

**EMPLOYMENT AND QUALITY OF LIFE OF WOMEN IN SPAIN:  
EVOLUTION FOR 1970-2020 AND INTERNATIONAL COMPARISONS**

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**Abstract:** We analyze the evolution of Female Employment by sector in Spain for the period 1970-2020, with particular focus on the effects of the financial crisis, since year 2007, on labor opportunities, real wages and female quality of life. We analyze the evolution in Spain compared to Germany, France, Italy, the United Kingdom and the United States for the period 1965-2018. We find that the crisis of 2007, together with the lack of enough economic policies of support to Spanish Industry, both from the European Union and from the Spanish Governments, has caused a diminution of real value-added of Industry per capita, and stagnation or deterioration of real wages, rates of employment and other indicators of quality of life. In year 2020, with the negative impact of the pandemia of Coronavirus on Tourism, the need to foster industrial development of Spain is of uppermost importance to increase Employment in Services, which are very important both for women, and men, and to favour better working conditions and quality of life. We analyse social visibility of relevant women who are outstanding in many fields of activity. We find gender gap in social visibility. Although there are yet many unfair situations, we may highlight several positive contributions that are helping to increase equality of opportunities for women.

Keywords: Employment, Quality of Life, Women, Spain, Gender gap, Industry

JEL Codes: C51, D6, E24, J21, N3, O52

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## **1. Introducción**

In Guisan, Aguayo and Exposito (2011) we analyzed employment, social participation and quality of life from a gender perspective in Europe until year 2008. Here we extended the analysis to the period 2008-2020.

The analysis of the evolution of women employment shows that industrial development is of uppermost importance because the great amount of indirect effects on the development of services sector which create many employments of interest per women, particularly in commercial and social services. In order to analyze the opportunities of employment for women, for the period 2021-2025, we must look at production by sector and the possibilities of increasing sustainable industrial development, with its positive effects of real value added and employment in services.

Section 2 analyzes Female Employment in Spain and other 5 OECD countries for 1960-2019. With particular reference to the Services sector.

Section 3 is devoted to show the positive impact of Industry, and other factors, to increase production and employment in Services, as well average real wages.

Section 4 analyzes the evolution of some indicators of quality of labour and quality of life, and Women initiatives to foster social and economic relevance of Female workers.

Section 5 presents a summary of conclusions.

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## 2. Employment by gender in Spain and other OECD countries

### 2.1. Female employment by sector in Spain

Table 1 shows Male and Female Employment in Spain, in 21 branches in year 2019, and graphs 1 and 2 show the evolution of Male and Female Employment for the period 1970-2019.

Table 1. Female and Male Employment in Spain: by sector en branch in year 2019.

Year 2019	Total	Male	Female	% Female
A Agriculture and Fishing	797.3	612.3	185.0	23.20
B Mining	32.6	28.4	4.2	12.88
C Manufacturing	2494.9	1813.7	681.2	27.30
D Electricity and gas	91.2	65.6	25.7	28.18
E Water and residuals	144.3	114.7	29.7	20.58
F Building	1277.9	1163.7	114.1	8.93
G Commerce and vehicles repair	3073.3	1563.0	1510.3	49.14
H Transport and Postal mail	1031.1	827.5	203.6	19.75
<b>I Hostelry</b>	1715.4	795.1	920.2	<b>53.64</b>
J Information and Communication	602.6	417.5	185.1	30.72
<b>K Finances and Insurances</b>	429.2	201.6	227.6	<b>53.03</b>
<b>L Real state activities</b>	154.3	71.3	83.0	<b>53.79</b>
<b>M Profesional, technical ans scientific</b>	1022.4	511.3	511.2	<b>50.00</b>
<b>N Administrative and auxiliary services</b>	1030.5	474.0	556.5	<b>54.00</b>
O Public Administration	1346.1	759.5	586.6	43.58
<b>P Education</b>	1373.6	454.5	919.1	<b>66.91</b>
<b>Q Health and Social services</b>	1681.2	396.9	1284.3	<b>76.39</b>
R Artistic and recreational activities	405.2	243.0	162.2	40.03
<b>S Other Services</b>	477.8	157.7	320.1	<b>66.99</b>
<b>T Domestic Services</b>	595.2	72.9	522.3	<b>87.75</b>
U Services in extraterritorial units	3.1	1.6	1.5	48.39
<b>Total Services (rows G to U)</b>	<b>14941.1</b>	<b>6947.2</b>	<b>7993.8</b>	<b>53.50</b>
<b>Total No Services (rows A to F)</b>	<b>4838.2</b>	<b>3798.4</b>	<b>1039.9</b>	<b>21.49</b>
<b>Total</b>	<b>19779.3</b>	<b>10745.6</b>	<b>9033.7</b>	<b>45.67</b>

Note: In bold type, branches with Female share 50% or more. Source: Elaborated from INE.

The highest percentages of Women on each row correspond to Education (66.91%), Health and Social Services (76.39%), Domestic Services (87.75%) and Other Srvices (66.99%). There is a preference of women for Employment in Services (53.50% of Female) than in Agriculture and Fishing (23.20%) and than in Manufacturing (27.30%) or in Building (8.93%).

The top branches for female employment, in thousand employed persons where: 1) Commerce 1510. 2) Health and Social Services 1284. 3) Hostelry 920. 4) Education 919. 5) Manufacturing 681. 6) Public Administration 587. 7) Administrative and Auxiliary Services 556. 8) Domestic Services 522. 9) Professional and Scientific 511. The sectors that employ more women are: Commerce and Hostelry with 2.4 million Education together with Health & Social Services and Professional and Scientific with 2.7 million. The rest of this list of 9 groups (Manufacturing, Public Administration, Administrative and Auxiliare Services and Domestic Services) amounts for 2.3 million Women. Other sectors of table 1 amount for 1.9 million of employed women

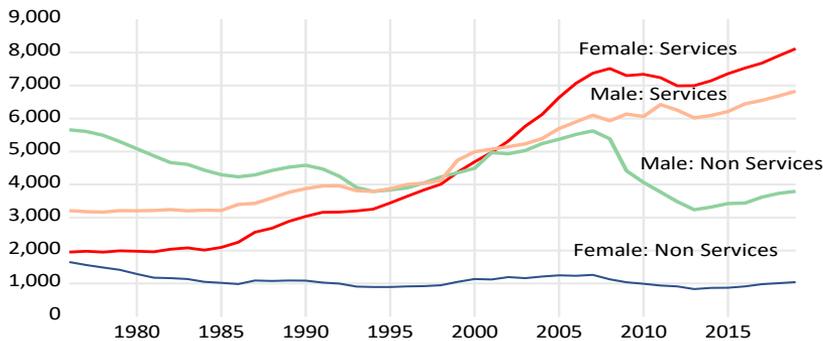
Graph 1 shows the evolution of female, male and total Employment in Spain, for 1970-2019. Graphs 2 shows the evolution of the ratio female employment/population in 6 OECD countries. In graph 2 we notice that female employment in Services has experienced a high increase for the period 1985-2007, even overpassing male employment in Services since year 2003.

Graph 1. Employment by gender in Spain, 1970-2019 (thousand people)



Source: Elaborated from INE(2020).

Graph 2. Employment by sector and gender in Spain, 1976-2019



Source: Elaborated from INE(2020)

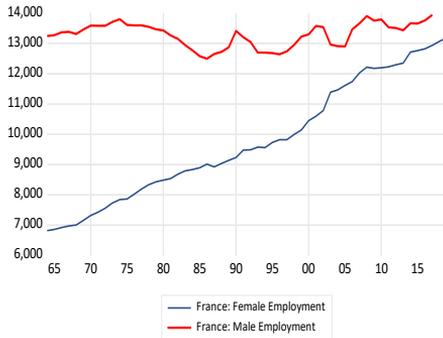
**2.2. Female Employment in 6 OECD countries**

We compare the evolution of female employment in Spain with other 5 OECD countries: France (Fr), Germany (De), Italy (It), United Kingdom (UK) and United States (USA). In the Annex 1, we analyze the limitations of statistical data by gender and the evolution of the OECD Labour Force Statistics (LFS), from 1964 to 2019. We find more information by gender in LFS(1986), with Male or Female Employment by 9 sectors, than in LFS(2001) (2011) or (2020), with only 3 sectors or (2020) without information of female employment by sector.

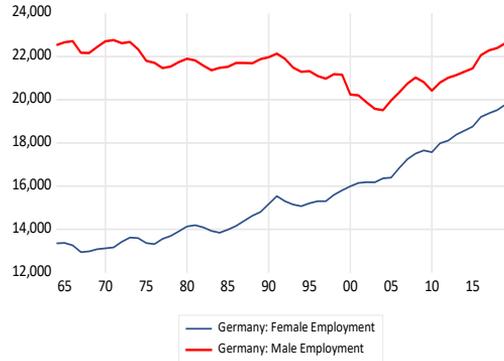
Regarding Total Employment (Male and Female) by sector, LFS(1986) and (2001) provides information by 9 sectors, LFS(2010) by 17 sectors and LFS(2020) by 21 sectors. World Bank includes information about Percentage of Female Employment on the total Employment of each sector, based on ILO statistics for 3 sectors: Agriculture, Industry and Building, and Services.

Graphs 3.1 to 3.6 show the evolution of Male and Female Employment in each country of the group of 6 OECD, for 1965-2019 (in thousand personas).

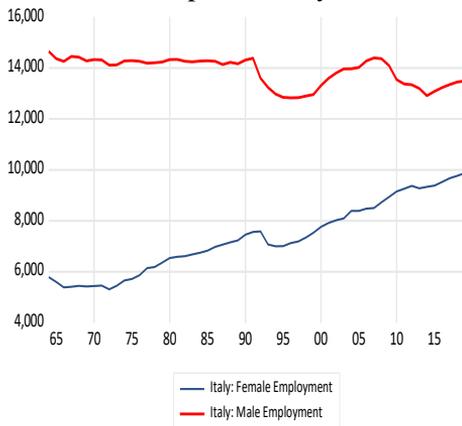
Graph 3.1. France



Graph 3.2. Germany



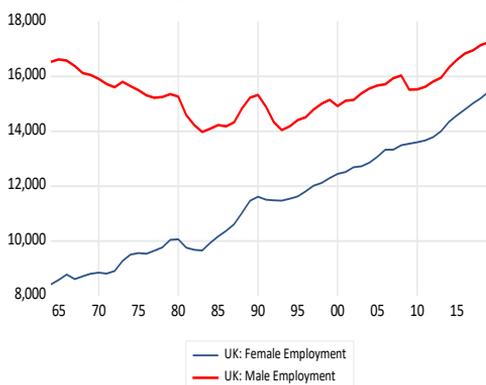
Graph 3.3. Italy



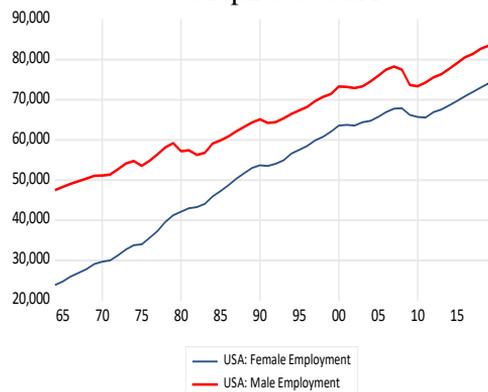
Graph 3.4. Spain



Graph 3.5. UK



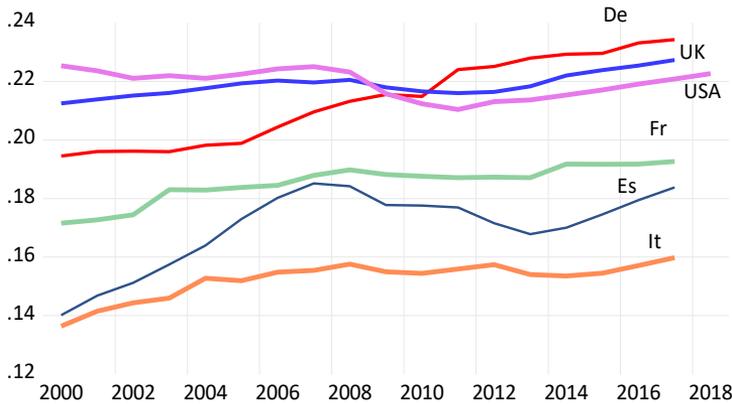
Graph 3.6. USA



Source: Elaborated by Guisan and Aguayo(2020) from OECD Labour Force Statistics (LFS)

Graph 4 presents a comparison of the evolution of the Ratio of Female Employment on Total Population of each country.

Graph 4. Ratio between Female Employment and Population in 6 OECD countries



Source: Elaborated from OECD Labour Force Statistics. Note on country codes: France (Fr), Germany (De), Italy (It), Spain (Es), United Kingdom (UK), United States (USA).

In these countries there is a high concentration of Female Employment in Services. From table 1 we can notice that 65% of men workers and 88% of women workers have their activity in Services, and the percentage of workers (male and female) in Services is 76%.

In Guisan, Aguayo and Exposito (2019 a,b) we include a comparison of Spain with Germany and the United States in several subsector of Services and find that in some of them the number of employments per one thousand people is alike in the 3 countries (for example Public Administration with 30 in Spain, 29 in the USA and 31 in Germany), while in other subsectors the number of employments is much lower in Spain (for example in Health with 25 in Spain, 58 in the USA and 50 in Germany).

The rate of Total Employment in Services by one thousand inhabitants, both Male and Female, is lower in Spain than in more advanced economies (France, Germany, UK, USA and other ones) due to the lower Spanish level of Industrial Production per capita.

In year 2020 we expect a diminution of the ratio, partly due to the special restrictions to industrial production for several weeks of the 2nd and 3th quarter of the year, due to the pandemia of Coronavirus, and the effects of the diminution of international tourism.

Table 2 shows the rate of female, male and total employment in Spain and Germany, and the ratio between each rate in both countries

Table 2. Number of people working per 100 inhabitants in Spain and Germany, 2017

	Male	Female	Total
Spain	22	18	40
Germany	27	23	50
Ratio Spain/Germany	0.81	0.78	0.80

Source: Elaborated from OECD statistics.

The percentage of Employment on Population is higher in Germany (50%) than in Spain (40%). It is mainly due to the higher levels of industrial production per capita which implies a higher level of activity in other sectors, particularly in Services.

### 3. The positive effects of Industry, and other factors, on employment and income

#### 3.1. Equations relating Female Employment with Industry and Services in Spain

Real Production of Services (QS) depends, at a great extend, on the real value of Industrial Production (QI). Other factors are analyzed in Guisan (2013) and other studies. Here we present 4 equations estimated to measure the effect of QI on LS in Spain, with the following variables:

LNSE= Employment in Non Services in Spain (Agriculture, Industry and Building)

LSE= Employment of Services in Spain

QS00E= real value-added of Production of Services at constant prices of year 2000

QI00E = real value-added of Production of Industry at constant prices of year 2000

LTFE=Total Female Employment in Spain

QI and QS are measured in thousand million Dollars (Bn USD) and Employment is measured in thousand people. The variables of the equations are:

*Equation 1: Impact of Production of Services on Employment of Services:*

$$LSE(t) = 0.99 * LSE(t-1) + 40.87 * D(QS00E), \quad R\text{-square} = 0.9884 \quad (1)$$

*Equation 2: Impact of the increase of Production of Industry on Services:*

$$QS00E(t) = 1.02 * QS00E(t-1) + 0.81 * D(QI00E), \quad R\text{-square} = 0.9934 \quad (2)$$

*Equation 3: Impact of sectoral increases of Employment on Female Employment:*

$$LTFE(t) = 1.0084 * LTFE(t-1) + 0.30 * D(LNSE) + 0.43 * D(LSE) \quad R\text{-square}=0.9987 \quad (3)$$

*Equation 4: Impact of sectoral increase of Employment on Male Employment:*

$$LTME(t) = 0.99 * LTME(t-1) + 0.68 * D(LNSE) + 0.58 * D(LSE) \quad R\text{-square}=0.9963 \quad (4)$$

The equations are mixed dynamic models with each variable in year (t) depending on its value in year (t-1) and the increase of the main explanatory variables. The increase of an explanatory variable (X) is  $D(X) = X(t) - X(t-1)$ . The full results are included in the Annex. The increase of QS has usually a positive effect on Labour of Services (LS). Increase of Employment in Services has a very positive impact on the increase of Female Employment

Graphs, in the Annex, show the evolution of Employment and Industrial and Non Industrial production of Spain and other related variables. A great deficit in the trade of goods, with increase of international debt, was a negative consequences of the lack of enough support to industry, in Spain, from European and Spanish economic policies.

#### 3.2. Contribution of Male and Female Employment to real income:

Compensation of workers is an important source of real income both for families and for Government through the social security contributions and taxes.

Table 3 shows the contribution to real income of Male and Female workers in Spain for the perio 1970-2019. Male and Female contributions.

Table 2. Contributions of Male and Female Employment to income  
(Bn Dollars at constant prices and exchange rates of year 2000)

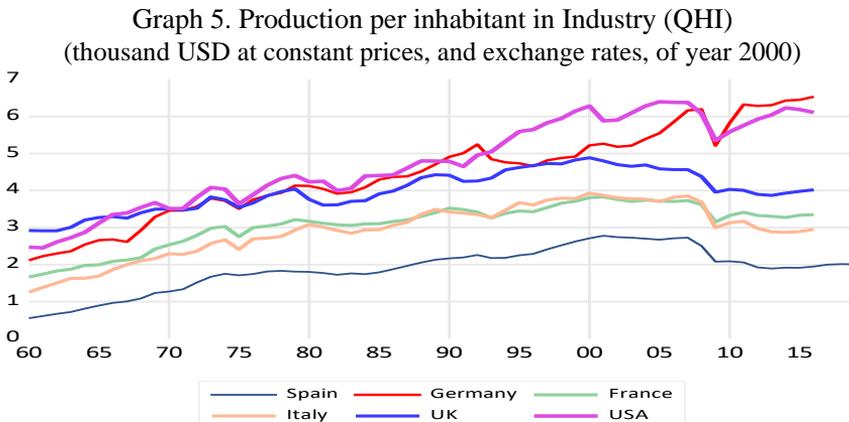
Year	Male contribution	Female contribution	Total Employment contribution	Real PIB
1970	116	41	157	232
1980	176	72	247	331
1990	193	92	285	441
2000	230	136	367	581
2010	263	215	478	711
2019	263	221	484	802
Increase 1970-1990	77	51	128	209
Increase 1990-2019	70	129	199	361
Increase 1970-2019	147	180	327	570

Notes: Male and Female contributions were calculated with the same average real wage. If we would use different average wages for Male and Female, the result of Male contribution would be higher and the Female contribution would be lower. Some indicators show that average Female wage varied between 75% and 78% of Male wage in many sectors. With these indicators the estimated contribution of women to real income from employment, in year 2019, discounted by the wage gap, should be around 80% of 221 Bn dollars=177 Bn, and the Male contribution=484-177=307. Source: Elaborated by Guisan and Aguayo, 2020, from OECD statistics.

In order to increase employment in Services, countries usually need increase in industrial production. Some countries with relatively low levels of industrial production per capita, like Spain in comparison with Germany, have got financial support for the imports of intermediate goods necessary for the increase of Non Industrial sectors, from international Tourist services and from international financial credit. Both factors, may be useful for development but usually they are not enough and it is very important to develop industry, as seen in Annex.

### 3.3. Industrial Production per capita and Wages in 6 OECD countries.

Graphs 5 shows the evolution of real Value-Added of Industrial Production per capita in 6 OECD countries, for the period 1960-2018.



Source: Elaborated from OECD National Accounts. Notes: Germany includes West and East, for 1960-1990, and the united country since 1991. Values in thousand Dollars per inhabitant at 2000 prices and Exchange Rates. QHI is real Value-Added of Industrial sectors in the domestic market.

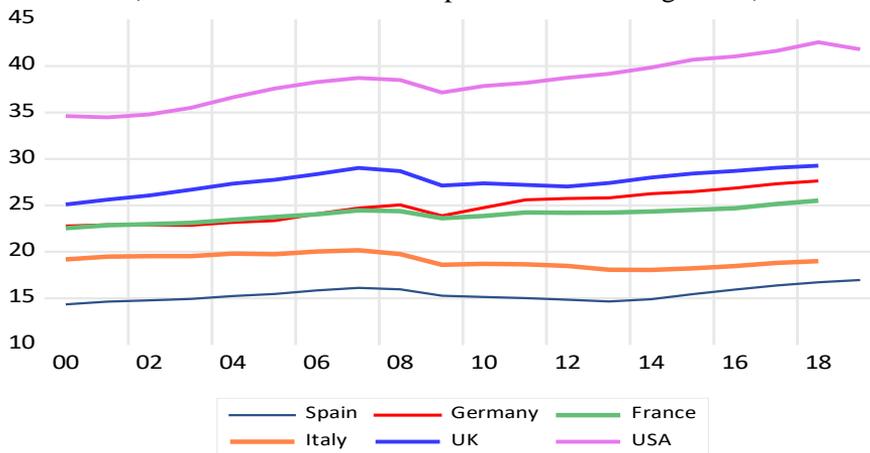
The financial crisis of year 2008 and the negative consequences of some European Union policies related with excess of globalization, led to a diminution, followed by stagnation, of industrial production per capita in Spain, France, Italy and the United Kingdom. It has caused a lot of social and economic distress.

Following the trend of the period 1960-1975, the value of QHI in Spain in year 2019 should be very close to the value in the UK. With the trend of the period 1982-1992, or with the trend of 1995-2000, it should be very close to the value of France. Unfortunately for the Spanish economy did not follow those trends for the period 2007-2019: in the period 2000-2007 there was stagnation, followed by decrease for the period 2007-2013 and a slight recovery for 2013-2019.

Usually Industrial Production per capita has positive effects on the development of Non Industrial and Total Production per capita, when the countries invest income from industrial sectors in Services or other domestic sectors. Besides, some countries with high levels of Industrial Production per capita may invest incomes from domestic industrial sectors on foreign countries (well on non domestic Industry or on Building, Services or other sectors). Both types of investment (domestic and abroad) contribute to economic development of the investor.

Graph 8 shows the evolution of Real Gross Domestic Product per capita, for the period 2000-2019, accordingly to OECD statistics. We may notice the negative effect of the financial crisis of 2007-2008, with a diminution in the 6 countries.

Graph 6. Total Production per capita in 6 OECD countries, 2000-2019 (thousand Dollars at 2000 prices and Exchange rates)



Source: Elaborated from OECD National Accounts: Total Production per capita calculated from data of real Gross Domestic Product and Population.

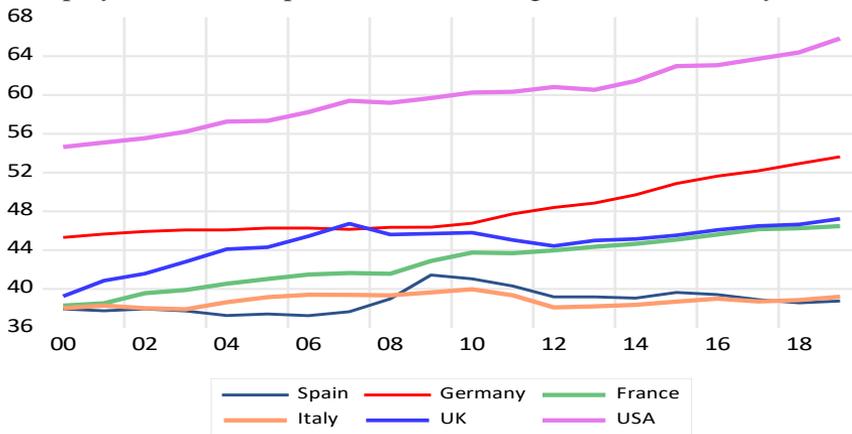
Comparing graphs 7 and 8 we may notice that the countries with the highest levels of industrial development per capita are usually also those with the highest levels of total production per capita, but in the case of Germany and United Kingdom. Germany invest more than UK abroad, and has a high Net International Investment Position (NIIP) and has low levels of production per capita in non-industrial sectors in the domestic market, in comparison with the United Kingdom.

A negative effect of the diminution of industrial production per capita, mainly due to the excess of globalization of the European Union economic policies, has been the decrease of real wages in Spain (2009-2014), Italy (2010-2012) and the United Kingdom (2007-2012).

Real income of workers in Spain has increased thanks to the increase of Female and Male Employment but with little increase of average real wages for the period 2000-2019. Average real wages rather low in Spain and Italy in comparison with the other 4 countries of the graph.

Graph 7 shows the evolution of average real wage in Dollars of year 2016 at Purchasing Power Parities, accordingly to OECD(2020).

Graph 7. Average real wage in 6 OCDE countries, 2000-2019 (thousand Dollars per employee at constant prices and Purchasing Power Parities of year 2016)



Source: Elaborated by Guisan and Aguayo(2020) from OECD(2020) Wages at 2016 prices.

The future of Employment and real income per capita in Spain depends mainly on the recovery of economic policies addressed to increase industrial production and industrial production per capita. There are also other factors that contribute to increase productivity and wages as seen in the econometric models of Guisan, Aguayo and Exposito(2011), Guisan(2020) and other studies.

Foreign tourism has been an important source of economic development in many Spanish regions. The right policy should have been to make compatible the development of Industry and Tourism, but unfortunately nor the Spanish nor the European Union policies have been enough to favor the industrial development of Spain since year 2008. Year 2020 with the negative consequences of the pandemic of Coronavirus on international tourism, has made clear the convenience to recover and increase industrial production in Spain.

The future of Employment in Spain depends basically on the recovery of sound development of Industry, with its positive effects on Services Employment, Female Employment, Wages and real Income. See graph A2 in the Annex.

## 4. Quality of Labour, female social visibility and quality of life.

### 4.1. Quality of labour and its impact on quality of life

Women workers lives are sometimes more stressed than lives of men workers, due to the problems to conceal family life and labour hours. The consequence is that women workers usually have fewer hours of leisure activities per week. In spite of that, the majority of women are happy to find a job, with quality of labour, not only because paid work provides some degree of income and independence, but also because it allows to develop social and personal values and, in many cases, also vocational jobs.

Quality of labour is an important part of quality of life. It is interesting to know the evolution for the period 2007-2019. Besides the diminution of average wage for the period 2009-2019 some indicators show that other aspects of quality of labor (stability, opportunities, good environment, flexibility of hours, etc.) seem to have diminished. There has been an increase of presentism and a diminution of opportunities for tele work in many public and private employments. In year 2020 with the pandemia, there has been an important increase of tele work, which diminishes the travel time to work, increases flexibility and helps to conceal family and labor lives.

The problems of conciliation of family life and working life is common in many countries, particularly for women with little children. Availability of public services for children care, family help (from husband, parents or other relatives) or the affordability to pay for private services are of great help but not always are easy to find for many women.

Randstad(2020) present a comparison of labour satisfaction of professionals in several countries in the first quarter of year 2019. The percentage of satisfied in Spain is 71%, close to the European average of 72%, with the highest value I Denmark (82%), Norway (80%) and the United States (80%). Italy has also 71% but the UK(68%), France (67%) and Germany (65%) present lower values in spite of higher average wages.

*Labour satisfaction of women and conciliation in Spain:* Las Heras (2018) conducted a study on the conciliation of work and family life in Spain, and compares the results with those of studies carried out in other developed countries in the period 2010-2018, and finds important differences. *"Progress zero. This is the balance that the conciliation between work and personal life in the last ten years shows in Spain. This is attested by the latest report of the corporate family responsibility index (IFREI) carried out by IESE and where it is indicated that 73% of employees in Spain consider that their work environment occasionally or systematically hinders the balance between work and private life. "* (See La Vanguardia press release). *"The punishment of the crisis has been strong in Spain, both due to the cuts it entailed at the labor level and support for family policies, as well as the introduction of the fear factor, which still persists. The fear of losing the job, the fear Breathed in by companies, it has entrenched the practice of presence. "* (The Vanguard).

*Types of Labour environment and conciliation:* The study by Las Heras(2018) classifies work environments into four categories according to whether they more or less

support the balance between work life and the personal and family life of employees: *Enriching, Favorable, Unfavorable or Polluting*. Unfavorable working environments for women often include negative discrimination for wages and promotion opportunities and difficulties to conceal work and family life.

The results of that study show low percentage of *Enriching or Favourable*, and a high percentage of *Unfavourable or Polluting*:

*Enriching* 7% in Spain (19% in the World), *Favourable* 20% in Spain (31% in the World), *Unfavourable* 45% in Spain (39% in the World), and *Polluting* 28% in Spain and 12% in the World. *Polluting or toxic environments* of work are very unhealthy and against workers rights and it is important that institutions, trade unions or workers associations provide support in order to eradicate that problem.

*Indicators of labor quality by gender*: Perez-Ortiz et al (2020a,b) present two interesting studies about quality of labour by gender. The first of both articles analyzes several indicators for Spain and the second one present an international comparison of Spain with other European countries.

*Indicators in Spain*: Perez-Ortiz et al(2020a) presents a set of indicator by gender in Spain for the period 1997-2017 into the following groups: CALI1 Equality and Non Discrimination, CALI2 Wage, CALI3, Conciliation, CALI4 Stability CALI5 Participation, CALI6 Formation and a Global Index as a function of the 6 partial indicators, with a value between 0 (worst quality) and 100 (highest quality).

For the period 2000-2008 there was an increase of the Global Index, both for Female and Male, and between 2008-2017 there was a decrease also for both genders:

Year 2000: 43.8 Female, 49.7 Male (difference Male-Female: 5.9)

Year 2009: 52.7 Female, 56.4 Male (difference Male-Female: 3.7)

Year 2017: 50.7 Female, 51.8 Male (difference Male-Female: 1.1)

The economic crisis of the period 2008-2017 has had a negative effect on the index of quality of labour both for Male and Female Employment. The difference between man and women decreased, from 5.9 points in 2000 to 3.7 points in 2008 and 1.1 in 2017.

*Indicators in EU28*: Perez-Ortiz et al (2020b) present an interesting graph for Female Global Index (horizontal axis) and Male Global Index (vertical axis) and draw the bisector in the first quadrant in 23 European Union countries. We highlight the following results of the Global Index of quality of labour by gender: 1) At the bottom, with Index below 50 for Female and below 55 for Male Employment: Greece, Poland, Latvia, Lithuania, Estonia, Hungary, Slovakia, Spain and Italy. 2) A second group with Index higher than 50 and below 60 for women and below 65 for men: Czech R, Portugal, Germany, France, Ireland, UK, Luxembourg, Slovenia and Belgium. 3) A third group, with the highest values of the Global Index of quality of labour includes 5 countries with both Female and Male Indexes between 60 and 70: Belgium, Austria, Finland, Denmark and Sweden. 4) The coordinates of most of countries are over the bisector of the first quadrant, as to say the quality of labor is usually higher for men than for women.

#### **4.2 Social visibility of notable women**

As seen in Guisan, Aguayo and Exposito (2011), and other studies, there are several interesting articles on the Female difficulties to reach opportunities of promotion and

visibility particularly in several environments of traditional Male power. Here we can add information about several problems and some interesting initiatives.

In the case of Spain, there is a high degree of female equality of opportunities, in comparison with other countries, in several activities: Teaching, Health assistance, students access to University graduation and doctorate, but it is rather low in social visibility of notable women, as writers, thinkers, researchers, political science experts, etc., in televisions, newspapers, encyclopedias, scientific prizes and other social environments. We may highlight the following features, and in the Annex we include some supplementary information.

#### 1) *Newspapers, radios and televisions.*

In year 2008 only 6% of women in interviews to professional experts and 10% to political members. Only 21% of opinion journalists, accordingly to the II report *Columnistas*, by Plann. In the *Columnista* study, prepared by the consulting firm *Planner Media* with the support of the Federation of Associations of Journalists of Spain (FAPE), where it analyzes more than 3,000 pieces of opinion with about 1,500 different columnists, from 26 media outlets, it shows that Only 21% of the opinion columns published by the Spanish media are signed by women and, in the case of opinion columns dedicated to scientific issues, the percentage signed by women drops to 7%.

Along these lines, the *Xornalistas Galegas* report shows that only 15.5% of opinion articles in the main Galician newspapers are signed by women, and the percentage is below 10% in sections such as sports, theme of the day or economy / sea.

A study financed by the Women's Department of the Autonomous Community of Madrid, *Mateos de Cobo et al (2007)* published an analysis of digital press in Spain regarding gender stereotypes.

For the last decades, a greater number of women journalists interested on Female visibility, as well as an increasing number of men, has contributed to changes in the contents of newspapers and other means of communication, with more interviews or news on outstanding women in fields of science, literature, economy, politics, and other ones. But already there is the feeling of "being invisible" for many notable women.

We have found some interesting cases of radio casting programmes addressed to provide support to the visibility of scientifics (male and female), like the "Ones de Ciencia" of radio *Cambrils* (Tarragona, Spain), that includes a section for scientific women visibility.

Some newspapers dedicate special issues to foster women participation, as for example in the case of the regional newspaper "*Correo Gallego*" with its editions on 25th July of each year inviting outstanding women, from several fields, to write an article.

#### 2) *Associations that support Women in Science, Technology, and Executive positions.*

The visibility of women in any area of society and particularly in those of research and technology is an aspect of great importance to refute the false argument that "there are no women" or "there are no brilliant women" in the different fields of knowledge (*Lopez et al, 2020*). In this sense, the Association of Women Researchers and Technologists (AMIT) has carried out various activities since 2001. In recent years, her collaboration

with the communication company "Atresmedia", in the Corporate Responsibility campaign, "Constantes y Vitales", for the creation of an important public database of Spanish female researchers. Likewise, since 2018, the collaboration with the newspaper El País in its section of scientific dissemination, Materia, the weekly scientific consultation *We respond*, in which the members of AMIT respond to questions of a scientific nature raised by the readers.

Some Executives Associations promote the visibility of women, as for example the Association of Women Executives of Galicia, with its list of "Women Referents in Galicia", that increases social visibility of many outstanding women in business, science, journalism, artistic activities, health, education, architecture, engineering and other fields reach.

## 2) Encyclopedias and textbooks.

The presence of women in Encyclopedias and Bibliographic Dictionaries is usually very low, with percentages of 6% or below in many fields, where they have had a remarkable higher activity. Although there are a few publications that collect biographies of some relevant women they usually are not available in internet at a low cost or free.

The scarce inclusion of relevant women in Wikipedia is analyzed in the interesting academic article by Li(2020) and in outstanding articles in newspapers and blogs.

**Noan Cohen(2011)** have published an interesting article in the New York Times (NYT) about the gender gap in contributors lists of Wikipedia:

***Define Gender Gap? Look Up Wikipedia's Contributor List.*** "According to the [OpEd Project](#), an organization based in New York that monitors the gender breakdown of contributors to "public thought-leadership forums," a participation rate of roughly 85-to-15 percent, men to women, is common — whether members of Congress, or writers on The New York Times and Washington Post Op-Ed pages. It would seem to be an irony that Wikipedia, where the amateur contributor is celebrated, is experiencing the same problem as forums that require expertise."

**Sue Gardner(2011)**. She was the executive director of the Wikimedia Foundation from December 2007 until May 2014, and has written the interesting article at her Blog related with the publication by Norma Cohen:

***Nine Reasons Women Don't Edit Wikipedia (in their own words)***. We list the 9 reasons in the Annex, and we highlight reason 4 and 9 as important not only for explain the gender gap in contributions to the Encyclopedia but also the gender gap in the biographical contents of notable women. Reason 4) is "Some women don't edit Wikipedia because they are conflict-averse and don't like Wikipedia's sometimes-fighty culture". Reason 9) is "Some women don't edit Wikipedia because social relationships and a welcoming tone are important to them, and Wikipedia offers fewer opportunities for that than other sites".

**Shlomit Lir (2020)**, also points to the unfriendly environment that many women find when they wish to include, in Wikipedia, contents related with women, in the article:

***Strangers in a seemingly open-to-all website: the gender bias in Wikipedia Equality, Diversity and Inclusion:*** "Findings – The findings show that having the will to edit and

*the knowledge of how to edit are necessary but insufficient conditions for women to participate in Wikipedia. The finding reveals two categories: pre-editing barriers of negative reputation, lack of recognition, anonymity and fear of being erased; and post-editing barriers of experiences of rejection, alienation, lack of time and profit and ownership of knowledge. The research suggests a “Vicious Circle” model, displaying how the five layers of negative reputation, anonymity, fear, alienation and rejection – enhance each other, in a manner that deters women from contributing to the website”*

Although Wikipedia has very good contributors, male and female, in many topics, the question is that the rules for contributors are not all good, and they should be improved in order to avoid lack of protection for women, or other contributors, when they find hostility barriers to publish qualified and interesting contents. In the Annex we include a few suggestions.

In biographic Encyclopedias and textbooks, the presence of women is usually very scarce and clearly below their professional, artistic or scientific activity. Accordingly.

An study by López-Navajas(2014) from the University of Valencia, presents data of female protagonism by subject of study in Secondary Education textbooks and show that only 7.5% of the referents in those text book are women.

### 3) Blogs and twitter: initiatives for women visibility.

An interesting initiative from Lydia Gil is her Blog of social media investigation : <https://socialmediaeninvestigacion.com/mujeresdivulgadoras-edicion3>

It is an interesting initiative for visibiligy of women communicators in Sciences (natural Sciences, Social ciencias and other fields). She also contributes to the women visibility on radio program "Ones of science". In the Annex we will include other Blogs.

It is worth highlighting initiatives such as the Women with Science blog, from the Chair of Scientific Culture of the University of the Basque Country, which tries to give greater visibility to women who contributed and contribute to progress in different scientific and technological fields, linked to STEM disciplines (Science, Technology, Engineering and Mathematics).

In the field of social sciences, the Women in Economics network formed in 2019 from the twitter account @mujereseneco addresses the objective of promoting presence in the public debate (conferences, talks, discussion tables, courses, media or discussion forums) of experts from different professional areas of the economic world. With initiatives in social networks such as #unaeconomistapordia with which, a relevant woman in the area of Economics is presented with a brief description of her area of specialization or some of her most relevant works.

In May 2018 @siconmujeres was born as an initiative promoted by male economists to end the discussion round tables where male representatives are often exclusive. In the same line of avoiding expert panels with none wome, or little female presence, the Office of the European Parliament in Spain launched the initiative # DondeEstánEllas, which has been signed by several entities.

### 4) Leadership in Universities, Scientific Academics and Prizes:

In the study of EUA(2017) on women in leadership positions in European universities. The results show that in 47 countries with EUA members, only 12% of all rectors are

female. The maximum is a third of Rectors in Sweden, Norway and Finland, and the minimum below 11% Spain, Bulgaria, Ukraine, Czech Republic, Turkey and Italy. In the case of Spain, journal news from El Pais, indicates 4 or 5 Women in Rector position out of 50 public universities and 7 out of 26 private universities. Ministry of Economy(2015) indicates a percentage of 27% women among Deans of Faculty and Directors of other University Centers, 27% among Directors of Department and 19% among Directors of Research Institutes.

Women economists in Prizes: the presence of women is below the percentage of their contributions to economics. Not only the Nobel Prize organization has shown a Male preference, but also in national prizes as follows:

Prize of General Council of Economists (Consejo General de Economistas, CGE, in Spanish): In 20 Prizes for years 2001-2018 only 1 was for a female economicst (5%).

Prize Queen Juan Carlos: In 20 years, 1986-2006, all Prizes for men (0% women)

Prize Rey Jaime: In 20 years 1997-2016 all Prizes for men (0% for women)

Accordingly to Ideas-Repec, an important international net of Economics research, there is a percentage around 25% of Female economists (more than 14000 women out of more than 55000 total economists). Among the top 100 Spanish members of this acadimid net, there are 21 women economists. A list of names may be seen in Guisan(2018). Women economists at Spanish Universities currently they represent around 40% of intermediate teachers and researchers and 20% of Full Professors. Given this women activity in Economics research it seems that they should appear at least in 20% of Economic Prizes.

4) Businesswoman and executives. There is an increase of initiatives, from Associations, to increase female visibility in the business and professional firms, in engineering, architecture, art and other fields.

5) *Women in political positions.*

In year 2007, Spanish socialist government approved a Law named "Organic Law of effective equality of women and men" ruling a minimum of 40% of each gender in electoral lists. Thanks to this law the percentage of Women in National and Regional Assemblies varies in Spain usually between 40 and 50, which is higher than in Italy (between 0 and 29), close to France (44 and 51), higher than in Germany (between 24 and 40) and the United Kingdom (28 and 42), as seen in EAGLE(2019). In local political representations in Spain, the newspaper *El Mundo* indicates 30% majors of cities and villages 35% local councillors.

The question in Spanish politics is not only the percentage of women in national or regional Parliaments, but a low level of internal democracy in many political parties, and excess of Male power concentration in decision making at the top of the parties. The usual *voting discipline* in Parliaments, following the orders of the political leader, without internal democracy in the party, indicates a low level of democracy and gives to the majority of representatives (male of female) scarce power in decision making of their

votes. Women at the top of political parties are very often chosen because they are supporters of the male leaders,

### **4.3. Subjective indexes of life satisfaction**

When asked to rate their general satisfaction with life on a scale from 0 to 10, people on average across the OECD gave it a 6.5. Life satisfaction is not evenly shared across the OECD however. Some countries – Greece, Hungary, Portugal and Turkey – have a relatively low level of overall life satisfaction, with average scores of 5.5 or less. At the other end of the scale, scores reach 7.5 in Denmark, Finland, Iceland, Norway and Switzerland.

Quality of life it is very much related with employment, real wage, real production per capita, quality of labor conditions but also with female participation in economic and social life, quality of Government and other variables. Generally, the educational level of population has a positive impact on the quality of many of these factors.

Accordingly to CIS(2020) Spanish citizens show concern about the political and economic situation with 67.1% of answers choicing the options "bad or very bad" for political situation and 43.4% choicing the answerts "bad or very bad" for the economic situation. The quality of economic policies has effects on Female Employment, wages and family income and thus in quality of life.

Eurostat (2019) points: "When looking at low, medium and high shares of overall life satisfaction, the differences between men and women remain low. 15.3 % of male respondents stated that they have a low level of life satisfaction, in comparison to 17.0 % of females. On the other hand, 25.6 % of males and 25.2 % of females had a high rating of life satisfaction in 2018".

OWID(2020) presents a graph, not by gender, of life satisfaction in several countries with data from Eurobarometer(2017). In the comparison of Spain, since year 1985, with the 4 European countries of this study (France, Germany, Italy and the United Kingdom), we may notice a positive evolution of Spain for the period 1985-2007, a diminution for 2007-2013 and a recovery afterwards. By the end of the period Spain has a higher level than Italy, but lower tha the other 3 countries. The top positions of this group of 5 European countries correspond to the United Kingdom and Germany, while France is an intermediate position between both countries and the lower values of Italy and Spain.

## **5. Conclusiones**

In Spain there was a high increase of the ratio of female employment for the period 2000-2007, a decrease for 2007-2013 and a recovery since 2014, but the ratio of female employment to total population is in Spain lower than in France, Germany, the United Kingdom and the United States.

Quality of labor presents several problems, some usually more specific for women as opportunities for conciliation of family and working activities. The financial crisis of year 2008 has had negative effects on quality of labor.

The contribution of women to real family income in Spain is five times higher in year 2019 than in year 1970, accordingly to table 2, and represent around 37% of workers income.

Female social visibility has experienced some advancements but it is far from equality, particular in some newspapers, televisions, and encyclopedias. In the Annex 6 we include, and expect to update, different initiatives that include social visibility of notable women in different fields.

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Note: These Annexes may be updated. We will include here the list of updates.

### **Annex 1. Evolution of Labour Force Statistics (LFS) published by the OECD.**

A first comment in this regard is the difficulty to get information about the evolution of female employment in many countries, due to the limitations of many international statistical sources: Sometimes there are changes through time, from more information in past decades to less information in the recent years. Very often there are "not available data" for some countries and years, or other types of problems. In the case of Germany the series are broken in year 1990, with information only for the old Federal Republic (FR) of West Germany before 1991. To analyze the evolution of Germany from 1964 to 2019, both West and East, we have made some supplementary estimations. In the case of Female Employment by sector, we may notice a descending order of data availability through time in Labour Force Statistics (LFS) published by the OECD.

1) *Period 1964-1984.* LFS(1986) presents, in Part 2: table III of each country, Civilian Employment classified into 9 sectors, with three parts: A (Total=Males+Females), B (Males) and C (Females) for 5 of the 6 countries of this section (all but France, where table III only presents Total Employment into 9 sectors, but not information by gender. In the case of Spain the information at 9 sectors level starts since year 1970. This volume of LFS presents Total Female Employment (LFT) in table II of each country.

2) *Period 1980-2000.* LFS(2001) includes in Part 2: table III of each country, total employment by sector of each country but without Female data for 9 sectors. Table IV includes the percentage of Female Employment by three sectors (Agriculture, Industry (including Building) and Services). This volume of LFS presents data of total Male and Females Employment in Summary tables, in Part 1, before country tables.

3) *Period 1989-2009.* LFS(2010) includes in Part 1, total Male and Female Employment in Summary tables, before country tables. In Part 2, table V for each country includes only the percentage of female employment in 3 sectors. In that table there is information of Employment in 17 sectors, but not by gender.

4) For the period 2010-2019, LFS(2020) only presents total Female Employment in the international comparisons at the beginning of the volume, but it does not include information about female employment nor for 9 sectors nor for 3 sectors.

### **Annex 2. Equations of Employment in Services and Female Employment in Spain.**

Here we present our estimations of the following equations, expressed as mixed dynamic models, with dependent variable as a function of its lagged value and the first difference of the explanatory variables.

1. Employment in Services of Spain (LSE) as a function of real Value-Added of Services in Spain at constant prices of year 2000 (QS00E)
2. Real Value-Added of Services in Spain as a function of Real Value-Added of Industry in Spain
3. Impact of Employment by sector in Spain on Female Employment
4. Impact of Employment by sector in Spain on Male Employment

Equation 1: Employment in Services. Impact of QS00E on LSE

Dependent Variable: LSE				
Method: Least Squares				
Sample (adjusted): 1995 2013				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LSE(-1)	0.990402	0.008798	112.5733	0.0000
D(QS00E)	40.87619	8.391496	4.871145	0.0001
R-squared	0.988455	Mean dependent var	11145.23	
Adjusted R-squared	0.987776	S.D. dependent var	2295.810	
S.E. of regression	253.8270	Akaike info criterion	14.01048	
Sum squared resid	1095279.	Schwarz criterion	14.10990	
Log likelihood	-131.0996	Hannan-Quinn criter.	14.02731	
Durbin-Watson stat	2.132352			

Source: Estimated by Guisan and Aguayo in this article of AEID 20-2

Equation 2: Impact of QI00E on QS00E

Dependent Variable: QS00E				
Method: Least Squares				
Sample (adjusted): 1995 2013				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QS00E(-1)	1.025422	0.003187	321.7843	0.0000
D(QI00E)	0.811895	0.217273	3.736750	0.0016
R-squared	0.993429	Mean dependent var	394.2888	
Adjusted R-squared	0.993043	S.D. dependent var	64.48897	
S.E. of regression	5.379026	Akaike info criterion	6.302192	
Sum squared resid	491.8767	Schwarz criterion	6.401607	
Log likelihood	-57.87083	Hannan-Quinn criter.	6.319017	
Durbin-Watson stat	1.267540			

Source: Estimated by Guisan and Aguayo in this article of AEID 20-2

Equation 3. Impact of Services and non Services on Female Employment

Dependent Variable: LTFE				
Method: Least Squares				
Sample (adjusted): 1971 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTFE(-1)	1.008399	0.003150	320.0982	0.0000
D(LAE+LIE+LBE)	0.300981	0.055555	5.417743	0.0000
D(LSE)	0.431816	0.055414	7.792504	0.0000
R-squared	0.998827	Mean dependent var	5396.796	
Adjusted R-squared	0.998776	S.D. dependent var	2125.707	
S.E. of regression	74.38375	Akaike info criterion	11.51562	
Sum squared resid	254515.4	Schwarz criterion	11.63145	
Log likelihood	-279.1327	Hannan-Quinn criter.	11.55957	
Durbin-Watson stat	1.981520			

Source: Estimated by Guisan and Aguayo in this article of AEID 20-2

Equation 4. Impact of Services and Non Services on Male Employment

Dependent Variable: LTME				
Method: Least Squares				
Sample (adjusted): 1971 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTME(-1)	0.994418	0.002113	470.6701	0.0000
D(LAE+LIE+LBE)	0.685502	0.059119	11.59528	0.0000
D(LSE)	0.582293	0.060101	9.688578	0.0000
R-squared	0.996461	Mean dependent var	9167.224	
Adjusted R-squared	0.996307	S.D. dependent var	1224.392	
S.E. of regression	74.40652	Akaike info criterion	11.51623	
Sum squared resid	254671.2	Schwarz criterion	11.63206	
Log likelihood	-279.1477	Hannan-Quinn criter.	11.56018	
Durbin-Watson stat	1.891526			

Source: Estimated by Guisan and Aguayo in this article of AEID 20-2

### Annex 3. Gender Empowerment and quality of life.

Guisan and Aguayo(2011) show a positive correlation between the Gender Empowerment Index of year 2008 with 3 indexes of quality of life, and estimated several equaitons related with the positive impacto of Education on Female participation and quality of life.

Table A1. Correlation between Female participation (GEM08) and Satisfaction with Life Indexes (SWLECO, SWL2F and SWLVEEN)

	SWLECO	SWL2F	SWLVEEN	GEM08
SWLECO	1.00	0.87	0.88	0.780
SWL2F	0.87	1.00	0.96	0.835
SWLVEEN	0.88	0.96	1.00	0.837
GEM08	0.78	0.83	0.83	1.00

Source: Table 6 of Guisan and Aguayo(2011) from UN data for GEM08.

*Estimated Equations by Guisan and Aguayo(2011).* These interesting equations relate Education (Tyr), Quality of Government (Voice of Citizens or Government Effectiveness), Women participation (GEM08), Production per capita (GDPpc) and Satisfaction with Life (SWLF2).

$$A1.1. Gem08 = 0.0689 Tyr + 0.0148 Voice + efectos\ fijos$$

(10.14) \*      (1.73) \*\*

Adjusted R<sup>2</sup> = 0.8439; % S.E. on Mean of dependent variable = 7.07%

$$A1.2. Gem08 = 0.1040 + 0.0543 Tyr + 0.0198 Voice\ of\ Citizens$$

(1.72)\*\*    (5.51)\*      (1.72)\*\*

$$A2.1. Swlf2 = 109 + 158 GEM08$$

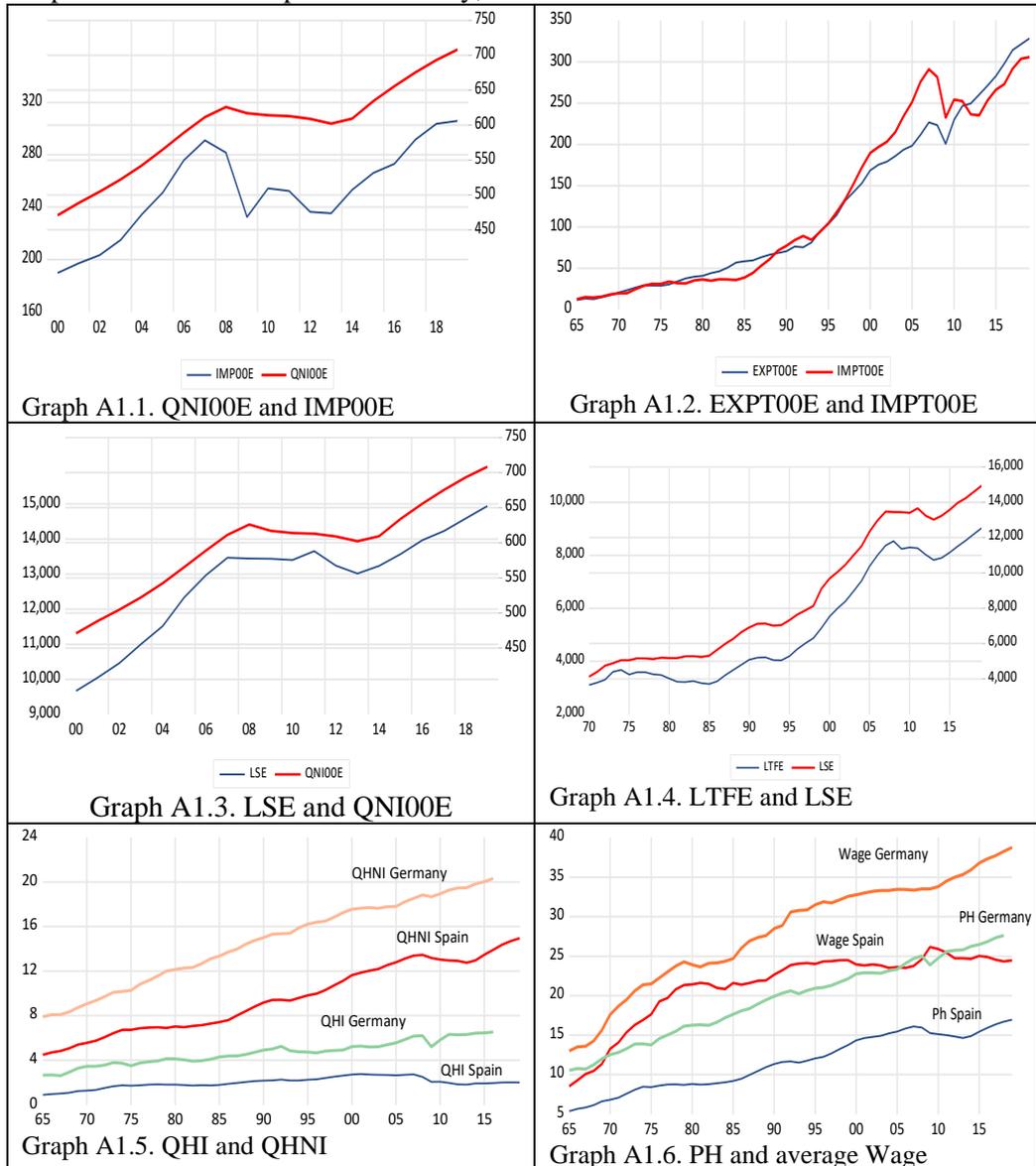
$$A2.6. Swlf2=120+52 GEM08 + 1.27 GDPpc + 4.53 (Voice+Gov.Eff.)/2+fixed\ effects.$$

Adjusted R<sup>2</sup>= 0.9792, %S.E. on mean of dependent variable= 2.47%

**Annex 4. Selected graphs of the Spanish economy and options for 2020-2025**

Graphs A1.1 to A1.4 show positive impacts among several variables: QI (Industrial Production), QNI (Non Industrial Production), LS (Employment in Services, th), LTF (Total Female Employment, th), IMPT (Total Imports of goods and services), EXPT (Total Exports of goods and services). X00E indicates that the variable X is measured at constant prices of year 2000 in Spain (E). Graphs A1.5 and A1.6 present a comparison of real values of industrial and non industrial production per inhabitant (QHI and QHNI) and real average Wage per worker (W) in Spain and Germany.

Graphs A1.1 to A1.4. Spanish economy, 1970-2019



Source: Elaborated by Guisand and Aguayo(2020) from OECD and INE statistics

The difference between Spain and Germany, in real industrial production per head has increased for the period 1975-2019, expressed in Dollars at 2000 prices and exchange rates, as follows: from 1799 in year 1975 (1708 in Spain and 3507 in Germany) to 4448 in year 2019 (2004 in Spain and 6452 in Germany).

Spain has tried to compensate the lack of enough income from industry with incomes from international tourism and international debt, but in year 2020, the strong effect of the pandemia of Coronavirus has shown that tourism also an interesting source of income is not enough to guarantee economic development of Spain and that industrial policies, with environmental protection, should be developed.

Graph A2 shows the options of Non Agrarian Employment in Spain, for the period 2020-2025, according to the industrial policy of the country, as seen in the Blog of our Association on Spanish economy,

Graph A2. Forecasts of Non Agrarian Employment in Spain for the period 2020-2025.



Source: Guisan, M.C. 2020) in Entry 77 of the Blog: <https://economyaydesarrollo-eeg.blogspot.com>

**Wages and productivity:** Table A2 presents correlations between real Production per inhabitant (PH), Mean Productivity per worker (PM) and real average Wage (W)

Tabla A2. Correlation between PH, PM y W in 5 European countries and in the USA

País	Correlation PH and PM	Correlation PH and W	Correlation PM and W
Alemania	0.9916	0.9717	0.9811
España	0.8779	0.8482	0.9513
Francia	0.9871	0.9170	0.9470
Italia	0.9858	0.9159	0.9371
Reino Unido	0.9876	0.9875	0.9807
USA	0.9766	0.9850	0.9814

Nota: PH=producción por habitante, PM=Productividad media del trabajo. W=Salario medio (Coste salarial medio)

**Annex 4. Women gaps in Wikipedia: barriers as contributors and visibility gap.**

Blog of Sue Gardner

- 1) Some women don't edit Wikipedia because the editing interface isn't sufficiently user-friendly."
- 2) Some women don't edit Wikipedia because they are too busy. Working women have usually less free time than men, due to family duties.
- 3) Some women don't edit Wikipedia because they aren't sufficiently self-confident, and editing Wikipedia requires a lot of self-confidence.

**4) Some women don't edit Wikipedia because they are conflict-averse and don't like Wikipedia's sometimes-fighty culture.**

There is lots of evidence to suggest this is true. *"My research into the gender dynamics of online discussion forums found that men tend to be more adversarial, and to tolerate contentious debate, more than women," said Susan Herring to a reporter from Discovery News. "Women, in contrast, tend to be more polite and supportive, as well as less assertive ... and (they) tend to be turned off by contentiousness, and may avoid online environments that they perceive as contentious."* [7] This assertion is supported by women themselves — both those who don't edit Wikipedia, and those who do. (More information in the Annex)

**5) Some women don't edit Wikipedia because the information they bring to Wikipedia is too likely to be reverted or deleted.**

From a commenter on Pandagon: "When I read about the shortage of women writing for Wikipedia, I immediately thought of [this article](#) and the ensuing discussion and the extent to which I do not have the time or emotional energy to fight this fight, over and over." [14] Another commenter on the same forum: "Even if I don't explicitly identify as female in my Wikipedia handle (and I don't), I still find myself facing attitudes of sexism and gender discrimination, attempts at silencing, "tone" arguments, and an enforced, hegemonic viewpoint that attempts to erase my gender when editing." [15] Barbara Fister writes in Inside Higher Ed magazine: "Since the New York Times covered the issue, I've heard more stories than I can count of women who gave up contributing because their material was edited out, almost always because it was deemed insufficiently significant. It's hard to imagine a more insulting rejection, considering the massive amounts of detail provided on gaming, television shows, and arcane bits of military history." [16]

**6) Some women don't edit Wikipedia because they find its overall atmosphere misogynist.**

*"A Wikipedia editor commenting at the blog Shiny Ideas: "Any woman identified as a woman who edits Wikipedia and dares to stumble into some territory some male or group of males has staked out will quickly find that the double standard lives and they will be criticized and their words twisted, even when men who say the same things are ignored or cut some slack. If they dare to persist in holding their ground or acting as equals in the conversation the criticism may escalate to insults and off and on wiki harassment. If a woman complains about a man's incivility in its various complaint forums, her complaints are not as likely to be taken as seriously as when men complain about other men or about the occasional woman who rocks their world with incivility equal to their own."*

- 7) Some women find Wikipedia culture to be sexual in ways they find off-putting.

From a comment on the Atlantic Monthly site from a female Wikipedia administrator:  
8) Some women whose primary language has grammatical gender find being addressed by Wikipedia as male off-putting.

9) Some women don't edit Wikipedia because social relationships and a welcoming tone are important to them, and Wikipedia offers fewer opportunities for that than other sites.

**Article by Noam Cohen in NY times: *Define Gender Gap? Look Up Wikipedia's Contributor List***

*"[Even the idea of going on to Wikipedia and trying to edit stuff and getting into fights with dudes makes me too weary to even think about it. I spend enough of my life dealing with pompous men who didn't get the memo that their penises don't automatically make them smarter or more mature than any random woman." [8]*

*"Wikipedia can be a fighty place, no doubt. To stick around there can require you to be willing to do the virtual equivalent of stomping on someone's foot when they get in your face, which a lot of women, myself included, find difficult." [9]*

*From a commenter on Feministing: "I agree that Wikipedia can seem hostile and cliquish. Quite simply, I am sensitive and the internet is not generally kind to sensitive people. I am not thick-skinned enough for Wikipedia." [10]*

*"From the inside," writes Justine Cassell, professor and director of the Human-Computer Interaction Institute at Carnegie Mellon University, "Wikipedia may feel like a fight to get one's voice heard. One gets a sense of this insider view from looking at the "talk page" of many articles, which rather than seeming like collaborations around the construction of knowledge, are full of descriptions of "edit-warring" — where successive editors try to cancel each others' contributions out — and bitter, contentious arguments about the accuracy of conflicting points of view. Flickr users don't remove each others' photos. Youtube videos inspire passionate debate, but one's contributions are not erased. Despite Wikipedia's stated principle of the need to maintain a neutral point of view, the reality is that it is not enough to "know something" about friendship bracelets or "Sex and the City." To have one's words listened to on Wikipedia, often one must have to debate, defend, and insist that one's point of view is the only valid one." [11]*

*"I think [the gender gap] has to do with many Wikipedia editors being bullies. Women tend to take their marbles and go home instead of putting a lot of effort into something where they get slapped around. I work on biographies of obscure women writers, rather under the radar stuff... contribute to more prominent articles makes one paranoid, anyone can come along and undo your work and leave nasty messages and you get very little oversight." [12]*

**Dr. Shlomit Lir, Ph.D.**

**Academic Advisor** - The Council for Advancement of Women in

Technology, Ministry of Science and Technology

Gender and Technology Researcher, Bar Ilan University, International Research Lab

The Center for Israel Studies, Ben-Gurion University of the Negev

[Note: We expect to update this section with some suggestions for a friendly environment, in order to increase interesting women contributions to Wikipedia.](#)

**Annex 5. Employment Data by subgroups of branches in Spain 2019, from INE.**

Table A3. Data from INE in Spanish

	Total	Male	Female
01 Agricultura, ganadería, caza y servicios relacionados con las mismas	729,8	552,2	177,6
02 Silvicultura y explotación forestal	28,3	25,2	3,1
03 Pesca y acuicultura	39,2	34,9	4,3

05 Extracción de antracita, hulla y lignito	2,0	1,8	0,1
06 Extracción de crudo de petróleo y gas natural	3,4	2,0	1,4
07 Extracción de minerales metálicos	2,8	2,6	0,2
08 Otras industrias extractivas	22,7	20,2	2,5
09 Actividades de apoyo a las industrias extractivas	1,8	1,8	0,0

10 Industria de la alimentación	456,1	284,7	171,4
11 Fabricación de bebidas	64,5	45,4	19,1
12 Industria del tabaco	1,3	0,8	0,4
13 Industria textil	55,2	26,7	28,5
14 Confección de prendas de vestir	55,0	16,7	38,2
15 Industria del cuero y del calzado	56,0	30,9	25,2
16 Industria de la madera y del corcho, excepto muebles; cestería y espartería	66,0	58,2	7,8
17 Industria del papel	44,7	35,2	9,4
18 Artes gráficas y reproducción de soportes grabados	96,1	68,9	27,3
19 Coquerías y refino de petróleo	19,7	14,6	5,1
20 Industria química	130,3	93,6	36,7
21 Fabricación de productos farmacéuticos	79,2	39,7	39,5
22 Fabricación de productos de caucho y plásticos	104,9	74,1	30,8
23 Fabricación de otros productos minerales no metálicos	108,9	89,5	19,4
24 Metalurgia; fabricación de productos de hierro, acero y ferroaleaciones	87,3	77,7	9,5
25 Fabricación de productos metálicos, excepto maquinaria y equipo	237,4	206,9	30,5
26 Fabricación de productos informáticos, electrónicos y ópticos	46,7	31,0	15,8
27 Fabricación de material y equipo eléctrico	69,2	52,2	17,0
28 Fabricación de maquinaria y equipo n.c.o.p.	154,0	128,0	26,0
29 Fabricación de vehículos de motor, remolques y semirremolques	228,1	169,3	58,9
30 Fabricación de otro material de transporte	74,6	61,6	13,0
31 Fabricación de muebles	91,4	79,5	11,9
32 Otras industrias manufactureras	57,9	29,2	28,8
33 Reparación e instalación de maquinaria y equipo	110,5	99,3	11,2

35 Suministro de energía eléctrica, gas, vapor y aire acondicionado	91,2	65,6	25,7
36 Captación, depuración y distribución de agua	50,0	38,2	11,8
37 Recogida y tratamiento de aguas residuales	5,8	5,0	0,7
38 Recogida, tratamiento y eliminación de residuos; valorización	80,6	65,6	15,0

39 Actividades de descontaminación y otros servicios de gestión de residuos	7,9	5,8	2,1
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41 Construcción de edificios	507,2	459,8	47,3
42 Ingeniería civil	105,9	91,9	13,9
43 Actividades de construcción especializada	664,8	612,0	52,9

## Commercial Services

45 Venta y reparación de vehículos de motor y motocicletas	338,1	285,0	53,1
46 Comercio al por mayor e intermediarios del comercio, excepto de vehículos de motor y motocicletas	803,6	522,9	280,7
47 Comercio al por menor, excepto de vehículos de motor y motocicletas	1.931,6	755,1	1.176,5

49 Transporte terrestre y por tubería	618,4	539,9	78,5
50 Transporte marítimo y por vías navegables interiores	21,7	15,9	5,8
51 Transporte aéreo	53,4	31,4	22,0
52 Almacenamiento y actividades anexas al transporte	220,4	163,6	56,8
53 Actividades postales y de correos	117,2	76,8	40,4

55 Servicios de alojamiento	407,8	166,1	241,7
56 Servicios de comidas y bebidas	1.307,6	629,0	678,5

58 Edición	51,4	27,8	23,6
59 Actividades cinematográficas, de vídeo y de programas de televisión, grabación de sonido y edición musical	39,0	23,8	15,3
60 Actividades de programación y emisión de radio y televisión	41,2	25,7	15,6
61 Telecomunicaciones	117,6	80,0	37,7
62 Programación, consultoría y otras actividades relacionadas con la informática	341,6	253,8	87,8
63 Servicios de información	11,7	6,5	5,2

64 Servicios financieros, excepto seguros y fondos de pensiones	245,0	116,4	128,6
65 Seguros, reaseguros y fondos de pensiones, excepto Seguridad Social obligatoria	128,9	57,8	71,1
66 Actividades auxiliares a los servicios financieros y a los seguros	55,3	27,4	27,9

69 Actividades jurídicas y de contabilidad			
70 Actividades de las sedes centrales; actividades de consultoría de gestión empresarial			
71 Servicios técnicos de arquitectura e ingeniería; ensayos y análisis técnicos			
72 Investigación y desarrollo			
73 Publicidad y estudios de mercado			
74 Otras actividades profesionales, científicas y técnicas			
75 Actividades veterinarias			

77 Actividades de alquiler	51,4	36,2	15,2
78 Actividades relacionadas con el empleo	34,3	12,3	22,0
79 Actividades de agencias de viajes, operadores turísticos, servicios de reservas y actividades relacionadas con los mismos	70,1	29,2	40,9
80 Actividades de seguridad e investigación	163,0	133,9	29,1
81 Servicios a edificios y actividades de jardinería	581,3	216,2	365,0
82 Actividades administrativas de oficina y otras actividades auxiliares a las empresas	130,4	46,2	84,2

86 Actividades sanitarias	1.116,8	307,7	809,1
87 Asistencia en establecimientos residenciales	325,8	53,3	272,5
88 Actividades de servicios sociales sin alojamiento	238,7	35,9	202,8

90 Actividades de creación, artísticas y espectáculos	75,6	50,3	25,3
91 Actividades de bibliotecas, archivos, museos y otras actividades culturales	40,3	16,4	23,9
92 Actividades de juegos de azar y apuestas	67,2	38,2	28,9
93 Actividades deportivas, recreativas y de entretenimiento	222,1	138,0	84,1

94 Actividades asociativas	114,8	43,8	71,1
95 Reparación de ordenadores, efectos personales y artículos de uso doméstico	45,6	35,0	10,6
96 Otros servicios personales	317,3	78,9	238,4

97 Actividades de los hogares como empleadores de personal doméstico	595,2	72,9	522,3
98 Actividades de los hogares como productores de bienes y servicios para uso propio	..	..	..

## Annex 6. Initiatives for visibility of Women Economists

Blogs of the Euro-American Association of Economic Development Studies:

There are several Entries related with women visibility in the Blogs of our Association:

<https://economyaydesarrollo-eeg.blogspot.com> (Spanish development) (Spanish)

<https://economyaydesarrollointernacional.blogspot.com> (Latin America and international) (Spanish)

<https://euroamericanassociation.blogspot.com> (World Development) (English)

Journal published by the EAAEDS: <https://www.usc.gal/economet/eaat.htm>