

Love for Sale Throughout European Countries: Assessing the Figures of Prostitution

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TO CITE THIS ARTICLE

Philippe ADAIR & Oksana NEZHIVENKO (2023). Love for Sale Throughout European Countries: Assessing the Figures of Prostitution. *Journal of Crime and Criminal Behavior*, 3: 1, pp. 251-276. <https://doi.org/10.47509/JCCB.2023.v03i01.13>

Abstract: The paper benchmarks the magnitude of sex work throughout 29 European countries (EU-28 and Norway), including *prohibitionist*, *regulationist*, *abolitionist* and *neo-abolitionist* regimes. First, literature review over the two past decades distinguishes between theoretical and empirical contribution, and voluntary versus coerced sex work. Second, scant data from representative household surveys on male sexual behaviour document the demand side. Third, data sources on the supply-side help designing three series of Estimates as of year 2010: one from HIV prevalence amongst female sex workers, one from international NGOs and one from victims of sexual exploitation trafficking. Fourth, Estimates are checked against National Accounts adjustment for illegal production on the supply side and for consumption expenditure on the demand side. Last, Estimates are assessed as for their share in the female labour force and informal employment.

Keywords: Estimates; European countries; Sex workers; Gender; Non Observed Economy.

JEL: E26, J46, J47

1. Introduction

When dealing with hidden activities such as prostitution, data are scant and may prove biased or even spurious, because both sex workers and customers may be reluctant to disclose their behaviour. Data on prostitution drawn from epidemiology focus on infection transmitted risks by sex workers. Data from NGOs are addressing social stigma alleviation, whereas those collected by the police aim at gauging law enforcement. It

is worth comparing data under scrutiny, whereas the claim that all macro-data should be dismissed is barking up the wrong tree. To the best of our knowledge, there is no benchmark analysis assessing the magnitude for non-coerced and coerced prostitution in European countries and especially the EU-28.

Two distinct approaches tackle the issue of prostitution. One is addressing legal sex work, supposedly a non-coerced market activity that deserves thorough analysis in terms of supply and demand. The other one is addressing coerced prostitution in terms of victims of illegal trafficking for sexual exploitation within a given country as well as cross-border migration. Such forced labour used as a proxy for estimating overall prostitution, blurs any distinction between non-coerced and coerced sex work. Hence, conflating prostitution with trafficking or slavery is misleading. Indeed, the controversial so-called “oldest profession”, raises moral and economic issues, encapsulated in the current distinct policy regimes ruling prostitution throughout Europe: *prohibition*, *regulation* and *abolition*, which all ban human trafficking for sexual exploitation.-

Prohibition makes prostitution illegal as well as the prostitute liable to penalties in four Member States (Croatia, Lithuania, Malta and Romania until decriminalisation in 2013).

As for *regulation*, prostitution is a legal trade in brothels, including tax collection and labour contracts for sex workers, in four Member States (Austria, Germany, Greece and the Netherlands).

Abolition, in accordance with the Universal Declaration of Human Rights (UN, 1948), advocates that sexual exploitation should be extinct as well as non-coercive sex trade. Pimps and brothels managers should be prosecuted, but not the prostitutes themselves. This policy regime applies to the remaining 19 Member States, Sweden being excepted.

Sweden (1999) pioneered the *neo-abolitionist* regime prosecuting demand for paid sex from customers, which Iceland (2009) and Norway (2009) also adopted. Since 2010, Northern Ireland (2015), France (2016) and the Republic of Ireland (2017) joined this stand, although policies may differ (Rogoz, 2016). Data are unfortunately missing for Iceland as well as for Northern Ireland.

The paper is structured as follows. Section two provides a literature review addressing both the demand side and the supply side, as well theoretical and empirical contributions. Section three investigates the demand side using scant data from representative household surveys. Section four collects the data sources on the supply-side and designs three series of Estimates: two from HIV prevalence amongst female sex workers, two others from data collected by international NGOs; and the last one from victims of sexual exploitation trafficking according to Eurostat and the UNODC in 2010. Section five checks Estimates with respect to National Accounts

adjustment for illegal production as well as for consumption expenditure; we point out the puzzling issue of prostitution, a legal economic activity considered as illegal, which is not classified as an occupation according to international standards and belong to informal employment. In concluding comments, we discuss what might be the most likely Estimates as for 2010 and recapitulate main findings.

2. Literature review

The literature review focuses on European contributions, among which those from the UK are quite numerous and deserve a thorough look, although the UK is not representative of overall EU countries.

We make a distinction between two strands of economic literature on prostitution, one is theoretical and the other one is empirical. Of course, the former does not run opposite to the latter, which either paves the way to test the predictions of the former or provides new insights requiring a new analysis.

In a seminal theoretical contribution, Edlund & Korn (2002) address the supply side explaining the paradox of high compensation for low-skilled female sex workers (henceforth FSW) by linking the sacrifice of forgone marriage prospects and returns from the labour market. FSW earn more than women with similar human capital characteristics do, and prostitution brings in a premium that is a serious challenge to the conventional human capital theory, despite the Beckerian flavour of the model. Noteworthy is that premium is related to gross revenue, because pimps are not included in the explanation. Furthermore, the paper includes no empirical survey.

Farmer & Horowitz (2013) focus on the role of intermediaries (pimps or brothel owners) develop a theoretical model to analyse the distribution of market surplus according to the presence or absence of intermediaries and the segmentation between “high quality” and “low quality” sex market.

Lee & Persson (2021) emphasize the key distinction between coerced and voluntary sex work supply, without providing some insight regarding the estimated share of each segment. They use a modified Edlund & Korn model including trafficking to analyse different regulatory regimes.

Della Giusta *et al* (2005, 2009) challenge the Edlund & Korn model, providing another explanation according to which it is social stigma, as the cost of reputation loss that is borne by the sex worker, whether FSW or MSW. It proves more general but more difficult to test (Peng 2016).

Della Giusta (2010) designs a theoretical model based on stigma and discusses costs and benefits of various prostitution regimes.

Regarding the empirical strand of literature, it is worth mentioning that the Edlund & Korn paper was intensely debated and rejected on empirical grounds by

Cameron (2002), addressing prostitution from the supply side as subject to the logic of choice in the economic model. Peng (2016) acknowledges that the pioneer Edlund & Korn model does not pass all tests.

British National Survey of Sexual attitudes and Lifestyles (Natsal) documenting male demand for FSW services was conducted in 1990-1991, in 2000-2001 and in 2010-2102 upon a large representative sample of clients and non-clients aged at least 16-44 years. Several papers addressing the analytics of demand in the UK take advantage of these data.

Cameron & Collins (2003) present a probit demand model of male decisions whether or not to consume female prostitution services based on subjective expected utility maximising behaviour. They use 1990-1991 Natsal survey.

Della Giusta *et al* (2017) use the 2000-2001 Natsal survey, but restrict their sample to men aged 26- 44 years; thus, there is no difference as regards average age between clients and non-clients. Their probit model includes the same variables as in Cameron and Collins (2003); determinants are very similar albeit educational attainment and skills seem to run opposite: client are better educated although more unskilled; clients are less often married or cohabiting than non-clients. Both these surveys are biased as regards the age groups of clients, in as much as males over 44 years old are also potential clients.

Extending the perspective brings in other issues dealing with predictions and empirical observations on demand for paid sex, such as rape as a potential substitute to paid sex (Ciacci, 2021) and the impact of institutional change before and especially since 2014 throughout several countries in Europe. Britain applied tougher conditions in the 2000 decade, whereas criminalisation on the demand-side was fostered by the neo-abolitionist regime and was adopted in the EU by France, Ireland and Northern Ireland.

Collins and Judge (2010) focus on the spill-over effects of harsher policing on the amount of prostitution in neighboring regions. Given the (strong) assumption that the price of paid sex remains constant, the demand will shift from the more policed to the less policed sector.

Platt *et al* (2018) used a meta-analysis of 40 quantitative and 94 qualitative studies published over 1990-2018, finding a positive association between (partial) sex work criminalisation—including that of clients and adverse health outcomes but neither demand nor supply is gauged. They suggest that demand for sex workers remain unchanged. They point out five-studies in Spain (1998), UK (2011, 2014) Netherlands (2014) and Sweden (2014) as for European countries among 94 qualitative studies. Noteworthy is that only partial criminalisation was represented in Europe wherein there is no full criminalisation (including within the *prohibition* regime) or decriminalisation (in the *regulationist* regime).

Sonnabend & Stadtmann (2019) design a theoretical analysis regarding how the so-called ‘neo-abolitionism’ prostitution regime criminalising demand from clients ex services impacts the supply of forced sex work. The effect is ambiguous and depends on the size of the deterrence effect and the composition of clients may change towards more risk-seeking individuals.

Cameron *et al* (2021) contend that if criminalization shrinks the supply side of the market on the short terms, the market rebounds in the longer-term as in Sweden.

Della Giusta *et al* (2021) focus on Natsal 2 and Natsal 3 surveys, and exploit the change in regulation as of 2009, which made it illegal to pay for services from a prostitute in the UK. Overall, the proportion having ever paid for sex has increased. Demand for sexual services might be inelastic to both the market price and the implicit price of stigma, whereby criminalisation is not likely to drive a decline in demand for paid sex.

Ciacchi R. (2021) examines the imperfect substitutive relationship between prostitution regime and rape and estimates correlations using a panel data of 18 European countries over 1975–2012. He suggests that both the neo-abolitionist regime (Sweden) and the *regulationist* regime (The Netherlands) increase rape, the effect of the former being larger than that of the latter. In addition, criminalisation does not shrink overall demand for sex.

3. Figures of prostitution in the EU from the demand side

According to a systematic mapping from 1970 to April 2018, Berg *et al* (2020) found 25 papers addressing women as customers from male sex workers. Most trade took place abroad and none in a European country as a setting. Although, demand for sex cannot be restricted to male customers, almost all quantitative studies focus on demand for prostitution from men addressing FSW and, to some extent, MSW. In the 2010–2012 Natsal survey, only 0.1% of British women admitted paying for sex, while one in 10 men admitted doing so, namely a factor 100.

Box 1. Male sex workers (MSW)

Paid sex is not restricted to services provided by female sex workers (FSW).

Cameron *et al* (1999) unfold an empirical analysis of the supply of male prostitution services in the UK with data drawn from individual prostitute advertisements, which cannot provide an estimate of overall MSW in the UK.

McCann *et al* (2021) conducted a meta-analysis in high-income countries (including ten European countries) upon 95 papers published between 1978 and 2019.

Three country studies only focused upon MSW (England, Portugal and Spain) and England only could provide some comparative self-reported data between MSW (Grath-Lone, 2014a) and FSW (Grath-Lone, 2014b) from visiting a London clinic. A tentative estimate suggests that MSW account for 15% of all sex workers (in London).

Male behaviour regarding demand for paid sex remains a controversial issue. Is it universal and different from female behavior? Farley *et al* (2011) use a non-representative sample of 110 in-depth interviews with men, almost nine out of ten being heterosexuals. The primary reasons for buying sex were a biological imperative or the assertion that men have a right to sexual access. Additional reasons include convenience, variety, the thrill, male bonding, and sex addiction. Noteworthy is that no comparative study investigated females who purchase sex from MSW or FSW.

In line with the neo-abolitionist regime, some scholars contend that demand should -and actually can be curbed (Jakobsson, & Kotsadam, 2013), whereas some others (Cho *et al*, 2013) assume that demand is inelastic.

Admittedly, sexual patterns and demand for prostitution differ according to European countries (Leridon *et al*, 1998). Table 1 reports significant figures upon demand addressing FSW.

In the early nineties, national household surveys on sexual behaviour (Natsal) were conducted in seven Member States plus Norway upon a sample including only 18–49 years old age group. The median value is below 5%. In the late nineties, surveys based upon the EU New Encounter Module (NEM) upon a sample of all adult age groups cover only five Member States plus Norway and provide much smaller figures, the median value standing slightly above 2.22%.

Three caveats apply. In the first place, one should keep in mind that men might be underreporting their number of paid sex partners as for all figures from national representative surveys. Underreporting may not be an issue as for figures from behavioural surveillance surveys and small-scale studies conducted among population groups with high-risk behaviours, but these samples are not representative for the entire population (Craael, 2006) and require weighting.

Second, there is a bias in the early 1990s surveys due to age concentration and small sample size for some countries; hence, one cannot conclude that demand is declining over time in Denmark and Sweden, whereas it would have been rising in Finland and Norway.

According to Kotsadam & Jakobsson (2014), the share of men who reported buying sex during the past six months as of the 2000s was lowest in Sweden (0.29%), much higher in Norway (0.93%) and in Denmark (1.3%).

We acknowledge the absence of a robust variable that would gauge demand for paid sex overtime, which is little documented. However, a loose proxy for sexual behavior might be the answer to the question 'have you ever paid for sex' (i.e. once in your life) recorded in Table 2, which supports the assumption of stable demand over time.

Table 1: Share of men from the European countries reporting having paid for sex in the past 12 months

<i>Country</i>	<i>Year</i>	<i>Clients of FSW: percentage of adult male population</i>	<i>Source</i>
France	1992	1.1	Natsal
France	1998	0.7	NEM
Germany (West)	1990	4.8	Natsal
Germany	1998	0.0	NEM
Greece	1998	5.3	NEM
Italy	1992	2.0	Natsal
Italy	1998	1.7	NEM
Netherlands	1989	2.8	Natsal
Portugal	1991	5.4	Natsal
Portugal	1999	2.4	NEM
Spain	1990	11.0	Natsal
UK	1990	2.0	Natsal-1
UK	1998	1.0	NEM
UK	2010-12	1.1	Natsal-3
Norway	1992	1.8	Natsal
Norway	1997	1.7	NEM

Source: Ward *et al* (2005), Carael *et al* (2006), Jones *et al* (2015)

Table 2: Men who ever paid for sex at least once in their life

<i>Country</i>	<i>% of men</i>	<i>Sample size (N)</i>	<i>Year</i>	<i>Source</i>
Denmark	14	1,155	1987	Schmidt <i>et al</i> (1989)
Denmark	13	1,466	1989	Melbye & Biggar (1992)
Denmark	11.3	22,410	2006-2007	Butmann <i>et al</i> (2011)
Finland	11	1,103	1992	Haavio-Mannila and Kontula (2003)
Finland	13	575	1999	Haavio-Mannila and Kontula (2003)
France	18.1	5,540	2006	Bajos <i>et al</i> (2007)
Norway	11	1,617	1992	Leridon <i>et al</i> (1998)
Norway	12.9	4,545	2002	Schei & Stigum (2009)
Sweden	13.6	1,475	1996	Lewin <i>et al</i> (1998)
Sweden	8	600	2008	Kuosmanen (2011)
Sweden	9.5	6,048	2017	Deogan <i>et al</i> (2021)

Sources: Authors' compilation.

A mere conclusion seems to be that the larger the sample, the weaker the share of customers who pay for sex. Hence, our assumption is that demand proves rather inelastic over time.

4. Figures of prostitution from the supply side

The gender distribution of sex workers varies across countries and is not restricted to female sex workers (FSW). According to Adriaenssens *et al* (2015), male sex workers (MSW) account for 5% as in Belgium. As for Britain, it is estimated that 85-90% of all sex workers are females (House of Commons, 2016). MSW constitute a group less commonly studied. With respect to Europe, Baral *et al* (2015) cite only one paper using a clinic-based sample in London as of 2006 (Sethi *et al* 2006). While clients of MSW include women, commercial heterosexual sex is likely a small share (5% self-identified as heterosexual) of all commercial sex from MSW, three out of four being homosexual.

As for 2008, FSW constitute 86% of the sex worker population in 25 European countries, whereas MSW account for a conservative 8% and transgender people for 6% (TAMPEP 2009, p. 152). In as much as country level data are lacking for the two last categories (Beyrer *et al*, 2015), we focus upon FSW.

Hereafter, we address the following question: what is the magnitude of sex workers throughout these European countries? We collect the relevant data from secondary sources and design three series of Estimates (Adair & Nezhyvenko, 2020): two from HIV prevalence amongst FSW, two others from miscellaneous sources collected by international NGOs and the last two from victims of sexual exploitation trafficking according to the ILO, as well as Eurostat and the UNODC.

4.1. Estimates of female sex workers from HIV prevalence

Table 3 records the number of FSW from HIV prevalence data provided by the World Health Organisation, UNAIDS and Eurosurveillance as well as field investigations.

Platt *et al* (2013) emphasize the paucity of data on HIV prevalence that include 14-20 EU countries (9,646-14,548 FSW) spanning from 2001 up to 2011. Country samples sometimes prove too small (below one hundred individuals) and biased with respect to specific categories (street prostitution) or location (capital city) that may overestimate HIV among sex workers; conversely, stigma and restrictive health policies towards migrants may drive underestimation.

Estimate 1A is based on multilevel modeling and multivariate linear regression (Prüss-Ustün *et al*, 2013) upon data collected in mid and late 2000s. Coverage for FSW was adjusted for injection drug use, which makes it a conservative estimate; we completed missing data with the median value of HIV prevalence in EU-28 (0.3%).

Estimate 1B is based on data collection related either to 2000 or 2004 (Vandepitte *et al*, 2006; Platt *et al*, 2013). We completed missing data with the median value of HIV prevalence in the EU (0.43%). Vandepitte *et al* (2006) acknowledge these are 'only very rough Estimates' and do not explain the estimation methods beyond the use

Table 3: Estimates of female sex workers from HIV prevalence (2010 and early 2000s)

Country	Females aged 15-64 (2010)	Females aged 15-49 (2000 or 2004)	FSW as a % of females aged 15-64 (year) ^a	Estimate 1A Number of FSW (2011)	FSW as a % of females aged 15-49 (year)	Estimate 1B Number of FSW (year) ^b
Austria	2 834 771	1 997 366	0.5 (2009)	14 159	1.03 (2000)	20 573
Belgium	3 569 607	2 457 970	0.2 (2008)	7 200	0.47 (2000)	11 552
Bulgaria	2 526 777	1 938 308	0.3 (2008)	7 500	0.52 (2004)	10 079
Croatia	1 472 363	1 085 384	0.2 (2006)	2 877	0.52 (2004)	5 644
Cyprus	391 080	266 650	N/A (0.3) ^a	913	N/A (0.43) ^a	1 147
Czech Rep	3 645 871	2 534 082	0.2 (2005)	7 244	0.38 (2004)	9 630
Denmark	1 772 423	1 254 051	0.2 (2006)	3 603	0.35 (2000)	4 389
Estonia	474 084	338 431	0.5 (2006)	2 279	0.72 (2004)	2 437
Finland	1 757 791	1 220 163	0.1 (2009)	1 753	0.32 (2000)	3 905
France	19 826 818	14 442 373	0.1 (2006)	20 609	0.17 (2000)	24 552
Germany	26 940 240	19 535 771	0.7 (2007)	186 667	1.45 (2000)	283 269
Greece	3 755 038	2 796 227	0.2 (2006)	7 352	0.34 (2000)	9 507
Hungary	3 549 879	2 452 329	0.3 (2000)	10 418	0.52 (2004)	12 752
Ireland	1 572 928	1 115 378	N/A (0.3) ^a	4 619	N/A (0.43) ^a	4 796
Italy	19 513 215	13 916 327	0.2 (2006)	39 136	0.33 (2000)	45 924
Latvia	801 369	576 022	0.7 (2007)	5 074	1.04 (2004)	5 991
Lithuania	1 100 411	883 897	0.4 (2008)	4 253	0.47 (2004)	4 154
Luxembourg	171 121	109 003	0.2 (2008)	345	1.64 (2000)	1 788
Malta	141 841	97 104	N/A (0.3) ^a	424	N/A (0.43) ^a	418
Netherlands	5 326 650	3 954 726	0.3(2002)	16 614	0.43 (2000)	17 005
Norway	1 495 486	1 067 868	0.2 (2005)	2 991	0.3 (2000)	3 204
Poland	13 556 499	9 945 657	0.3 (2006)	40 741	0.34 (2004)	33 815
Portugal	3 617 774	2 622 604	N/A (0.3) ^a	10 746	0.27 (2007)	7 081
Romania	7 387 376	5 411 431	0.3 (2006)	20 599	0.47 (2004)	25 434
Slovakia	1 943 623	1 441 761	0.2 (2006)	3 877	0.39 (2004)	5 623
Slovenia	693 598	503 285	0.7 (2004)	4 828	0.92 (2004)	4 630
Spain	15 706 866	11 291 339	0.3 (2008)	46 914	N/A (0.43) ^a	48 553
Sweden	2 903 516	1 983 359	0.1 (2007)	1 503	0.1 (2000)	1 983
UK	19 962 675	14 148 579	0.3 (2003)	62 648	0.4 (2000)	56 594
Total 29 countries	168 411 690	121 387 445		537 886		666 429
EU-28	166 916 204	120 319 577	0.3 ^a	534 895	0.43 ^a	663 225

Note: N/A: Not available. a EU median.

Source: a (Platt *et al*, 2013; Vandepitte *et al*, 2006); b (Prüss-Ustün *et al*, 2013) and authors' calculations.

of a multiplier, namely the ratio of adjusted HIV prevalent FSW upon HIV prevalent females times female population aged 15-49 for a given year.

In as much as sources and methods differ, we have no strong clue to decide whether Estimate 1A understates versus Estimate 1B overstates the magnitude of FSW.

Prostitution patterns did change throughout the decade (Hubbard *et al*, 2008), although change may not be captured by HIV prevalence in the EU that remains roughly stable from the early 2000s, whereas data collection and HIV reporting improved over time (ECDC, 2014). The decline in numbers throughout the decade could be driven by a shift in risk behaviour towards safer sex practices from prostitutes (UNAIDS, 2012) alongside the extension of indoor prostitution. In contrast, the no use of condom may be due to the increasing share of migrants among (street) prostitutes.

Whatever the Estimate (1A or 1B), the prevalence of FSW among females is below EU average and quite close across countries, Ireland being excepted.

4.2. Estimates from NGOs and miscellaneous sources

An international NGO (TAMPEP, 2010) built reports from a standardised questionnaire for 23 EU countries and Norway; Ireland and Sweden are missing. Some answers regarding earnings suggest that the questions were misunderstood and figures were not checked. Almost two thirds of sex workers in Europe work indoor. Twelve EU countries wherein the share of migrants among sex workers is above 50 % are net importers. Conversely, ten EU countries wherein the share of nationals among sex workers is above 50 % are most likely to be exporters. One third of migrants came from EU countries; Romania and Bulgaria were most mentioned countries of origin. The distribution of sex workers is respectively 30 % and almost 70 % for nationals and migrants. Migrants are highly mobile and more vulnerable as regards working conditions and risks (including HIV as well as deportation); two thirds are prone to be exploited by third party (pimps and brothel managers), whereas the share is one third as for nationals. Most sex workers in the EU-28, possibly less than three out of five (55%), would be trapped into coerced sex labour, whereas over two out of five sex workers (45%) would not face coercion. Figures from TAMPEP (2009) are recorded in Table 4.

In order to fill in the vacuum for the missing countries from TAMPEP, we collected data from the abolitionist Scelles foundation (Charpenel, 2013). We designed Estimate 2A as the highest of the lowest (*maximin*) and Estimate 2B as the lowest of the highest (*minimax*). Figures recorded in Table 4 come from miscellaneous sources (NGOs, the police, etc.) and no information is available as regards coverage and period for data collection.

Table 4: Sex workers circa 2010: Estimates 2A and 2B from NGOs and miscellaneous sources

Country	Number of adult females (thousand)	Number of prostitutes (thousand)					Prostitutes as a % of adult females	
		TAMPEP ^a	UN-AIDS ^b , or other source	Charpenel ^c	Estimate 2A Maximin	Estimate 2B Minimax	Estimate 2A	Estimate 2B
Austria	2 835	27-30	5-15	5,5-10	10	27	0.35	0.95
Belgium	3 570	15-20		10-15	15	15	0.42	0.42
Bulgaria	2 527	6-10		8-10	10	10	0.40	0.40
Croatia	1 453	N/A		6,7	6,7	6,7	0.46	0.46
Cyprus	391	N/A		N/A	0,915*	1,446*	0.23	0.37
Czech Rep	3 662	10-13	13	5-25	13	25	0.35	0.68
Denmark	1 799	5,56		5,5	5,5	5,5	0.31	0.31
Estonia	458	1-1,2	1	1	1	1,2	0.22	0.26
Finland	1 758	5-6		12-15	6	12	0.34	0.68
France	20 343	18-30		18-20	20	30	0.10	0.15
Germany	26 368	400		150-400	150	400	0.57	1.52
Greece	3 802	10		1,2-20	10	20	0.26	0.53
Hungary	3 483	10-15		8-10	10	15	0.29	0.43
Ireland	1 573	N/A		1	1	1	0.06	0.06
Italy	19 608	50		50-100	50	100	0.25	0.51
Latvia	742	2-3		15-20	3	20	0.40	2.69
Lithuania	1 100	1,25-1,55		N/A	1,55	1,55	0.14	0.14
Luxembourg	171	5		N/A	5	5	2.92	2.92
Malta	142	N/A		N/A	0,467*	0,467*	0.33	0.33
Netherlands	5 535	10-15	25	20-30	15	30	0.27	0.54
Norway	1 586	3,3			3,3	3,3	0.21	0.21
Poland	13 732	10		12	10	12	0.07	0.09
Portugal	3 618	9,7		28	9,7	28	0.27	0.77
Romania	7 021	2,5-3,8		23-47	3,8	23	0.05	0.33
Slovakia	1 957	7,5		N/A	7,5	7,5	0.38	0.38
Slovenia	688	1,5-3		N/A	1,5	3	0.38	0.38
Spain	15 707	6		300-400	300	300	1.91	1.91
Sweden	3 015			1,5	1,5	1,5	0.05	0.05
UK	20 945	58-80		80-100	80	80	0.38	0.38
Total 29 countries	171 245				751,432	1,185 163	0.426**	0.674**
EU-28	169 659	693-730		740,4-1,253,7	748,132	1,181 863	0.441**	0.697**

Note: * EU-28 median. ** Average.

Source: a (TAMPEP, 2009), b (UNAIDS, 2014), c (Charpenel, 2013). Authors' calculations.

4.3. Forced labour, sexual exploitation trafficking and prostitution

The ILO (2012a), alongside Eurostat (2013a) and the UNODC (2014) document the patterns and magnitude of prostitution throughout Europe as for year 2010. Data available across countries cover age and gender of the victims of sexual exploitation. Their main limitation is that victims recording depends on judicial and police effectiveness.

4.3.1. Estimate of sex trafficking from the ILO

The ILO (2009) designed a list of 67 indicators related to trafficking. The subset of indicators for sexual exploitation encapsulates very bad working conditions (including excessive working time and hazardous work), low or no salary (including wage manipulation) and no compliance with labour regulations (including the absence of contract and social protection). In this respect, forced labour for commercial sex includes women and men who have involuntarily entered a form of commercial sexual exploitation, or who have entered the sex industry voluntarily but cannot leave it (ILO, 2018).

Lim (2007) pinpoints that trafficking should not be conflated with prostitution, arguing that there is no consensus upon the abolitionist view embedded in the Palermo Protocol, according to which all prostitution involves trafficking and rejecting, without evidence, the view that non-coerced prostitution can and does exist without trafficking.

The ILO (2012a) computed a global estimate of forced labour for the 2002-2011 reference period from a capture-recapture investigation based on reported cases from different sources (research institutes, NGOs and the media). As for the EU-28 only, forced sexual exploitation amounts to 270,000 female victims (98 %) and the average duration for sexual exploitation turnover is below 18 months. This figure does not gauge the magnitude of overall prostitution, although it might be a starting point to compile Estimate 3A. Unfortunately, it cannot be estimated because country distribution is missing.

4.3.2. Estimate of sex trafficking in Europe: Eurostat and UNODC

Eurostat (2013a) collected data on human beings trafficking over 2008-2010. As of 2010, 20 EU Member States reported data upon identified and presumed victims of trafficking for sexual exploitation predominantly females (96 %). Sexual exploitation includes all forms of forced prostitution whether indoor or outdoor. Most victims detected in EU Member States are citizens from Romania and Bulgaria.

The UNODC (2014) in charge of monitoring the Palermo Protocol provided some similar patterns for the period 2010- 2012. Among the detected victims trafficked to EU countries, sexual exploitation is prevalent (66.25 %). According to the gap with

the country of origin, the richer the destination country, the higher the profits sexual exploitation can generate.

We compiled the data upon victims of sexual exploitation in 2010, from Eurostat (2013a) and UNODC (2014), whereby databases do not collect information from the same secondary sources, thus preferably using Eurostat series for consistency.

Table 5 reports the average number of victims of sexual exploitation as for the EU-28 and Norway in year 2010, which is slightly over one per one thousand hundred inhabitants, standing as the usual indicator. No clear pattern emerges from the figures for the various countries, according to both the number of victims and compliance with the Palermo Protocol.

Among countries that are compliant (Tier 1) Finland and Norway are way below average, whereas France and Ireland are close to average and Sweden stands well above average.

According to the UNODC (2010) the detection ratio is one in 20 victims of sexual exploitation trafficking, hence, multiplier is $\lambda = 20$; furthermore, one in seven sex workers would be a victim of trafficking ($\mu = 7$), a share that remains undocumented. Thus, we calculate the number of victims of sexual exploitation in each country and extrapolate the magnitude of prostitution (see last column in Table 5) with the following formula: $\Sigma \text{victims} (\lambda \mu)$. We come up with our Estimate 3B. The UNODC calculates a stock from a flow, ignoring how large is the flow that leaves the market (replacement) or just moves across countries. The accuracy of such a proxy to gauge prostitution at country level is disputable (Savona and Stefanizzi, 2007). Be it as it may, Estimate 3B is checked alongside other Estimates.

Noteworthy is that Walby *et al* (2016) provide an extensive study on prostitution and trafficking in human beings, based on data from Eurostat, Europol and UNODC. Notwithstanding data and related concepts are flawed, this study overlooks several other data sources on prostitution, especially those from epidemiology surveys.

5. Comparing the Estimates of prostitution in EU-28 (+ Norway)

5.1. Comparing Estimates and country ranking

According to OLS regression and an ordered probit upon EU-28 plus Norway as of year 2010, Tables A1 and A2 (See Appendix) show that Estimate 1A is obviously the most reliable one. Although the data set is small, it does not preclude econometric analysis.

Table 6 reports country ranking according to the share of sex workers among the female labour force (workers aged 15-64), when dividing ranking into quartiles. Score

Table 5: Victims of sexual exploitation (both males and females) and prevalence in Europe as for year 2010

<i>Country</i>	<i>Number of inhabitants (100,000)</i>	<i>Compliance with Palermo Protocol</i>	<i>Number of victims (Eurostat)</i>	<i>Number of victims (UNODC)</i>	<i>Number of victims (Eurostat or UNODC)</i>	<i>Number of victims /100,000 inhabitants</i>	<i>Estimate 3B Number of victims x20x7</i>
Austria	84,099	Tier 1	N/A	49	49	0,585	6 860
Belgium	109,387	Tier 1	43	N/A	43	0,382	5 880
Bulgaria	74,046	Tier 2	366	339	366	4,966	51 240
Croatia	43,282	Tier 2	2	4	2	0,047	280
Cyprus	11,126	Tier 2	24	24	24	2,858	3 360
Czech Rep.	105,363	Tier 1	3		3	0,029	2 100
Denmark	55,548	Tier 1	50	70	50	0,899	6 580
Estonia	13,321	Tier 2	N/A	20	20	1,504	2 800
Finland	53,658	Tier 1	26	20	26	0,484	3 640
France	630,267	Tier 1	726		726	1,117	98 420
Germany	808,948	Tier 1	610	419	610	0,719	82 320
Greece	114,460	Tier 2	N/A	69	69	0,620	9 660
Hungary	99,278	Tier 2	5	52	5	0,050	700
Ireland	46,269	Tier 1	56	52	56	1,116	7 140
Italy	597,298	Tier 1	N/A	61	61	0,103	8 540
Latvia	21,188	Tier 2	3	4	3	0,145	420
Lithuania	31,238	Tier 2	N/A	15	15	0,491	2 100
Luxembourg	5,079	Tier 1	6	N/A	6	1,172	840
Malta	4,161	Tier 2	4	N/A	4	0,964	560
Netherlands	166,829	Tier 1	749	900	749	4,497	104 860
Norway	48,859	Tier 1	26		26	0,532	3 640
Poland	383,234	Tier 1	N/A	169	169	0,444	23 660
Portugal	106,523	Tier 2	N/A	17	17	0,161	1 400
Romania	204,404	Tier 2	482	520	482	2,386	67 480
Slovakia	54,043	Tier 1	9	13	9	0,167	1 260
Slovenia	20,452	Tier 1	6	22	6	0,293	840
Spain	467,886	Tier 1	1 605	207	1 605	3,439	224 700
Sweden	93,902	Tier 1	19	34	19	2,018	2 660
UK	633,068	Tier 1	95	173	95	0,151	13 300
Total	5 087,218		4,915		5,315	1,115*	737 240
EU-28	5 038,359		4,889	2,823	5,289	1,136*	733 600

Note: * Unweighted average

Source: Eurostat (2013a) and UNODC (2014); authors' compilation and calculations.

is respectively 4 for the highest quartile, 3 for the second highest, etc. Noteworthy is that overall score is higher for former transition countries than for most Western EU countries, whereas there is no unique pattern for countries with legal brothels that score high as for Austria and Germany versus Greece and the Netherlands.

Table 6: Countries ranking: share of prostitutes in the female labour force according to Estimates as of 2010

<i>Country</i>	<i>Female labour force (15-64)</i>	<i>Estimate 1A Score</i>	<i>Estimate 1 B Score</i>	<i>Estimate 2A Score</i>	<i>Estimate 2B Score</i>	<i>Estimate 3B Score</i>	<i>Overall Score</i>					
Austria	1 954 000	0.725	4	1.053	4	0.512	3	1.382	4	0.351	3	3.6
Belgium	2 202 000	0.324	1	0.525	2	0.681	3	0.681	2	0.267	2	2
Bulgaria	1 572 000	0.482	3	0.641	3	0.636	3	0.636	2	3.260	4	3
Croatia	865 000	0.340	2	0.652	3	0.775	4	0.775	3	0.032	1	2.6
Cyprus	261 000	0.450	2	0.439	2	0.351	2	0.554	2	1.287	4	2.4
Czech Rep.	2 251 000	0.324	1	0.428	2	0.578	3	1.111	4	0.093	1	2.2
Denmark	1 367 000	0.259	1	0.321	1	0.402	2	0.402	1	0.481	3	1.6
Estonia	326 000	0.727	4	0.748	3	0.307	2	0.368	1	0.859	4	2.8
Finland	1 275 000	0.138	1	0.306	1	0.471	2	0.941	3	0.285	2	1.8
France	13 788 000	0.144	1	0.178	1	0.145	1	0.218	1	0.714	3	1.4
Germany	18 688 000	1.009	4	1.516	4	0.803	4	2.140	4	0.440	3	3.8
Greece	2 199 000	0.342	2	0.432	2	0.455	2	0.910	3	0.439	3	2.4
Hungary	1 956 000	0.544	3	0.652	3	0.511	3	0.767	3	0.036	1	2.6
Ireland	977 000	0.483	3	0.491	2	0.102	1	0.102	1	0.731	3	2
Italy	9 976 000	0.391	2	0.460	2	0.501	2	1.002	3	0.086	1	2
Latvia	527 000	1.064	4	1.137	4	0.569	3	3.795	4	0.080	1	3.2
Lithuania	756 000	0.582	3	0.549	3	0.205	1	0.205	1	0.278	2	2
Luxembourg	103 000	0.332	2	1.736	4	4.854	4	4.854	4	0.816	4	3.6
Malta	61 000	0.698	4	0.685	3	0.766	4	0.766	3	0.918	4	3.6
Netherlands	4 017 000	0.398	2	0.423	1	0.373	2	0.747	2	2.610	4	2.2
Norway	1 196 000	0.250	1	0.268	1	0.276	1	0.276	1	0.304	2	1.2
Poland	8 088 000	0.503	3	0.418	1	0.124	1	0.148	1	0.293	2	1.6
Portugal	2 519 000	0.431	2	0.281	1	0.385	2	1.112	4	0.056	1	2
Romania	3 934 000	0.563	3	0.647	3	0.097	1	0.585	2	1.715	4	2.6
Slovakia	1 200 000	0.324	1	0.469	2	0.625	3	0.625	2	0.105	1	1.8
Slovenia	464 000	1.046	4	0.998	4	0.323	2	0.647	2	0.181	2	2.8
Spain	10 412 000	0.453	3	0.466	2	2.881	4	2.881	4	2.158	4	3.4
Sweden	2 295 000	0.063	1	0.086	1	0.065	1	0.065	1	0.116	2	1.2
UK	14 494 000	0.413	2	0.390	1	0.552	3	0.552	1	0.092	1	1.6

Note: Countries in bold with a high share, within the last two quartiles (3 and 4), stand above maximum score =2.

Source: Authors.

5.2. The Non-Observed Economy (NOE) and illegal prostitution

In search for exhaustiveness, Eurostat (2012b) requested that National Accounts adjust for illegal production (N2), which gathers all prohibited activities that are neither registered nor licensed encapsulating illegal prostitution as well as narcotics and smuggled or regulated goods (tobacco, alcohol, firearms, etc.). By September 2014, all Member States adjusted their National Accounts to ESA 2010 (Eurostat, 2013b) and compiled illegal production (N2).

Table 7 records the figures for N2, as well as the share of prostitution, from the supply side and the demand side for EU-28 that could amount to 0.49 percent of EU-28 GDP in 2010.

We compiled Estimates for prostitution from the supply side as of 25 EU Member States, which is a 76.7 % share of EU-28 GDP in 2010, that would account for a 0.193 % mean.

From the demand side, according to the households' final consumption expenditure by consumption purpose (COICOP) as for 20 EU countries in 2010, which is a 50.3 % share of EU-28 GDP, prostitution could amount to a 0.178 % mean.

5.3. Neither a profession nor an occupation, prostitution is informal employment.

Azam *et al* (2021) use a single registration capture-recapture population from online clients' assessments of sex workers on large website for the Netherlands and Belgium. They find that the share of FSW in the overall adult female population (15-49 years old) of the two countries is quite close despite different legal environments, and proves considerably lower than other epidemiology estimates: 0.15% for the Netherlands and 0.18% for the northern part of Belgium.

The status of the 'oldest profession' remains a puzzling issue in the light of inconsistencies between several classifications. First, prostitution is included in N2 as an illegal economic activity with respect to National Accounts, although it is legal in most European countries. On the demand side, COICOP already included prostitution and this is explicit in the revised classification (UNSC, 2018). Second, sex work is not classified as an occupation in the International Standard Classification of Occupations (ISCO) designed by the ILO (2012b), although it may fall within the minor group 5169 (Personal Services Workers Not Elsewhere Classified), which does not address explicitly commercial sex but 'hostess' or 'social escort'. A note indicates 'that countries that have a requirement to compile statistics on those who provide sexual services on a commercial basis should include these' (ILO, 2012b, pp. 243-244). Sex workers are not registered as employees and they come under the category of self-employed, although most of them may not be self-employed, whether coerced or salaried workers.

Table 7: Illegal production and prostitution: Contribution to GDP in EU-28 as of 2010

EU countries	2010 GDP (€ billion)	N2 as a % of GDP	Prostitution			
			from the supply-side		from the demand-side	
			As a % of GDP	€ million	As a % of GDP	€ million
Austria	284	0.16	0.08	225	0.179	508.5
Belgium	353	0.37	0.09	317.7	N/C	N/C
Bulgaria	36	0.21,	0.09	32.4	0.044	16.0
Croatia	46	0.7	0.27	124.2	N/C	N/C
Cyprus	17	1.09	0.31	52.7	0.33	56.2
Czech Rep.	145	0.53	0.09	130.5	0.177	257.9
Denmark	234	0.14	0.05	11.7	N/C	N/C
Estonia	15	0.52	0.03	4.1	0.027	4.1
Finland	180	0.1	0.03	54	0.053	96.0
France	1,933	N/C (0.21) ^a	N/C (0.11) ^a	N/C (2,170)	N/C(0.14)	N/C (2,712.5)
Germany	2,499	0.1 (0.23) ^b	N/C (0.13) ^b	N/C (3,248.7)	N/C	N/C
Greece	230	N/A	N/A	N/A	0.19	437.0
Hungary	98	0.85	0.49	480.2	0.641	628.6
Ireland	156	0.73	0.036	56.16	0.038	59.5
Italy	1,549	1	0.22	3,455	N/C	N/C
Latvia	18	0.9	0.088	15.84	0.103	18.6
Lithuania	27	N/A	N/A	N/A	0.107	29
Luxembourg	42	0.23	0.22	92	0.192	81
Malta	6	0.3	0.14	9	N/C	N/C
Netherlands	591	0.38	0.088	520	0.192	1,139
Norway ^c	324	N/C	0.003	N/C	N/C	N/C
Poland	354	0.81	0.21	74.34	N/C	N/C
Portugal	173	0.35	0.29	501.7	0.367	635.4
Romania	122	0.46	0.06	73.2	0.071	86.7
Slovakia	66	N/A	N/A	N/A	0.074	49
Slovenia	36	0,36	0.13	46.8	0.225	81.3
Spain	1,063	0.87	0.35	3,720.5	N/C	N/C
Sweden	347	0,14	0.017	58.99	0.017	58.8
UK	1,697	0.58	0.31	5,300	0.383	6,504.7
EU-28	12,314	0.491 € 60.457,3 (25 countries)	0.193	€ 23,83215	0.178 (20 countries)	€ 21,857.35

Note: a (Prostcost, 2015); b (Kazemier & Rensam, 2015); c (Evensen, 2011); NC (Not compiled); N/A (Not available).

Source: Eurostat (2012b, 2018) and EU Statistics Offices. Figures were checked with most the National Accounts division of EU-28 Statistics Offices.

Hence, female prostitutes should be included in the total number of women in informal employment (ILO, 2013).

6. Conclusion

Data sources on prostitution are scant and rather inconsistent, especially as regards country distribution. To our best knowledge, we have designed the first benchmark analysis in the economic literature on prostitution. We have compiled three series of Estimates as for the magnitude of sex work throughout the European countries as of 2010. We eventually checked these Estimates against adjusted National Accounts. We acknowledge that adjusted National Accounts may not capture the full magnitude of prostitution, whereas figures for both customers and prices are disputable. However, we can assess a few plausible figures for prostitution. Estimate 1A from HIV prevalence stands as the best Estimate and, in addition, it is consistent with National Accounts, thus a likely lower bound for prostitution. Although less robust and consistent with National Accounts, Estimate 1B from HIV prevalence is likely to stand as a middle bound for prostitution, whereas Estimate 2A (*maximin*) is even less likely to stand as an upper bound. Estimate 3B from victims of sexual exploitation is lacking both robustness and consistency. Estimate 2B (*minimax*) is an unreliable upper bound for prostitution. Hence, our first finding is that some Estimates prove more reliable than others do, although country distribution may be distorted by biased data.

Our second finding is that demand for paid sex throughout the 1990s and the 2000s is inelastic in those countries that did not switch to a neo-abolitionist policy regime prosecuting demand. The case for Sweden remains inconclusive, so as to assess the impact of neo-abolitionist policy regime upon the decline in demand, although this impact cannot be discarded.

On the supply side, our third finding is that there is a premium on average earnings for prostitution, whether domestic or foreign. Such an incentive is consistent with the “prostitution puzzle” (Edlund & Korn, 2002), although average earnings do not address the segmentation of the prostitution market, wherein the upper end segment may pull prices; conversely, the lower end may be far less profitable for sex workers.

Our fourth finding is that coerced and non-coerced prostitution is neither a profession nor an occupation, according to international standards. This economic activity escapes tax collection and does not benefit from social protection, thus it is included into informal employment.

Our last finding relates to the expanding tide of the neo-abolitionist regime throughout Europe. Besides various distinct faiths (Nordic Protestants vs. Irish and French Catholics), the six *neo-abolitionist* EU countries do enjoy a similar GDP per

capita. Hence, wealth does not explain the choice for a policy banning demand, which is therefore a political decision based on the rationale of gender equality.

There are limitations in our study, which better data collection should overcome.

The first limitation is that of any cross-section analysis (as regards year 2010) applied to a small sample. In the absence of a reliable database for prostitution, we did not address the dynamics of an expanding indoor prostitution and a rising share of migrants among outdoor sex workers. We have no robust variable addressing the demand side from customers, which requires representative surveys upon sexual behaviour as well as National Accounts data for prostitution expenditure. Last, we have little evidence regarding either the share of coerced vs. non-coerced prostitution, or the share of employees vs. self-employed prostitutes that deserve dedicated surveys, according to the guidelines advocated by the ILO (2018): disentangling prostitution and sexual exploitation as well designing Estimates from multiple systems estimation (MSE), as advocated by Van Dijk & van der Heijden (2016).

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*Appendix***Table A1: Comparing Estimates: An OLS model upon 29 countries (EU-28 + Norway)**

<i>Variables</i>	<i>Estimate 1A (HIV prev.)</i>	<i>Estimate 1B (HIV prev.)</i>	<i>Estimate 2A (Maximin)</i>	<i>Estimate 2B (Minimax)</i>	<i>Estimate 3</i>
Ln GDP	-1.563***	-0.478	1.386	0.747	-0.365
	(0.482)	(0.760)	(0.873)	(1.269)	(1.087)
Legal brothels	0.614**	0.695**	0.913	1.296**	1.580**
	(0.272)	(0.286)	(0.555)	(0.477)	(0.638)
Legal prostitution	0.187	-0.034	-0.095	0.037	0.500
	(0.352)	(0.268)	(0.343)	(0.482)	(0.788)
Ln Female migrant stock per 100,000 population	0.221	0.238	0.399*	0.410	-0.728**
	(0.163)	(0.150)	(0.201)	(0.243)	(0.324)
Unemployment for females below 25	-0.032**	-0.032*	-0.014	-0.029	
	(0.015)	(0.016)	(0.025)	(0.023)	
Ln Male population aged 15-64 per 100,000 population	0.685***	0.674***	0.631***	0.652**	
	(0.123)	(0.134)	(0.171)	(0.296)	
Female part-time employment	0.002	-0.019	-0.058**	-0.061**	0.046
	(0.014)	(0.019)	(0.024)	(0.029)	(0.029)
Ln Male population aged 15-64 per 100,000 population					1.264***
					(0.292)
Constant	10.390***	7.669***	1.265	3.963	7.521**
	(1.593)	(2.136)	(2.647)	(3.621)	(3.275)
Observations	29	29	29	29	29
R-squared	0.908	0.877	0.794	0.777	0.676

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors.

Table A2: Comparing Estimates: An ordered probit model upon 29 countries (EU-28 + Norway)

<i>Variables</i>	<i>Estimate 1A</i>	<i>Estimate 1B</i>	<i>Estimate 2B</i>	<i>Estimate 2A</i>	<i>Estimate 3B</i>
	<i>(HIV preval.)</i>	<i>(HIV preval.)</i>	<i>(Maximin)</i>	<i>(Minimax)</i>	<i>(Victims)</i>
GDP per capita	-0.042**	-0.018	-0.001	0.004	-0.016
Legal brothels	1.623**	1.129	1.013*	1.701***	1.741***
Adult female population	0.004**	0.001	0.006*	0.002	0.002
Female migrant stock	-0.623***	-0.346**	-0.320	-0.036	-0.572***
Unemployment rate of young females	-0.002	-0.002	0.004	-0.011	-0.024
Rate of part-time female workers	0.025	-0.011	-0.004	-0.037	0.027*
Constant cut1	-4.374***	-3.444***	-2.046	-1.937**	-3.919***
Constant cut2	-3.405***	-2.510***	-1.296	-1.120	-3.030***
Constant cut3	-2.443***	-1.700**	-0.550	-0.321	-2.163*
Observations	29	29	29	29	29
Pseudo R-squared	0.171	0.114	0.0553	0.102	0.144
Prob>chi2	0.000291	0.000740	0.477	0.118	0.00304
Wald Chi-Squared	25.38	23.18	5.537	10.15	19.77

Note: 17 EU non-transition countries + Norway + 11 EU former transition countries. Robust standard errors omitted. Constant cuts take care of quartiles. *** p<0.01, ** p<0.05, * p<0.1

Source: Authors.