percentage of Male	Wage Gap	Female Employment as Percentage of Male	Wage Gap
Excecutive, Administrative & Managerial Occupations	**64.4%**	**35.6%**	**81.3%**	**18.7%**
Professional Specialty Occupations	**54.6%**	**45.4%**	**70.7%**	**29.3%**
Accountants and Auditors	73.9%	26.1%	82.1%	17.9%
Writers, Artists & Entretaniners	84.1%	15.9%	74.2%	25.8%
Religious Workers	73.1%	26.9%	59.6%	40.4%
Lawyers and Judges	49.9%	50.1%	77.9%	22.1%
Engineers	48.5%	51.5%	71.8%	28.2%
Electrical & Electronic Engineers	41.8%	58.2%	67.2%	32.8%
Mechanical Engineers	49.5%	50.5%	56.7%	43.3%
Physicians and Surgeons	48.2%	51.8%	81.3%	18.7%
Dentists	45.8%	54.2%	98.7%	1.3%
Pharmacists	67.6%	32.4%	61.9%	38.1%
Teachers	83.3%	16.7%	65.4%	34.6%
Surveying and Mapping Scientists	135.2%	-35.2%	100.6%	-0.6%
Technicians & Related Support Occupations	**71.6%**	**28.4%**	**84.6%**	**15.4%**
Sales workers	**57.6%**	**42.4%**	**71.1%**	**28.9%**
Administrative Support Occupations				
Secretaries, Administrative Assistants and other office workers	**78.1%**	**21.9%**	**74.5%**	**25.5%**
Service Occupations	**68.0%**	**32.0%**	**78.1%**	**21.9%**
Service Occupations, Except domestic	76.8%	23.2%	88.2%	11.8%
Domestic Service Occupations	69.6%	30.4%	79.9%	20.1%
Farming, Forestry, and Fishing Occupations	**90.7%**	**9.3%**	**84.2%**	**15.8%**
Farm Operators and Managers	56.3%	43.7%	61.1%	38.9%
Farm Occupations Except Managerial	109.6%	-9.6%	71.1%	28.9%
Precision Production, Craft and Repair Occupations	**85.8%**	**14.2%**	**78.5%**	**21.5%**
Operators	**89.2%**	**10.8%**	**78.0%**	**22.0%**
Repair Occupations	89.1%	10.9%	78.5%	21.5%
Automobile Mechanic & Repairmen (including body)	85.0%	15.0%	63.0%	37.0%
Other Mechanics and Repairers	81.7%	18.3%	56.1%	43.9%
Transportation Equipment Operators	70.1%	29.9%	68.7%	31.3%
Laborers, Except Farm workers	87.5%	12.5%	56.2%	43.8%
Workers in Cleaning Services and Other Laborers	75.5%	24.5%	73.3%	26.7%
Construction and Other Related workers	78.9%	21.1%	62.3%	37.7%

An analysis from Tables 6 and 7 demonstrates that from 1980 to 2000 the GWG decreased for occupational categories as professionals, executives, technical assistance, sellers and services. The majority of employees in these occupational categories have post-secondary academic education. However, it should be emphasised that the GWG is still noticeable. For example, in the category of professionals, female mean income was 70.7% that of males, that is a wage gap of 29.3% for the year 2000. The wage gap was 45.4% for the year 1980 in this occupational category, decreasing by 16.1% in a 20 year period.

In the professional categories there are occupations where the GWG between male mean incomes related to that for females is substantial until the year 2000. For example, amongst

others: teachers (whose wage gap increased from 1980 to 2000), engineers, pharmacists, lawyers and judges.

The tables also show occupations where the GWG increased from 1980 to 2000. Some of these are administrative assistant, agricultural occupation, artisans, forepersons and analogous, operators and mechanics.

In summary, still by the year 2000, the GWG is relatively high when compared to other countries such as the United States, Canada and the member countries of the European Union. As already mentioned, evidence points towards a certain degree of discrimination in the labour market, persistent for the periods covered in this research, although this gap has been consistently decreasing.

However, this gap still remains for the year 2000, but it is difficult to precisely determine how much of that GWG is explained by plain discrimination and how much can be explained by choices and preferences made by males and females. The unexplained difference in the gap due to cultural factors and the occupational preferences of women can be an indirect, but somewhat crude of the said gap due to discrimination. Some studies have tried to directly measure this factor by observing the pay difference between the genders for performing similar tasks or jobs or comparing pay with specific productivity measures. These studies have consistent findings of discrimination in the labour market and favour the conclusion that women still face a differential treatment for the jobs performed.

Employment by industry and gender

It is important to review employment by industry and gender to partially clarify the reason for a marked gender wage gap. The data can throw some light on the question if the industries where the highest proportion of female jobs have any relationship with the wage gap. In the United States, for example, the most recent and detailed longitudinal research showed that for the last years of the 1980-1990 decade, around one third of the GWG can be explained by the differences in skills and experiences brought by women to the labour market and 28% was explained by the difference in industry and occupations chosen by women. Another

example is set in another study undertaken in six European countries that found that there are substantial differentials in intra-industry wages by gender.10

Employment by industry and gender in Puerto Rico

This section presents data for employment by industry and gender as estimated by the United States Bureau of the Census.11 Table 8 presents employment by industry and gender selected for the years 1950 and 2000, as published by the Bureau of the Census. A major detail is available in the Statistical Appendix of this work. Table 9 shows the employment percentage for women and men for each industrial sector and Table 10 shows the percentage of male and female employment in each industry.

TABLE8
EMPLOYMENT BY GENDER AND INDUSTRY, PUERTO RICO,CENSUS YEARS 1950 Y 2000

	1950			2000			Cambio	Absoluto
Industrial Sector	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Agriculture	212,079	3,904	215,983	26,216	3,052	29,268	-185,863	-852
Mining and Construction	28,215	292	28,507	131,652	9,520	141,172	103,437	9,228
Manufacturing	40,932	51,607	92,539	115,113	90,456	205,569	74,181	38,849
Durable Goods	8,287	2,096	10,383	46,057	25,281	71,338	37,770	23,185
Non-Durable Goods	32,486	49,502	81,988	95,274	85,277	180,551	62,788	35,775
Transportation, Communications and								
Public Services	30,172	1,496	31,668	70,753	23,423	94,176	40,581	21,927
Trade	**58,708**	**9,531**	**68,239**	**66,044**	**15,708**	**81,752**	7,336	6,177
Finance, Insurance and Real Estate	2,508	991	3,499	26,574	36,947	63,521	24,066	35,956
Finance	1,088	625	1,713	12,919	20,804	33,723	11,831	20,179
Insurance	529	298	827	7,638	10,176	17,814	7,109	9,878
Real Estate	891	68	959	6,017	5,967	11,984	5,126	5,899
Personal Services	11,546	31,674	43,220	20,686	20,646	41,332	9,140	-11,028
Business Services	**225**	**51**	**276**	**34,497**	**23,434**	**57,931**	**34,272**	**23,383**
Repair Services	5,896	113	6,009	34,799	2,364	37,163	28,903	2,251
Amusement and Recreation	3,203	669	3,872	10,192	4,675	14,867	6,989	4,006
Professional Services	**11,761**	**22,614**	**34,375**	**41,960**	**96,636**	**138,596**	**30,199**	**74,022**
Health Services	4,438	6,969	11,407	35,984	89,208	125,192	**31,546**	**82,239**
Educational Services (Private)	**4,983**	**14,569**	**19,552**	**37,625**	**102,434**	**140,059**	**32,642**	**87,865**
Engineering and Alquitectural Services	169	24	193	5,665	1,785	7,450	5,496	1,761
Auditing and Accounting Services	215	46	261	2,777	2,494	5,271	2,562	2,448
Public Administration	**18,148**	**5,538**	**23,686**	**96,295**	**79,245**	**175,540**	**78,147**	**73,707**
Commonwealth Government	10,479	3,642	14,121	64,556	56,429	120,985	54,077	52,787
Municipal Government	1,721	418	2,139	19,637	19,339	38,976	17,916	18,921
Federal Government	5,948	1,478	7,426	12,102	3,477	15,579	6,154	1,999
TOTAL	429,944	143,689	573,633	800,085	609,078	1,409,163	370,141	465,389

Table 8 above shows a strong increase in female employment in professional service industries which include medical and educational services sectors. From 1950 to 2000, female employment increased by 82,239 in medical services industry and by 87,865 in educational and

10 Brenda Gannon, Robert Plasman, Francois Ryck y Ilan Tojerow, Inter-IndustryWage differentials and Gender Wage Gap:Evidence from European Countries, Discussion Paper No. 1563 (2005), IZA, Bonn, Germany

11 These data differs from those published by the Puerto Rico Department of Labor and Human Resources based on the Household and Business Surveys.

private services industries. Another sector showing a strong increase in female employment is in the sector of Public Administration and non-durable manufacturing goods. On the other hand, the sector for personal services point towards a strong decreasing trend, mainly due to a decrease in private domestic services. Another interesting fact from the table is the increase in female employment in commercial services sector in which only 51 women were employed in 1950 and the same increased to 23,383 for the year 2000. This sector includes publicity amongst others. Male employment showed its maximum increase in the manufacturing sectors. During the period of 1950, male employment increased by a mean annual rate of only 1.2% compared to 3% for female employment.

In which industries male and female employment tend to group? Table 9 show the percentage of employment for each industry related to total employment by gender. The data for this table shows that in the year 1950, the highest percentage of female employment was concentrated in manufacturing industries, especially non-durable goods (which include apparel and accessories), in personal services, professional services specifically in educational and medical services. Women had a very low participation in industries such as durable-goods manufacturing, finance, insurance and real estate, commercial services, whole sale and retail trade, accounting and auditing services, engineering and architectural services amongst others.

TABLE 9

PERCENT OF TOTAL EMPLOYMENT BY GENDER AND INDUSTRY, PUERTO RICO, CENSUS YEARS 1950 Y 2000

	1950			2000		
Industrial Sector	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Agriculture	49.33%	2.72%	37.65%	3.28%	0.50%	2.08%
Mining and Construction	6.56%	0.20%	4.97%	16.45%	1.56%	10.02%
Manufacturing	9.52%	35.92%	16.13%	14.39%	14.85%	14.59%
Durable Goods	1.93%	1.46%	1.81%	5.76%	4.15%	5.06%
Non-Durable Goods	7.56%	34.45%	14.29%	11.91%	14.00%	12.81%
Transportation, Communications and	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Public Services	7.02%	1.04%	5.52%	8.84%	3.85%	6.68%
Trade	13.65%	6.63%	11.90%	8.25%	2.58%	5.80%
Finance, Insurance and Real Estate	0.58%	0.69%	0.61%	3.32%	6.07%	4.51%
Finance	0.25%	0.43%	0.30%	1.61%	3.42%	2.39%
Insurance	0.12%	0.21%	0.14%	0.95%	1.67%	1.26%
Real Estate	0.21%	0.05%	0.17%	0.75%	0.98%	0.85%
Personal Services	2.69%	22.04%	7.53%	2.59%	3.39%	2.93%
Business Services	0.05%	0.04%	0.05%	4.31%	3.85%	4.11%
Repair Services	1.37%	0.08%	1.05%	4.35%	0.39%	2.64%
Amusement and Recreation	0.74%	0.47%	0.67%	1.27%	0.77%	1.06%
Professional Services	2.74%	15.74%	5.99%	5.24%	15.87%	9.84%
Health Services	1.03%	4.85%	1.99%	4.50%	14.65%	8.88%
Educational Services (Private)	1.16%	10.14%	3.41%	4.70%	16.82%	9.94%
Engineering and Alquitectural Services	0.04%	0.02%	0.03%	0.71%	0.29%	0.53%
Auditing and Accounting Services	0.05%	0.03%	0.05%	0.35%	0.41%	0.37%
Public Administration	4.22%	3.85%	4.13%	12.04%	13.01%	12.46%
Commonwealth Government	2.44%	2.53%	2.46%	8.07%	9.26%	8.59%
Municipal Government	0.40%	0.29%	0.37%	2.45%	3.18%	2.77%
Federal Government	1.38%	1.03%	1.29%	1.51%	0.57%	1.11%
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

For the year 2000 there is a significant change in the labour panorama. Female employment participation in manufacturing decreased from 35.9% in 1950 to 14.85% in the year 2000. The main cause of this is the loss of 19,561 jobs in apparel industry. In the service sectors a loss of 17,683 jobs in personal services was registered (which included domestic services) and in agriculture, there were 1,148 jobs lost. Likewise, female employment participation as percent of total women employed increased in industries such as educational services, finance and health services, public administration and professional services.
It is notorious the low percentage of women in trade, repair services, Federal Government, engineering and architectural services and entertainment services. For the year 2000, male employment is grouped around industries such as construction, manufacturing (albeit male employment in this sector decreased substantially), professional services and public administration.

Table 10 shows the male and female employment percentage of the total employment for each industry and how they have changed for the period of 1950 to 2000.

TABLE 10
PERCENT BY GENDER IN EACH INDUSTRY, PUERTO RICO, CENSUS YEARS 1950 Y 2000

	1950			2000		
Industrial Sector	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Agriculture	98.19%	1.81%	100.00%	89.57%	10.43%	100.00%
Mining and Construction	98.98%	1.02%	100.00%	93.26%	6.74%	100.00%
Manufacturing	44.23%	55.77%	100.00%	56.00%	44.00%	100.00%
Durable Goods	79.81%	20.19%	100.00%	64.56%	35.44%	100.00%
Non-Durable Goods	39.62%	60.38%	100.00%	52.77%	47.23%	100.00%
Transportation, Communications and						
Public Services	95.28%	4.72%	100.00%	75.13%	24.87%	100.00%
Trade	86.03%	13.97%	100.00%	80.79%	19.21%	100.00%
Finance, Insurance and Real Estate	71.68%	28.32%	100.00%	41.83%	58.17%	100.00%
Finance	63.51%	36.49%	100.00%	38.31%	61.69%	100.00%
Insurance	63.97%	36.03%	100.00%	42.88%	57.12%	100.00%
Real Estate	92.91%	7.09%	100.00%	50.21%	49.79%	100.00%
Personal Services	26.71%	73.29%	100.00%	50.05%	49.95%	100.00%
Business Services	81.52%	18.48%	100.00%	59.55%	40.45%	100.00%
Repair Services	98.12%	1.88%	100.00%	93.64%	6.36%	100.00%
Amusement and Recreation	82.72%	17.28%	100.00%	68.55%	31.45%	100.00%
Professional Services	34.21%	65.79%	100.00%	30.28%	69.72%	100.00%
Health Services	38.91%	61.09%	100.00%	28.74%	71.26%	100.00%
Educational Services (Private)	25.49%	74.51%	100.00%	26.86%	73.14%	100.00%
Engineering and Alquitectural Services	87.56%	12.44%	100.00%	76.04%	23.96%	100.00%
Auditing and Accounting Services	82.38%	17.62%	100.00%	52.68%	47.32%	100.00%
Public Administration	76.62%	23.38%	100.00%	54.86%	45.14%	100.00%
Commonwealth Government	74.21%	25.79%	100.00%	53.36%	46.64%	100.00%
Municipal Government	80.46%	19.54%	100.00%	50.38%	49.62%	100.00%
Federal Government	80.10%	19.90%	100.00%	77.68%	22.32%	100.00%

This table depicts significant data, since they offer a complete picture of how employment composition has changed by gender for each industry. In the first place, table analysis shows a strong increase in female presence in practically most industries. For example, in durable-goods industries, transportation, communications and public utilities, finance, insurance and real estate, public administration, recreation and entertainment, accounting and auditing services, amongst others.

Furthermore, the table also shows in which industry female employment is predominant. Amongst the most significant ones (for the year 2000) are finance, insurance and real estate industries, professional services (especially in medical services industries) and educational services. Female employment percentage is almost the same for male employment in industries such as public administration, accounting and auditing, manufacturing, personal services and trade.

The comparison of employment percentage by industry and gender with the median income by gender can throw some light on one of the possible causes of the gender wage gap. That is, the placement of female employment by industry can be one factor causing the GWG, moreover if female employment is grouped around sectors which already have a marked wage

gap and if on the other hand, where there is no concentration of female employment the wage gap is small or non-existent.

This study attempted to analyse this phenomenon, but the 2000 Census data could not be found in spite of the effort to retrieve the median income by industry and gender for that year. For the year 1980 data exists, albeit too aggregated. Table 11 presents comparative data.

TABLA 11
MEDIAN INCOME, WAGE GAP AND PERCENT OF EMPLOYMENT BY GENDER AND INDUSTRY, 1980 CENSUS

	Median Income		Wage	Percent of Employmentby Industry	
Industrial Sector	**Male**	**Female**	**Gap**	**Male**	**Female**
Agriculture	2,220	3,285	-47.97%	95.91%	4.09%
Mining and Construction	4,190	5,893	-40.64%	94.89%	5.11%
Manufacturing	**6,466**	**5,108**	**21.00%**	**56.68%**	**43.32%**
Durable Goods	**6,459**	**5,864**	9.21%	62.87%	37.13%
Non-Durable Goods	**6,459**	**4,859**	**24.77%**	**53.20%**	**46.80%**
Transportation, Communications and Public Services	6,879	8,252	-19.96%	85.14%	14.86%
Trade	6,407	5,326	16.87%	73.49%	26.51%
Finance, Insurance and Real Estate	**8,749**	**7,327**	**16.25%**	**57.54%**	**42.46%**
Finance	8,687	7,158	17.60%	56.17%	43.83%
Insurance and Real Estate	8,768	7,935	9.50%		
Business and Repair Services	**4,863**	**6,453**	-32.70%	77.68%	22.32%
Personal Services	**5,434**	**3,147**	**42.09%**	**53.37%**	**46.63%**
Amusement and Recreation	**4,070**	**3,613**	11.23%	78.14%	21.86%
Professional Services	**7,029**	**5,937**	**15.54%**	**34.69%**	**65.31%**
Health Services	**6,460**	**5,489**	**15.03%**	**35.74%**	**64.26%**
Educational Services Public)	**6,810**	**6,421**	**5.71%**	**29.08%**	**70.92%**
Educational Services (Private)	**5,795**	**4,438**	**23.42%**	**32.07%**	**67.93%**
Engineering, Legal and other Services	**14,977**	**6,732**	**55.05%**	**65.89%**	**34.11%**
Public Administration	6,045	5,652	6.50%	61.68%	38.32%

This table's analysis proves the hypothesis that for at least, the year 1980, those industries in which female employment prevails there is a marked gap and in some cases it can be substantial. Examples of these industries are non-durable manufactured goods, finance, personal services, medical services, educational services and other professional services. However, where there is not female employment concentration as percentage of each industry total, it can be appreciated that in the great majority of cases the wage gap is insignificant. These industries comprise sectors such as durable manufactured goods, transportation, communications and utilities (where the wage gap is biased in favour of women), construction, agriculture, trade and others. Only in public administration (excluding educational services) there is the smallest wage gap where a great concentration of female employment prevails (38%).

Summary and Conclusion

Gender wage gap analysis reveals the following facts:

In practically all countries there is a wage differential between female and male workers. Albeit the gap has been closing in the past 40 years, it still persistent. Various explanations for this behaviour have been offered ranging from cultural factors to plain discrimination.

As in the majority of these countries, there is a GWG in Puerto Rico. In the United States these gender wage gap has been closing since the passage into law of the Equal Pay Act in 1963, but there is still a significant differential that cannot be explained neither by differences in experience between genders in the labour market nor the characteristics of the tasks they perform.

The increase in accumulated experience of women in the labour market and their movement towards higher paid occupations, have played an important role in their mean wage increase compared to males.

Changes in family status, in industrial structure and collective bargaining have also contributed to close the GWG.

In spite of that the GWG has been closing there remain a persistent gap that defies explanation. Many scholars in this subject attribute this gap, of which there is no reasonable explanation, discrimination against the female gender in the labour market.

Evidence points towards existence of discrimination, although it is very difficult to determine precisely how much of the differential in female wage ratio to male wage ratio is caused by discrimination and how much is a matter of choices and preferences made by men and women. The unexplained difference in the gap can be an indirect and crude measure of discrimination.

In the case of Puerto Rico, the following questions were searched:

a) Is there a GWG in Puerto Rico?
b) If the data analysis reveals so, what is the magnitude at an aggregate level and by main occupational group?
c) If there is a gap, how has it behaved using the Census data from 1960 to 2000?

As the analysed data shows, the answer to the first questions is in the affirmative: there is a GWG in Puerto Rico. For the period 1960 to 2000 the median income for all main occupational groups increases for both men and women. However, whilst the wage gap decreases up to 1980, there still remains a significant one. Even in professional categories persists a significant wage gap. Inside these professional categories, engineers show the biggest median income gap. Professional categories for occupations such as lawyers, judges, doctors and dentists registered the highest median income. However for 1980, the wage gap for these professions remained extremely high. There are occupations with a small wage gap and others where the gap is negative, meaning that the female median income is higher than for their male counterparts. However, these occupations have a low median income and some of them can be classified as low category.

As in a great number of countries the GWG in occupational categories such as executives and administrators remained at high levels, at least until 1980.

The main conclusion derived from the 1960 to 1980 data is, albeit the wage gap has been closing, still by 1980 it remained quite high and more significantly still, and maybe opposite to that expected, the biggest gaps are found in professional occupations such as lawyers, judges, doctors and dentists.

From 1980 to 2000 the wage gap decreased for occupational categories of professionals, executives, technical assistance, sellers and service occupations. Most workers in these occupational categories have post-secondary academic education. However, it is important to emphasise that he wage gap is still wide.

Inside professional categories there exist occupations in which the wage gap of the female mean income compared to male mean income is substantial up to the year 2000. For example, mentioned amongst others are: teachers (whose wage gap increased from 1980 to 2000), engineers, pharmacists, lawyers and judges.

In summary, even in the year 2000 the gap between female mean wage and male mean wage remains relatively high when compared to other countries such as the United States, Canada and member countries of the European Union.

Related to the question whether the wage gap is caused by discrimination against women, results are inconclusive for Puerto Rico and elsewhere. Evidence revealed by local and international data, points toward a certain degree of discrimination in the labour market that has

been persistent for the time period covered by this research, although it can be observed that the gap has been closing. Up to the year 2000 there still a persistent gap, but it is very difficult to determine precisely how much of the difference in female to male pay ratio is explained by discrimination and how much by choices and preferences made by men and women. The unexplained differential in the gap can be due to cultural factors and occupational preferences selected by women and can be taken as an indirect but crude measure of discrimination.

It is important to identify employment by industry and gender to better understand, partially, the reason for a marked gender wage gap. The data can throw some light on the relationship between the placement of most female jobs in particular industries and the wage gap.

What does the result reveal?

The data reveal that there is a strong increase in female employment in professional service industries which include, amongst others, medical and educational services. For example, from 1950 to 2000, female employment increased by 82,239 in medical services and 87,865 in educational and private services. Other sectors with a strong female jobs increase were public administration and non-durable manufacturing goods. On the other hand, personal service sectors showed a strong decrease.

Data show the in the year 1950, the highest percentage of female employment were grouped in manufacturing industries, especially in non-durable goods industries (which include apparel and accessories), in personal services, professional services (especially educational and medical services). Women had a low participation industries such as durable goods manufacturing, finance, insurance and real estate, commercial services, wholesale and retail trade, accounting and auditing, engineering and architectural services, amongst others.

There is a significant change in panorama for the year 2000. Female employment participation in manufacturing decreased from 35.9% in 1950 to 14.85% in 2000. This is mainly caused by the loss of 19,561 jobs in apparel industries. In the personal service sector, 17.683 jobs are lost (which include domestic services) and in agriculture there is a loss of 1,148 jobs. On the other hand, female employment participation increased as a percentage of total employment in industries such as educational services, finance and health services.

A comparison of employment percentage by industry and gender with the median income by gender can help clarify one of the possible causes of the gender wage gap. That is, if female job placements around certain industries can be one cause of the GWG, especially if where these jobs tend to group there is already a wage gap. On the other hand, where there is no big concentration of female jobs, the wage gap is small or non-existent. This research tried to analyse this phenomena. However, the data for the 2000 Census were unavailable, in spite of the effort made to retrieve the median income by industry and gender.

Data analysis proves the hypothesis (at least for the year 1980) and presents the following: For the year 1980, data shows theta in those industries where female employment is concentrated, there is a market GWG and it can be substantial in some cases.
Where no female jobs concentration exists as a percentage of total industry employment, it can be observed that in most cases the wage gap is insignificant. However, based on the analysed data, there is inconclusive evidence that the GWG in Puerto Rico is caused by discrimination against women in the labour market or by a set of causes in which exist elements for discrimination. There may be other possible causes such as cultural factors, the industrial placement of female jobs, preferences for certain occupations that are not necessarily related to the highest mean income, a lower participation rate in the labour market, amongst others. This is a subject for further research.

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