

Working Paper 16: Women at Work... Looking Ahead

London employment projections by gender and sector

Prepared by Volterra Consulting

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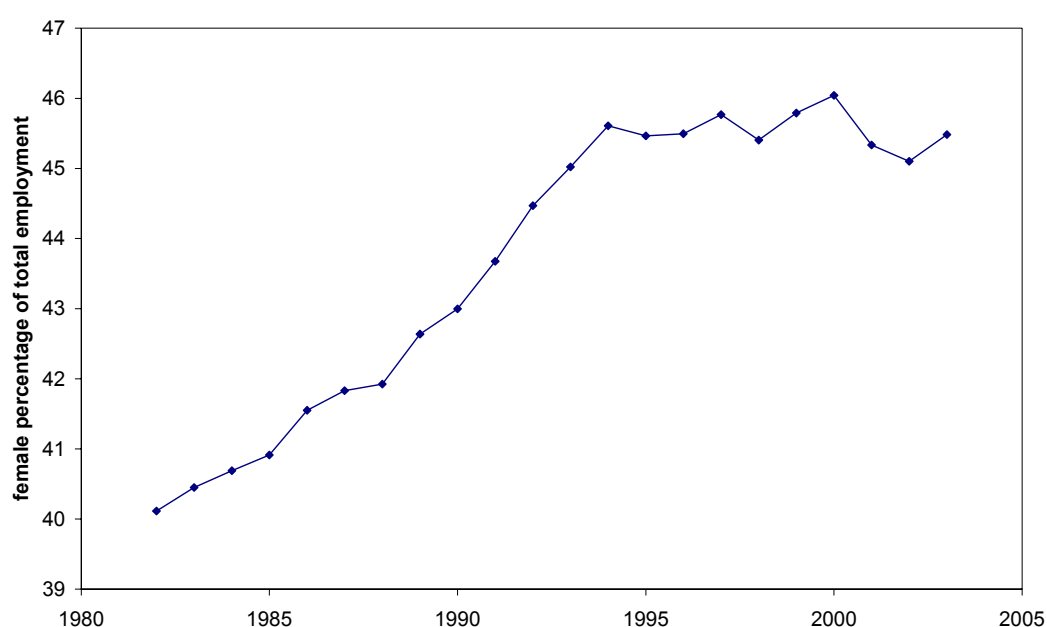
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London employment projections by gender and sector

This working paper shows a breakdown of employment forecasts for London by gender. This information is provided as part of a wider GLA-programme of research about women in London's economy.

GLA Economics' *Working Paper 14: Working Future*¹ gives the total London employment forecasts by sector up to 2026. Forecasts by gender though are only included to 2016. Since 1982 the proportion of female workers in London has risen from 40 per cent in 1982 to 45 per cent in 2003. Figure 1 shows how this proportion has changed over the whole time period. The proportion of females rose sharply from 1982 to 1994 and since then it appears to have levelled at around 45 per cent. The possible recent change in the trend and the sensitivity of the subject means this working paper only takes a view up to 2016.

Figure 1: Female percentage of total London employment, 1982-2003



Source: Experian Business Strategies workforce employment series

Because of the uncertainty surrounding the direction in which the proportion of women in the total London workforce may go, a bottom up approach was used. Trends in the proportion of female employment in the twelve employment sectors were examined to see what this would imply for total London female employment.

To help decide on growth projections, short, medium and long-term trends for three time periods were calculated. The short-term historic trend is calculated as the gradient of a local linear fit to the period 1999 – 2003, the medium-term trend is calculated similarly over the ten-year period 1994 – 2003, and the long-term trend over the period 1982 – 2003.

¹ GLA Economics, 2005, *Working Paper 14: Working Future – Employment projections for London by sector*, GLA: London. View: www.london.gov.uk/gla/publications/economy.jsp#wp14

There have been some sharp historical changes in employment data, these may be due to errors in data or real fluctuations. Therefore, as a measurement of the confidence that the trends may continue into the future, the variability of each series is calculated. The historic growth rates are curbed by multiplying by this variability factor. The exact formula for calculation can be found in Appendix A. It is designed so that it is between zero and one, with one being no variability and close to zero being high variability.

Table 1 shows which trends have been used for each of the 12 sectors up to 2016. Also detailed in Table 1 is the female proportion of employment in each sector, both for 1982 and 2003. In Appendix B there are charts of the female proportion of employment by each of the 12 sectors. Also on these charts are the trends and the variability figures.

Table 1: Summary of trends used for each sector for female proportion

Sector	Trend for forecast to 2016	Proportion of sector employment which was female in 1982	Proportion of sector employment which was female in 2003
Primary and Utilities	from '82 to '03	0.259	0.318
Manufacturing	from '82 to '03	0.286	0.332
Construction	from '82 to '03	0.101	0.104
Wholesale	from '82 to '03	0.475	0.542
Retail	from '94 to '03	0.312	0.291
Hotels & Restaurants	Flat	0.547	0.478
Transport & Comms	½ trend from '82 to '03 ½ trend from '94 to '03	0.208	0.265
Financial services	½ trend from '82 to '03	0.505	0.456
Business services	from '82 to '03	0.354	0.423
Public administration	from '82 to '03	0.490	0.479
Health & Education	from '94 to '03	0.681	0.746
Other services	Flat	0.456	0.499
Total employment	sum of sectors	0.401	0.455

Source: Experian Business Strategies workforce employment series

Table 2 shows the employment by sector for females implied by the growth rates described previously. Table 3 does the same for male employment.

Table 2: London female employment

History 2001-2003; Forecasts 2004-2016

GVA Growth = 2.5% pa (000s)	Primary & utilities	Manufacturing	Construction	Wholesale	Retail	Hotels & restaurants	Transport & comms	Financial services	Business services	Public administration	Health & Education	Other services	Total
2001	7	93	24	81	231	136	103	164	488	98	466	169	2,061
2002	4	84	22	77	219	138	96	153	462	105	475	171	2,006
2003	5	89	24	70	215	148	93	154	455	112	494	180	2,038
2004	5	87	24	70	217	152	93	155	472	110	497	185	2,066
2005	5	84	24	70	220	155	93	155	489	108	500	190	2,094
2006	5	82	23	70	223	159	93	156	506	107	503	195	2,123
2007	5	80	23	70	226	164	93	156	523	105	506	201	2,151
2008	5	78	23	70	229	168	93	157	540	104	509	206	2,181
2009	5	76	22	70	232	172	93	157	556	102	512	212	2,210
2010	5	75	22	71	234	176	93	158	573	101	515	217	2,240
2011	5	73	22	71	237	181	92	158	590	100	518	223	2,270
2012	5	71	22	71	240	186	92	159	607	98	522	229	2,301
2013	4	69	21	71	243	190	92	159	623	97	525	235	2,331
2014	4	68	21	71	246	195	92	160	639	95	528	242	2,363
2015	4	66	21	71	249	200	92	160	656	94	531	248	2,394
2016	4	64	21	72	253	205	92	161	672	93	534	255	2,426

Source: History – Experian Business Strategies. Projections – Volterra Consulting

Table 3: London male employment

History 2001-2003; Forecasts 2004-2016

GVA Growth = 2.5% pa (000s)	Primary & utilities	Manufacturing	Construction	Wholesale	Retail	Hotels & restaurants	Transport & comms	Financial services	Business services	Public administration	Health & Education	Other services	Total
2001	15	206	186	173	172	152	269	196	632	112	169	203	2,485
2002	15	189	189	173	177	159	256	192	607	118	166	200	2,442
2003	11	178	208	170	181	161	258	184	620	121	168	181	2,442
2004	11	172	204	171	182	166	256	186	635	119	168	186	2,455
2005	11	167	200	172	182	170	254	188	648	116	168	191	2,468
2006	10	162	196	173	183	174	253	190	662	114	168	196	2,481
2007	10	156	192	174	183	179	251	192	674	112	169	201	2,494
2008	10	152	189	175	184	183	249	194	687	109	169	207	2,507
2009	10	147	185	177	184	188	247	196	698	107	169	212	2,520
2010	10	142	181	178	185	193	246	198	709	105	169	218	2,533
2011	9	138	178	179	185	198	244	200	720	102	169	224	2,546
2012	9	133	174	180	185	203	242	202	730	100	170	230	2,559
2013	9	129	171	181	186	208	240	204	740	98	170	236	2,572
2014	9	125	168	182	186	213	239	206	749	96	170	242	2,586
2015	8	121	164	184	187	219	237	208	758	94	170	249	2,599
2016	8	117	161	185	187	225	235	210	766	92	170	256	2,613

Source: History – Experian Business Strategies. Projections – Volterra Consulting

Appendix A: Measurement of variability

There have been some sharp historical changes in employment data, these may be due to errors in data or real fluctuations. The growth into the future is therefore partially curbed depending on the magnitude of the historic change. This is done by multiplying the historic annual growth rate by a scaling factor. This is defined as:

$$S = 1 - \frac{1}{3} \sqrt{\left(\frac{\max(x)}{\min(x)} - 1 \right)} \quad \text{where } x \text{ is the historic series of employment data}$$

This formula looks at the range of historic employment data, and scales accordingly. For example, if the series has doubled over its history, then the scaling factor would be equal to 2/3. If however the data had increased five-fold then the scaling factor would be equal to 1/3.

Appendix B: Historic proportion of female employment, by sector

The figures in this appendix show the proportion of employment in each sector which has been female from 1982 – 2003. The vertical grey lines show the point from which medium-term and short-term trends are calculated. The horizontal dashed lines, where appropriate, show the 0.5 line. The x-axis labels show the long-term, medium-term and short-term trends. This is followed by the variability parameter, the calculation of which is described in Appendix A. The green lines show the forecasts based on judgments of which trends to take forward (as set out in Table 1).

Figure B1: Female proportion of Primary and Utilities employment

History 1983-2003; Forecast 2004-2016

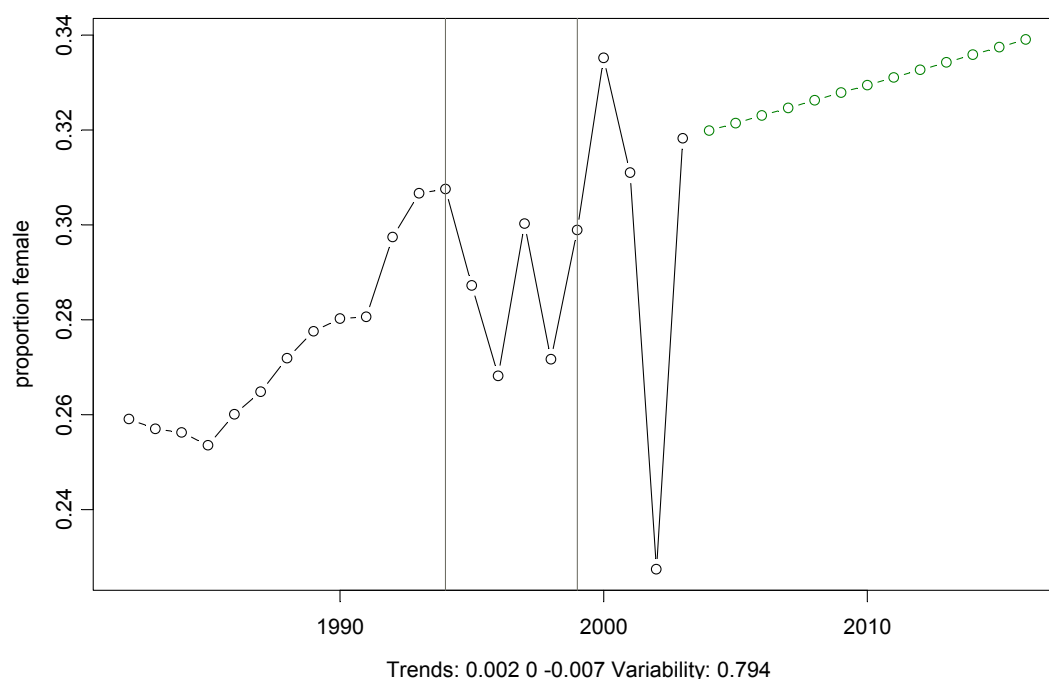


Figure B2: Female proportion of Manufacturing employment

History 1982-2003; Forecast 2004-2016

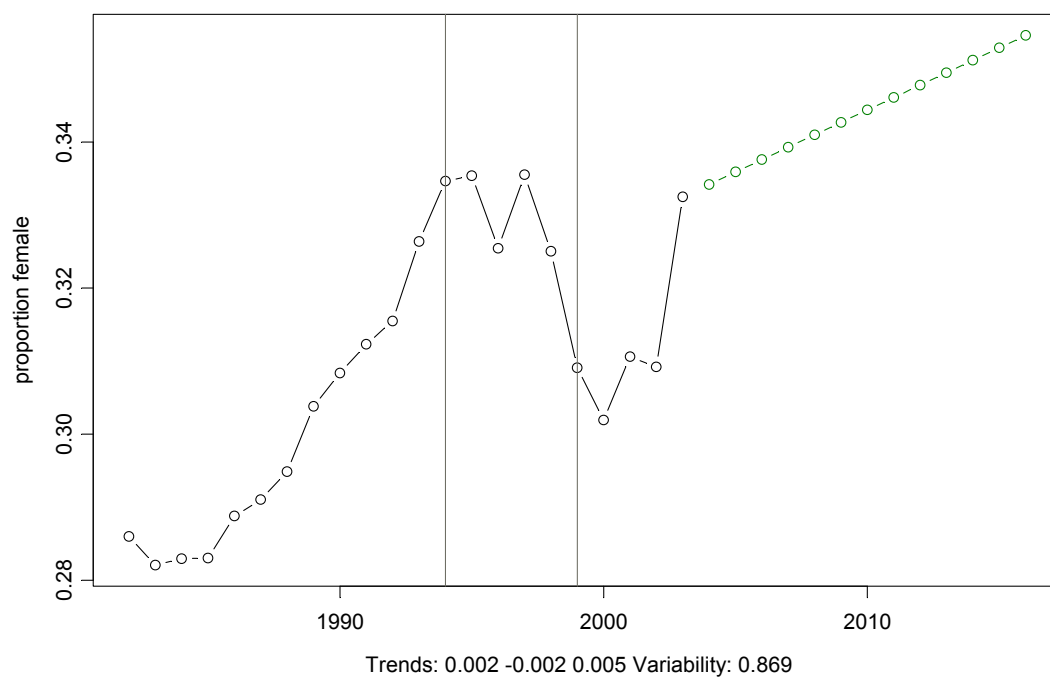


Figure B3: Female proportion of Construction employment

History 1982-2003; Forecast 2004-2016

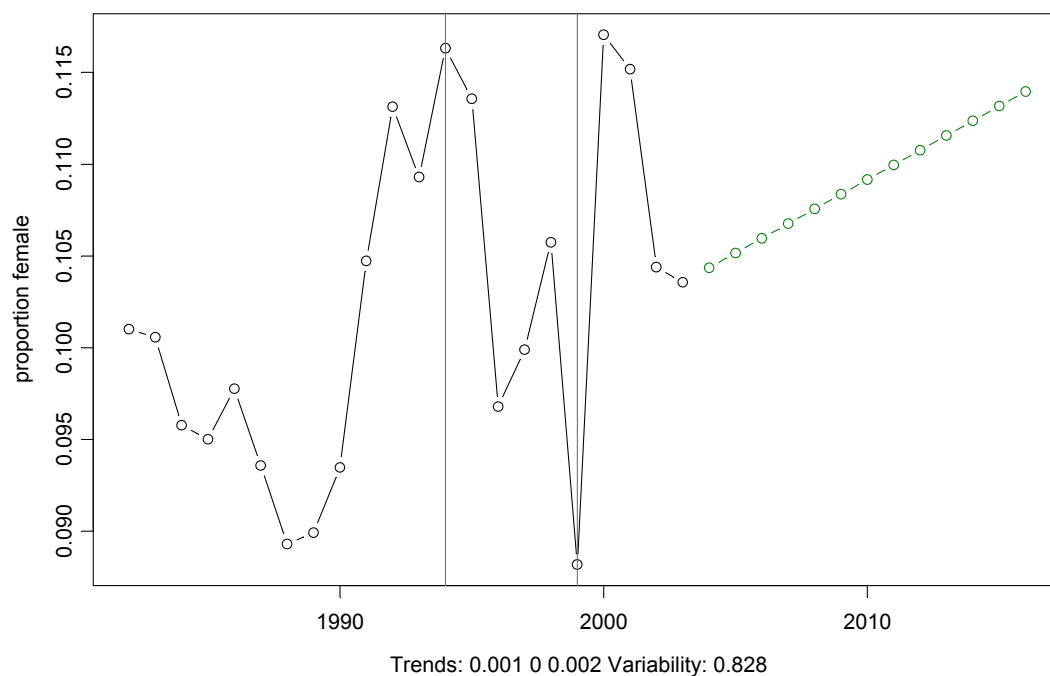


Figure B4: Female proportion of Wholesaling employment

History 1982-2003; Forecast 2004-2016

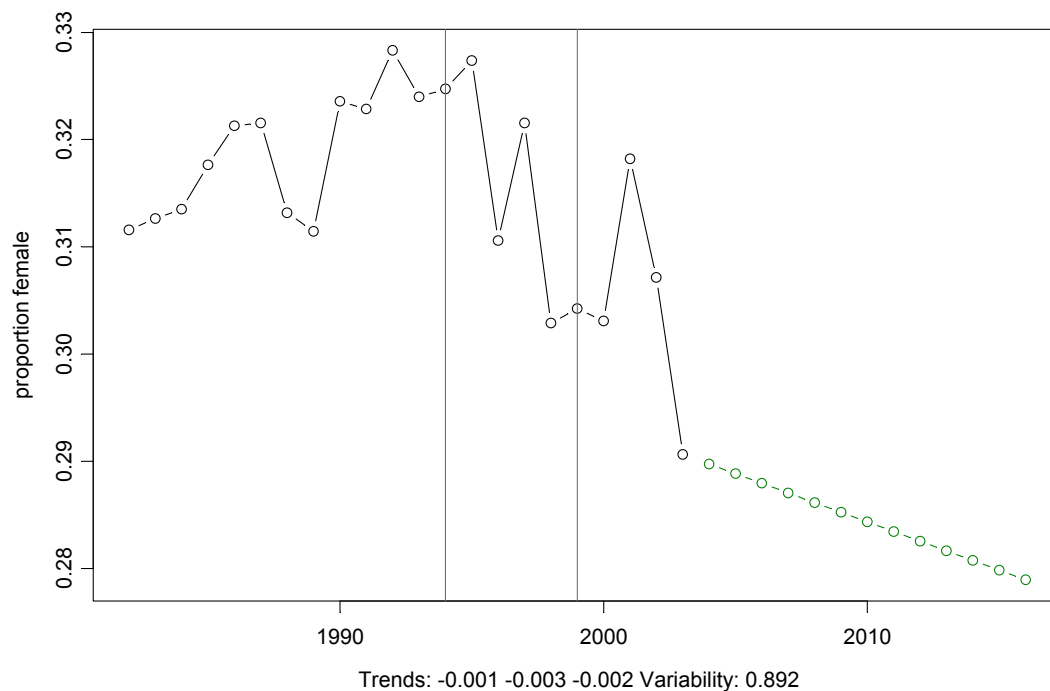


Figure B5: Female proportion of Retail employment

History 1982-2003; Forecast 2004-2016

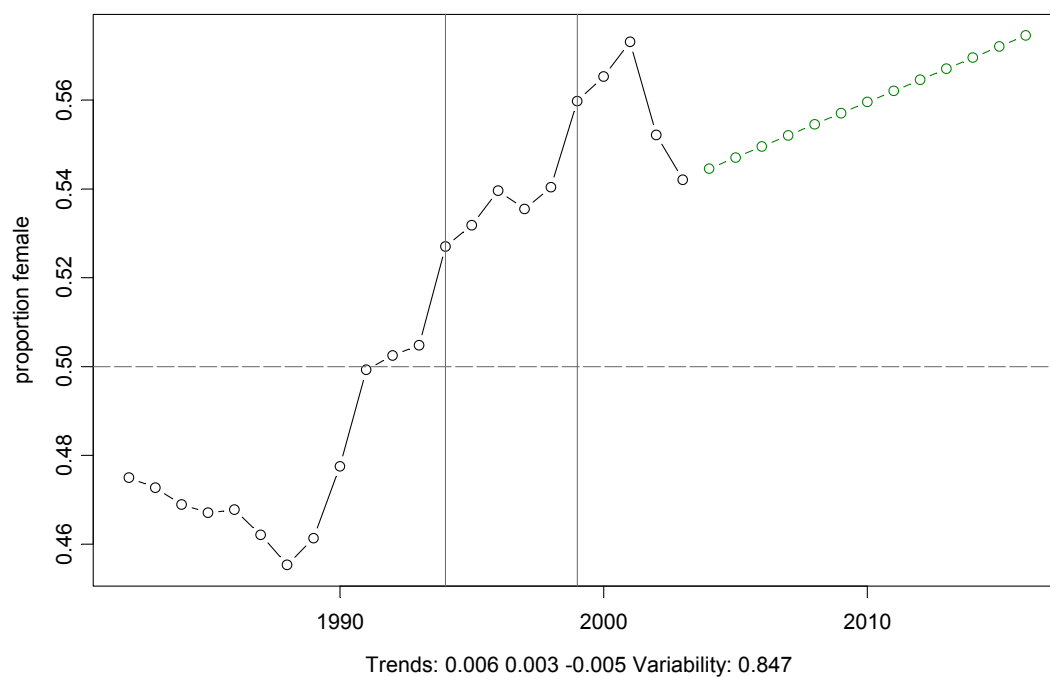


Figure B6: Female proportion of Hotels & Restaurants employment

History 1982-2003; Forecast 2004-2016

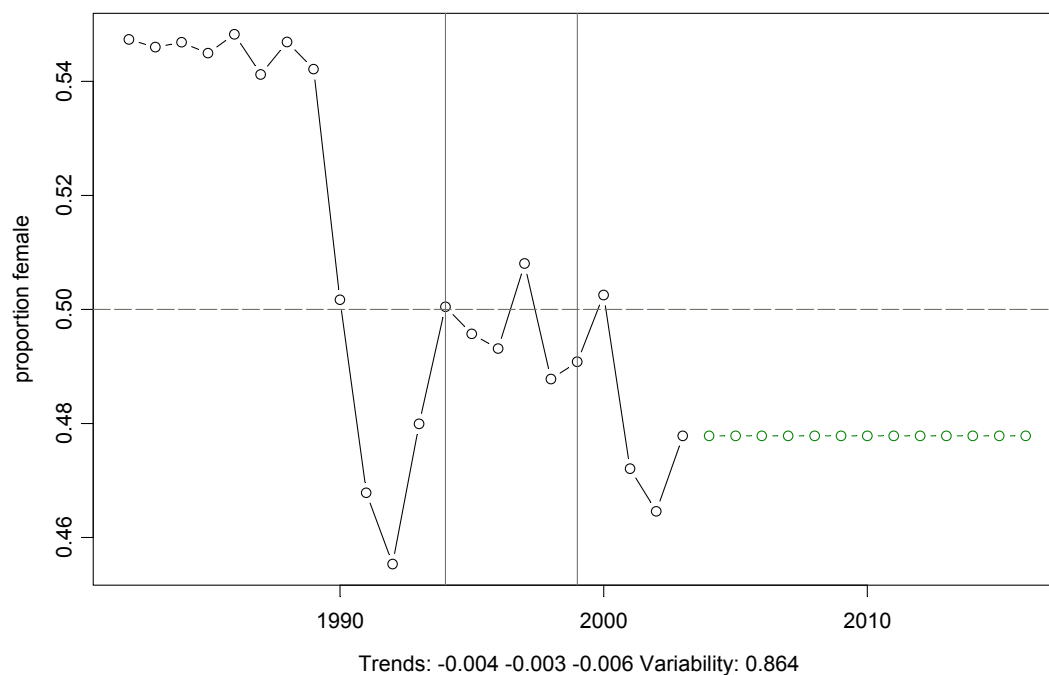


Figure B7: Female proportion of Transport & Communication employment

History 1982-2003; Forecast 2004-2016

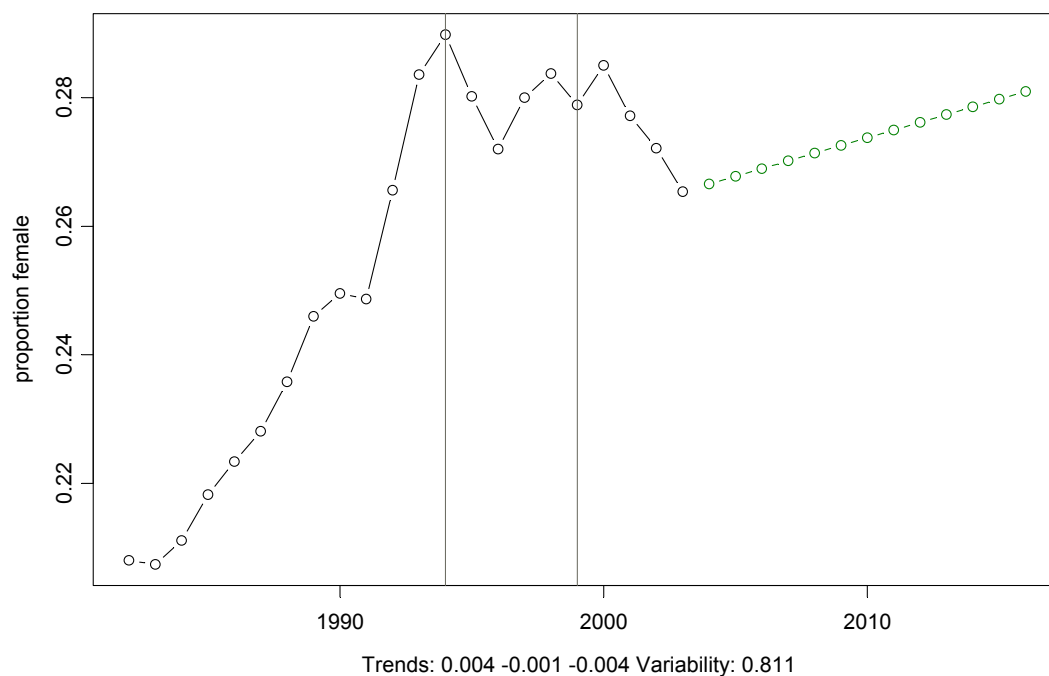


Figure B8: Female proportion of Financial Services employment

History 1982-2003; Forecast 2004-2016

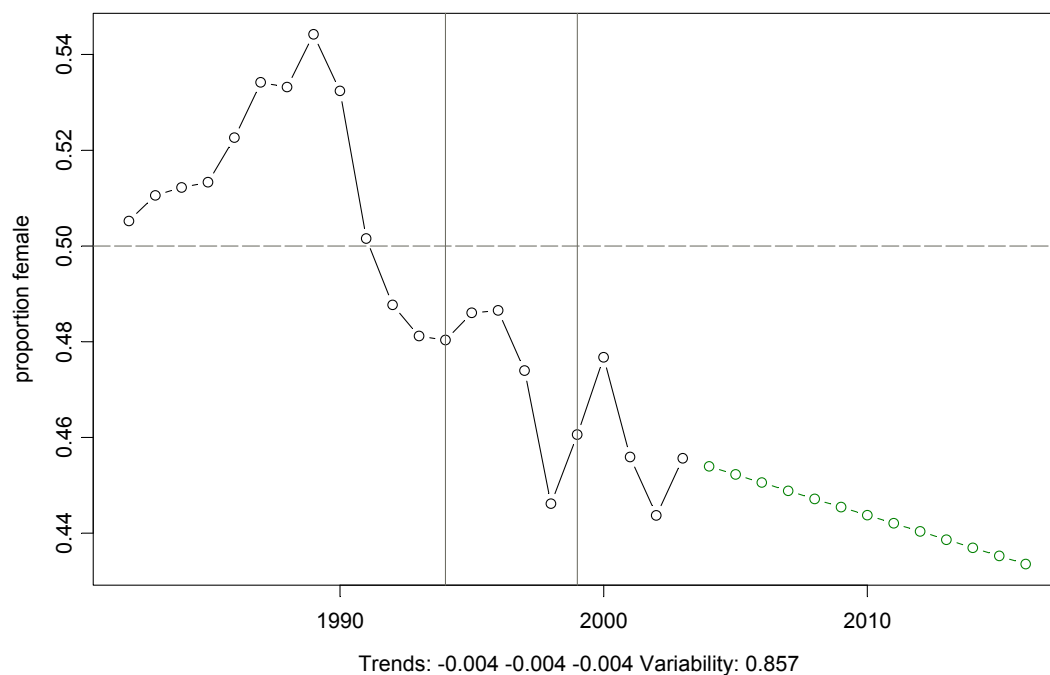


Figure B9: Female proportion of Business Services employment

History 1982-2003; Forecast 2004-2016

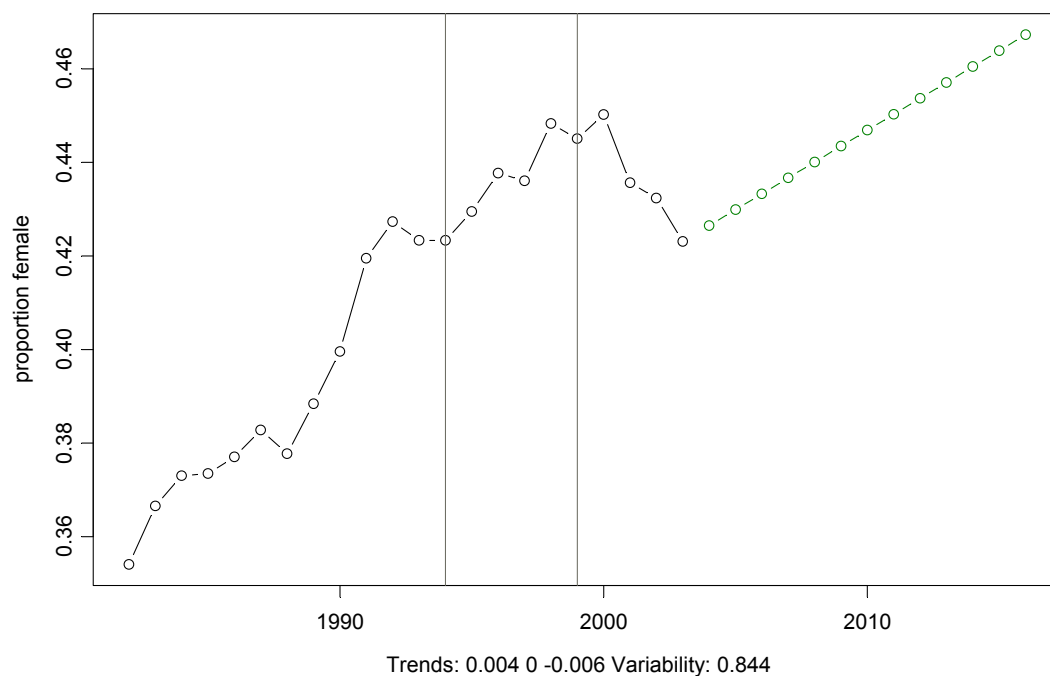


Figure B10: Female proportion of Public Administration employment

History 1982-2003; Forecast 2004-2016

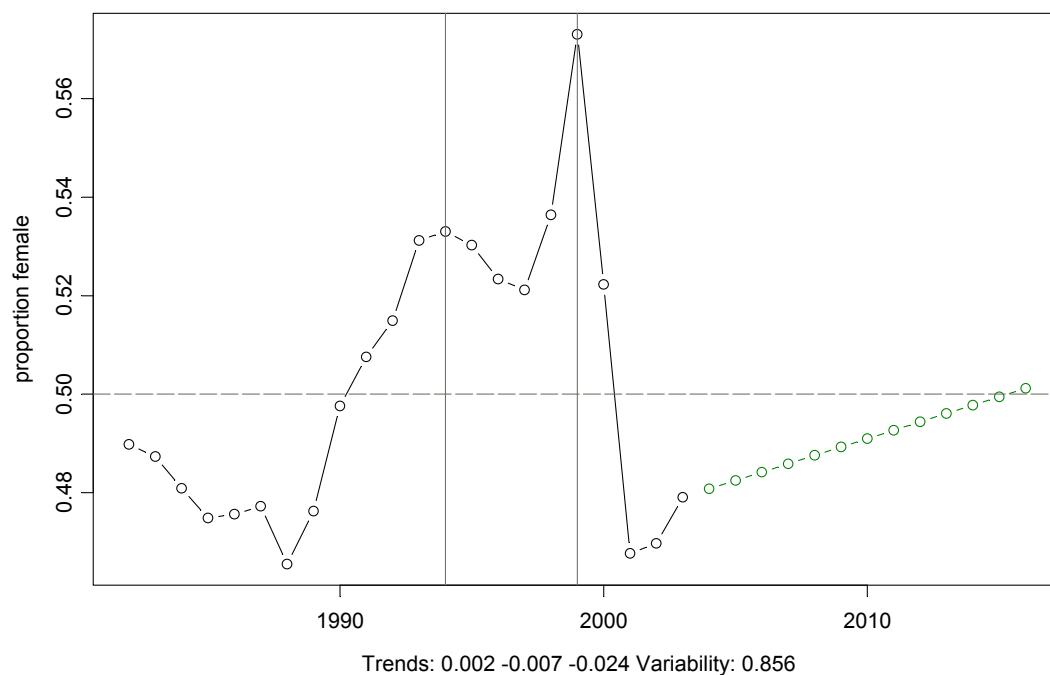


Figure B11: Female proportion of Health & Education employment

History 1982-2003; Forecast 2004-2016

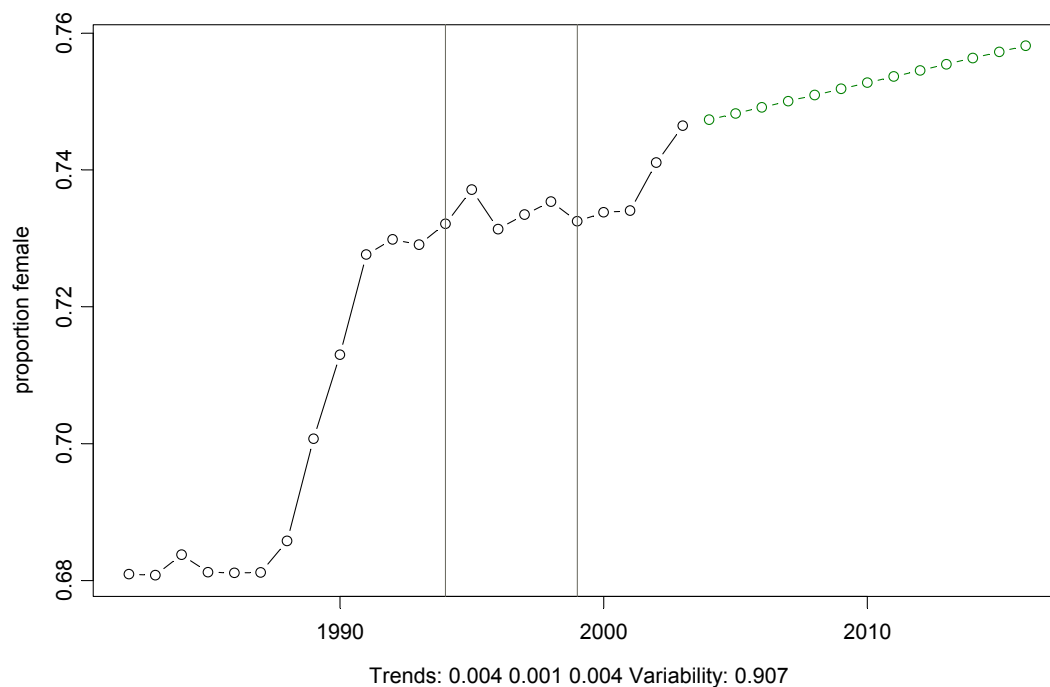
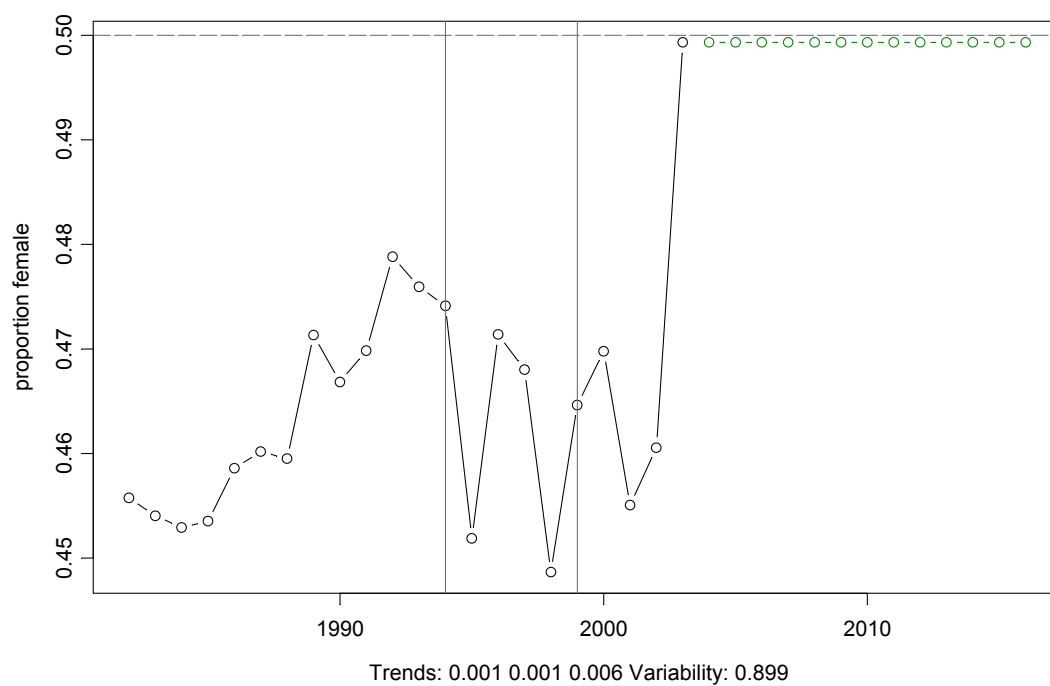


Figure B12: Female proportion of Other Services employment

History 1982-2003; Forecast 2004-2016



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