Scoping Study for RES CWE

1 Introduction

The Committee for Women in Economics (CWE) has carried out a series of biennial surveys of academic economics departments. These indicate that women have not progressed in academic economics in the same proportions as men. There is a wide range of reasons why we might not see more women in senior roles. The CWE would like to improve understanding of the dynamics of career progress and or dropout, and how men and women may be facing different opportunities, with different expectations and preferences. The basic questions we sought to answered are:

- establish facts describing women's, compared to men's, career progression (in academic economics, in other economic professions, and in other academic professions)
- whether women have the same career opportunities in academic economics as men?
- whether women making different career choices than men, and if so why?

The CWE has been considering whether and how to gather longitudinal data from individuals to help answer these questions. A feasibility study indicated that a large scale panel survey to look at these issues would be quite expensive, and perhaps have an impracticably long time scale. This was thought to be beyond the CWE's time and cash resources, or their collective time horizon with revolving membership. A pilot of a smaller scale email survey was conducted by Rachel Griffith at IFS, on behalf of the Committee, with informal advice from the National Centre for Social Research. The reaction to the pilot was that the questions asked were too narrowly focused on pecuniary factors and that more work was needed on the design of the survey. The pilot has also identified the need to take stock of existing data before proceeding. The CWE therefore concluded that any further development of a survey should involve a professional survey organization.

The Committee agreed to pay a summer student at IFS to conduct an exploratory study to survey the existing literature and existing data sources. This is the report of this work. The aims of this study are to:

- review the existing literature on the behaviour of women as professional economists and in other academic fields [this is only a review of some of the key quantitative articles]
- discuss existing sources of current and historical information and what they do or could tell us about women career opportunities and choices,
- make a recommendation on what further work could be done with existing data and what information could usefully be collected in a longitudinal or other type of survey.

The report is organised as follows:

The second section gives some background (using the LFS) to the labour market behaviour of educated women in the UK. We then briefly review some of the key known facts about women in economics and academia in the UK and other countries. This sections shows that women take time out mid-career to have kids, although in more recent cohorts participation rates among women are higher. Women without kids look like men. Looking at women's career progression we see similar patterns across countries and across many disciplines. It is not clear the extent to which sciences and social sciences differ because we don't have the relevant data to calculate survival rates (though maybe could with historical HESA data).

The third section outlines a model of participation in academic economics. This is used to discuss some of the empirical issues that are faced in the literature. In the fourth section we review what we thought were some of the key articles that have addressed this questions. The fifth section details existing data sources that we know about. The sixth sections discusses our ideas and recommendations about (a) what we know, (b) further work that could usefully be done with existing data, (c) new data that could be collected and what use it would be. Note that HEFCE are in the process of putting out a tender to collect longitudinal data on HEFCE employees.

In addition to reading the literature we talked to three senior women economists - Professor Bronwyn Hall (UC Berkley), Professor Carol Propper (Bristol) and Professor Heather Joshi (Institute of Education).

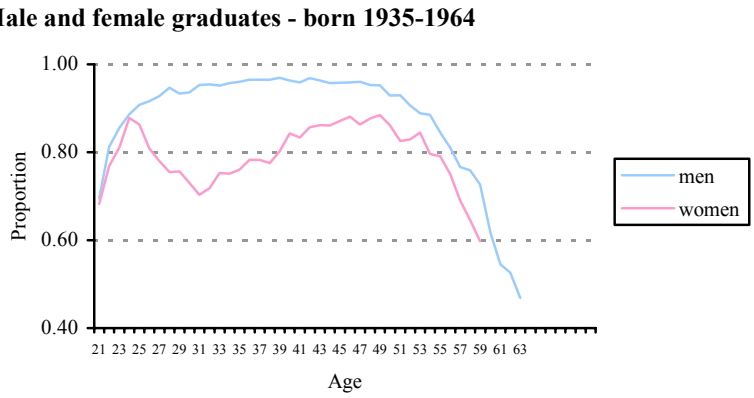
2 Background

This section begins by reviewing patterns of work of educated women in the UK using the LFS and then describes the position of women in academic economics and related fields both in the UK and other countries. The description is opportunistic in that we used the data that was available to us, we did not seek out particular comparison groups. Further thought could be given to which are the most relevant comparators. Our aim is to establish whether the work patterns of females in academic economics differ from other fields. Seeing similarities or differences in the work patterns of educated women across disciplines, countries and time may help identify the main factors affecting them.

2.1 Work patterns of educated women and men in the UK

We begin by looking at patterns of work and fertility amongst educated women and men in the UK. This provides useful background information on the labour market behaviour of educated people. We use the annual Labour Force Surveys (LFS) for 1977-1991, and then the Spring quarter of the LFS for each year between 1992-2001. Figure 1 shows participation rates of men and women with at least an undergraduate degree for cohorts born between 1935 and 1964.[1] These approximate cohorts which would currently include professors. For these cohorts taken as a whole we see a significant divergence in participation rates from about the age of 25 which persist through the main childbearing years. Female participation amongst this groups starts to increase again from early 30s onwards, but still remains well below male participation rates throughout the life course.

Figure 1. Employment participation rates for graduates born 1935 to 1964: men and women compared.



Source: Labour Force Survey 1977-1991 and spring quarters 1992-2001

[1] The participation rate is the proportion in employment out of the total population.

In Figure 2 we look at four different cohorts (by 10 year birth date bands). We see that female participation rates are higher in more recent cohorts, though there remains a significant divergence between male and female participation from the mid-twenties onwards.

This suggests that, for educated women as a whole, years spent out of the labour market caring for children may be an important factor in later labour market behaviour. [We are extracting data on earnings and relationship status for these group. There is potential for more work with the LFS/BHPS/NCDS, see section six]

In Figure 3 we look at how participation rates differ between graduate women with children and without children. For those without children, participation rates are very similar to those of men, particularly for the younger cohorts, whilst for women with children participation is significantly below this.

Figure 2. Employment participation rates for graduates: men and women by 10 year birth cohort

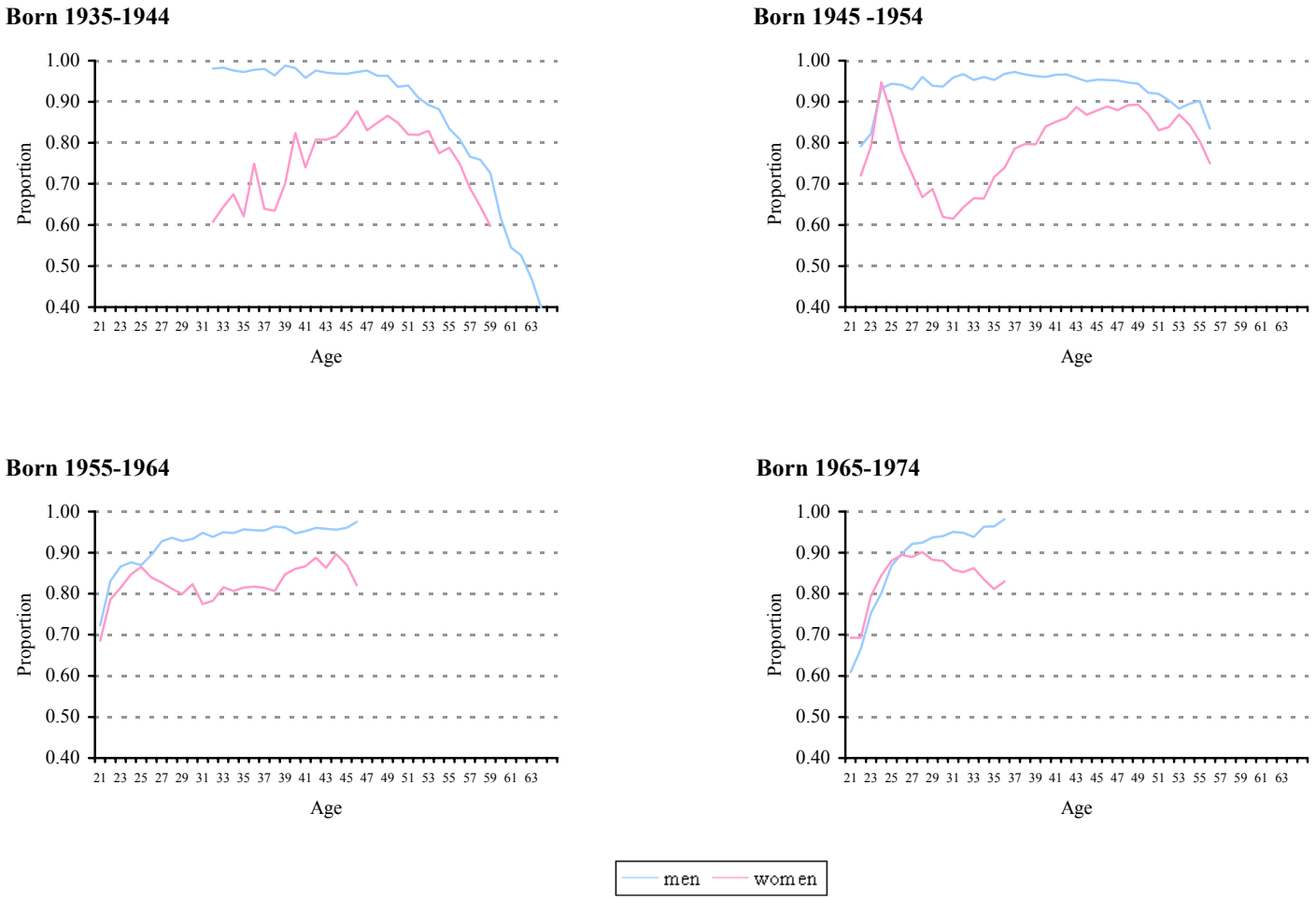
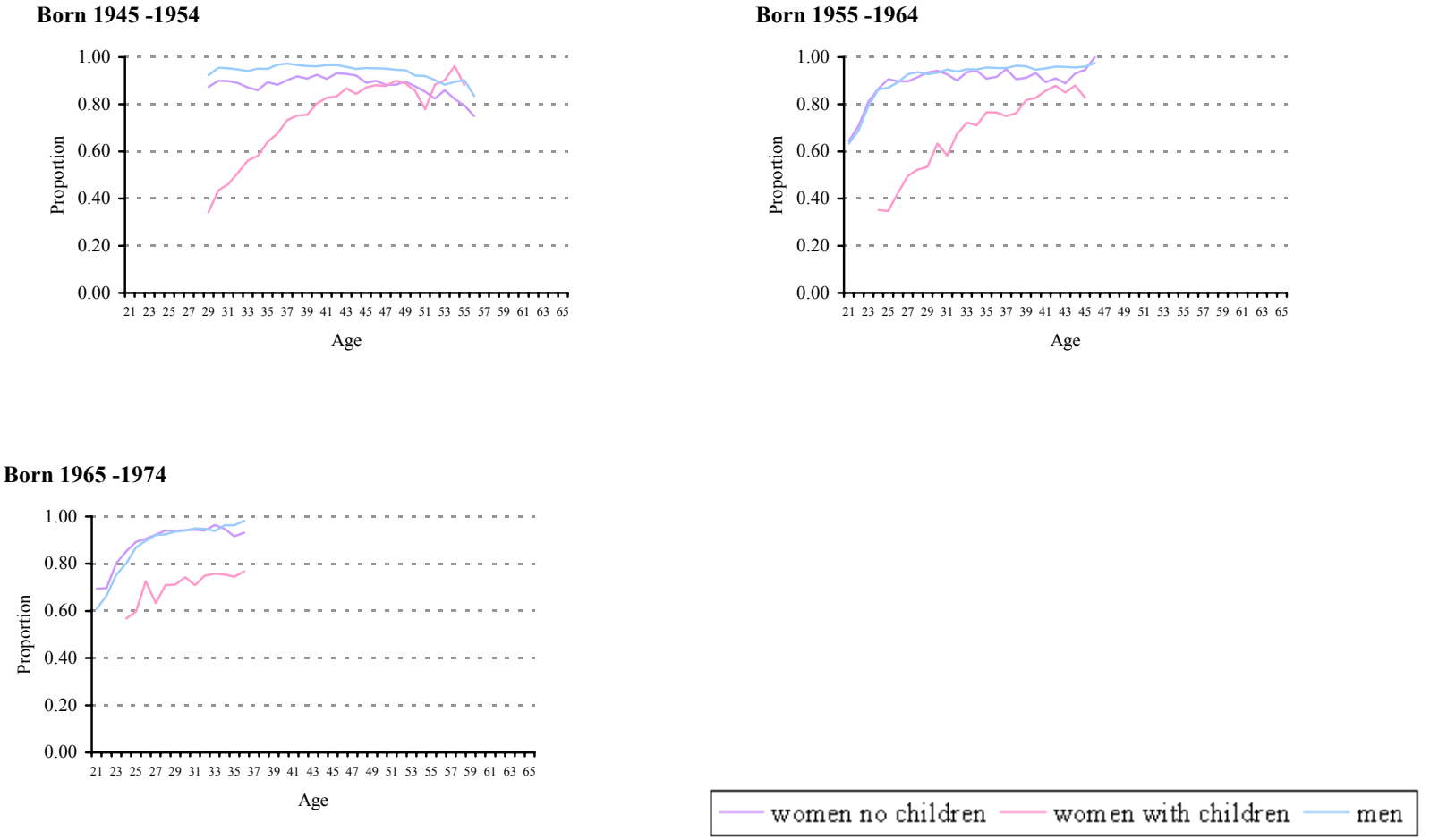


Figure 3. Employment participation rates for graduates: men compared to women with and without dependent children



Source: Labour Force Survey 1984-1991 and spring quarters 1992-2001

2.2 Work patterns of men and women in economics and other academic professions

In this section we review the main facts that we currently know about the career progression of women in economics in the UK and in other countries. We also discuss what we know about the career paths of women in other academic fields.

From the RES surveys we know that the percentage of women in higher grades in academic economics in the UK is low – around 7% - compared to the percentage of women in more junior grades. This is shown in Tables 1 and 2 using data for 2000.

What we don't know is the rate of success of women (that is we don't know numbers of women in feed grates the relevant number of years ago, although this may be available in historic HESA data?).

Table 1: Percentage of grade that is female, UK academic economics, 2000

Primary Employment Function		
	full-time	part-time
Professors	6.94	5.00
Readers and Senior Lecturers	12.01	12.50
Lectures- permanent	19.92	34.62
Lectures- fixed term	44.12	36.92
Senior Researchers	27.59	
Researchers- fixed term	40.44	
Total	**18.97**	**28.35**

Source: Burton, Rowlatt, and Joshi. (2002). Royal Economic Society Survey on the Gender and Ethnic Balance of Academic Economics 2000, p.6

Table 2: Percentage female, UK academic economics, 2000

Research Students	PhD students	MSc students
Full time		
UK	36.36	32.78
Non-UK	41.07	36.34
Non-EU	32.34	37.85
Totals	**35.95**	**35.73**
Part Time		
UK	31.11	39.10
Non-UK, EU	44.83	46.15
Non-EU	41.30	27.27
Totals	**37.63**	**39.89**

Source: Burton, Rowlatt, and Joshi. (2002). Royal Economic Society Survey on the Gender and Ethnic Balance of Academic Economics 2000, p.14

A similar picture arises in other countries. The Committee on the Status of Women in the Economics Profession in the US has sent a questionnaire to 120 Ph.D. granting economics departments since 1993. The table below shows the results up until 1999 and shows a similarly low percentage of women in the highest grade compared to lower grades.

Table 3: Percentage of grade that is female, US academic economics

Pipeline	1993	1994	1995	1996	1997	1998	1999
Graduate School:							
First Year	30.5	29.0	30.5	30.5	31.3	32.2	35.6
All But Dissertation	27.2	25.7	27.8	28.3	26.8	28.2	33.0
Ph.D.	24.2	26.8	23.2	24.1	25.0	29.9	34.2
Overall	*27.7*	*27.4*	*27.8*	*28.2*	*27.7*	*29.6*	*34.0*
Academe:							
Non Tenure Track Full-time (U)	30.4	25.2	39.2	50.8	38.0	31.8	31.8
Non Tenure Track Full-time (T)	16.7	6.8	13.3	0.0	0.0	31.6	23.1
Assistant Professors (U)	24.0	22.9	24.2	23.8	26.0	25.9	27.8
Assistant Professors (T)	34.6	24.5	11.8	30.8	17.9	9.1	14.0
Associate Professors (U)	7.4	6.4	14.1	9.1	11.1	15.9	27.3
Associate Professors (T)	14.5	13.6	12.9	15.4	13.4	14.0	15.1
Full Professors (U)	12.1	2.9	0.0	18.2	0.0	2.94	0.0
Full Professors (T)	6.7	6.3	7.5	8.4	6.5	6.1	6.5
Overall	*13.5*	*12.0*	*13.3*	*14.8*	*13.0*	*13.3*	*14.1*

Source: CSWEP Annual Report (1999), pg6

U= nontenure track, T= Tenure track

Looking across all academic disciplines we see a broadly similar picture, although there are some differences across countries.

Table 4: Percentage of women in grade, all disciplines

Country	Year	Full Professors	Associate Professors	Assistant Professors
UK	1996/7	8.5	18.4	33.3
Germany	1998	5.9	11.3	23.8
France	1997/8	13.8	34.2	*
Italy	1997	11.0	27.0	40.0
Sweden	1997/8	11.0	22.0	45.0
Israel	1996	7.8	16.0	30.8
Australia	1997	14.0	23.0	40.7
USA	1998	13.8	30.0	43.1

Source: EC Report, (2000) Science policies in the EU, Promoting excellence through mainstreaming gender equality pg10.

The proportion of female researchers appears to vary according to discipline. For example, in EU Member States there are lower numbers of female researchers in

Engineering and Technology than in other disciplines and there are higher numbers of women in the humanities and social sciences.

Table 5: Percentage of female researchers, EU by discipline

Country	Natural sciences	Engineering and Technology	Medical Sciences	Agricultural Sciences	Social Sciences and Humanities	Total
UK	31	14	55	40	54	36
Germany	14	9	30	25	27	19
France	29	17	21	*	38	29
Italy	31	13	23	24	36	28
Sweden	29	18	39	41	36	32
EU	23	12	33	28	32	26

Source: Laafia, I. and Larsson A. (2001), Women in public research and Higher education in Europe (2001) pg3. Eurostat (WiS database).

Comparing academic economics to the Government Economic Service (GES) Rowlatt (2001) shows gender breakdown of stock and promotion of GES members, 1986 – 2000. There is an increase in the proportion of women at all grades. Women and men are equally likely to succeed in the entrance exam. The probability of promotion is the same for men and women, however, there are differences in departure rates. Larger numbers (12% compared to 7%) of women left mid-career than did men.

Looking at business:

[UK business: *use 'Equal Opportunities Commission on women and men in Britain: management' ('I' in the tables) See tables on page 2 and 3- look at business sectors which are comparable to academic economics, i.e. how are similarly qualified women to academic economists doing in business. Also has figures for police, civil service, council in EOC paper. Also some figures for Britain on pg4 of the Industrial Society's report 'Small Step or Giant Leap?'*]

3 A model of female labour market participation

A model which describes the career progression of an educated cohort, some of whom have career breaks for children and then return, some of whom exit the labour market after child birth, some of whom don't have children is presented. This provides a context within which to discuss the various studies.

In this part of the report we relate the issues we are trying to address to a general quantitative modelling framework for looking at gender differences in outcomes in the UK economics profession including academia. The overview we set out is very general and encompasses approaches which have been used to look at this issue in previous empirical papers in both economics and other professions.

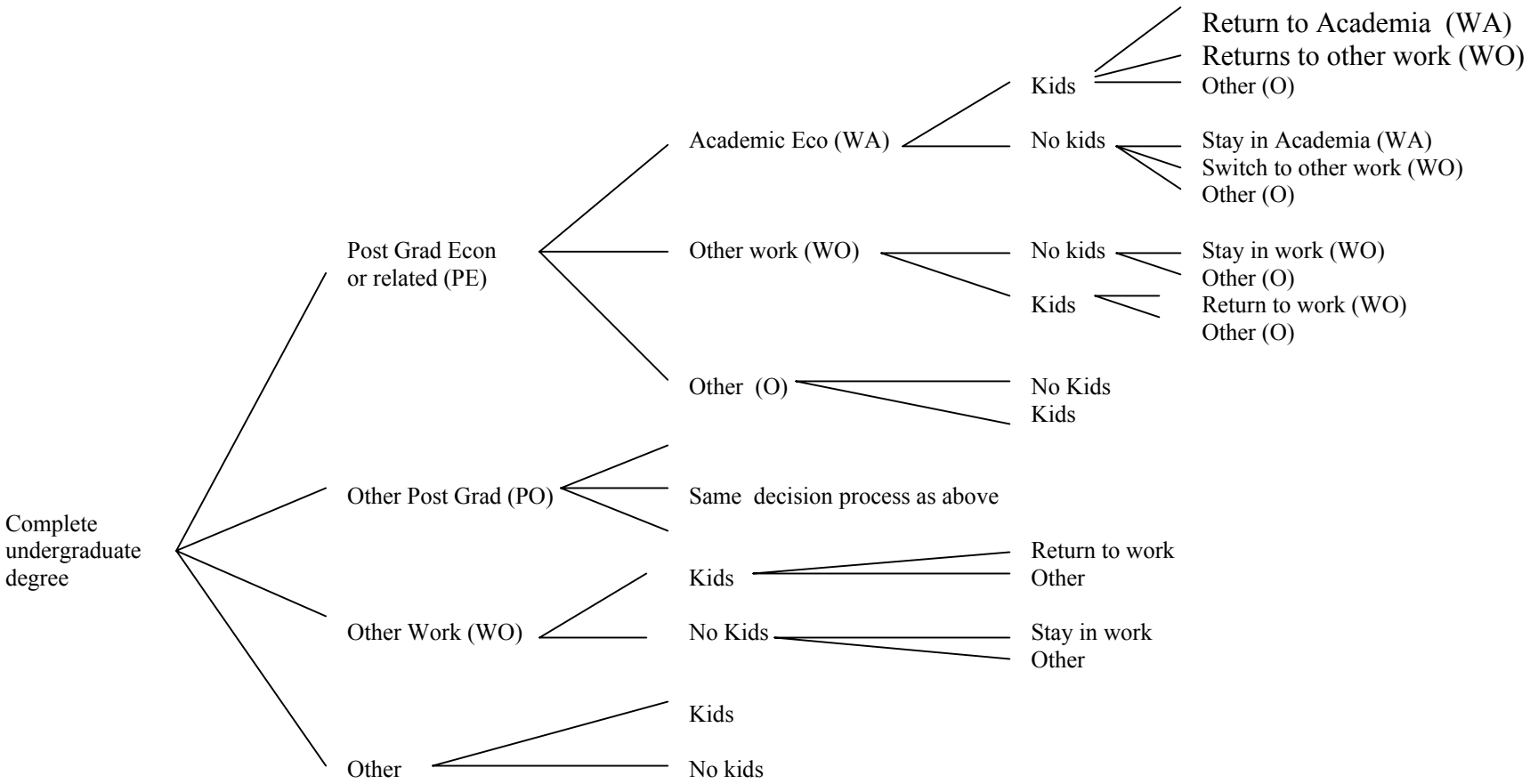
3.1 The decision making process

In looking at this issue we take as the starting point individuals who undertake university education. We then look at ways of quantifying their lifetime choices about study and work so that we can place both the decision to be an academic economist and the outcomes associated with this choice in the widest possible context taking into account all the competing risks along the way. It is only if we understand the whole decision making process and how this is changing over time for different cohorts and for men and women, that we will be able to answer the questions which we want to address. Setting out this decision making process allows us to place in some context what the existing quantitative literature takes into account and what it ignores.

We take as our starting point all individuals who have successfully completed an undergraduate degree in any subject. The broad schematic outline of the decision process we envisage is illustrated in Figure 3.1. It should be emphasised that the decision making process outlined in Figure 3.1 is very schematic and encompasses a simplified version of what in reality is a very complicated decision making process. However we feel it captures both the issues which the CWE wishes to investigate as well as previous academic papers (particularly quantitative papers) looking at these broad issues. The way we have visualised each of these decisions stages is set out in detail below.

The key question which our research needs to address is what determines the path an individual chooses and what are the outcomes associated with each stage of this decision making process. In our schematic outline we have assumed that the decision of whether or not to have kids plays a crucial role in this decision making process. It should be pointed out, however, that an individuals expectations about the future (including whether or not to have children) almost certainly will have some impact on early decisions such as whether to pursue post-graduate study and/or an academic career. Furthermore, it is also argued in some of the papers reviewed below, that other factors (i.e not just decisions about children) play an important role, for example the work environment and culture.

Figure 3.1 – The Decision Making Process



3.2 What could a quantitative study tells us?

In this section we look at what a quantitative study will and will not tell us about this decision making process and the various outcomes associated with these decisions. This will in part depend on the quality of data available to look at the issue under consideration. Some of these issues have already been looked at using quantitative methods and are reviewed in detail in the next section. We review the key articles here and point out what they do and what they do not account for and measure.

3.2.1 Initial decisions/outcomes after undergraduate study

From Figure 3.1, we see that our starting point is all individuals who complete an undergraduate degree[2]. To obtain a job in an academic economics department a person will have to have completed a post-graduate degree in economics or closely related discipline and a first key question is whether the type of people undertaking such post-graduate study are different to those taking other options (defined here as other post-graduate work, work and other activities) and whether these factors vary by gender. If different factors have or are currently determining participation in post-graduate economics by men or women, then this may impact on later participation in academic economics. To see if this is the case, or if this has been changing over time, we ideally need to go back and look at the determinants of initial decisions after completing undergraduate study when young. This process is relatively easy to model using a multinomial nested discrete choice model. From this model, with appropriate data, we could work out the unconditional probability of undertaking post-graduate economics and by modelling this process separately for men and women it would be easy, with appropriate data, to see if any differences over time are due to differences in the characteristics of women undertaking post-graduate economics or differences in the importance of these characteristics in influencing the various decisions. To our knowledge, this type of analysis has not been carried out in the UK or US context.

The crucial requirement here is longitudinal data which has rich enough information on individuals' background characteristics, and their initial decisions after completing undergraduate study including subject choice at post-graduate level.

To our knowledge such data does not exist, and collecting it would be a major exercise (see discussion in section six). In addition, it is not clear how informative modelling the current cohorts decisions to undertake undergraduate education would be informative about behaviour of earlier cohort who would not be professorial candidates. We know (e.g. from the LFS) that proportion of women undertaking undergraduate training has risen substantially over cohorts. Collecting retrospective data is problematic as people's

[2] We could of course go back one step further and look an initial undergraduate university decisions but we think that this unnecessarily complicates our exposition and is not the key factor in determining who works and progresses in academic economics.

recall may not be accurate. Thus, it would be many years (a generation) until results would be obtained from such an exercise.**]**

Even with rich longitudinal data, as stated above, these initial decisions may be significantly influenced by an individuals' future plans regarding children and family as well as other unobserved preferences and tastes, and these cannot be measured quantitatively. This may bias the results of any quantitative work that we do.

3.2.2 Decisions after the completion of post-graduate study

If we look at the next decision making stage in our diagram, it involves the initial choices and outcomes after a person has completed their post-graduate study. This will of course depend on what they have undertaken and achieved at university as well as other background characteristics both observed and unobserved. Ideally, we would like to model both the choices people make as different types of people will select into different types of career paths and establish whether and how these differ among men and women and also between economics post-graduates and other post-gradates. Having modelled this initial selection process, we would then want to take account of this and look at initial outcomes such as type of appointment and earnings. Our main interest lies in looking at gender differences in offers of jobs in academic economic departments, the type of appointment (including salary and/or scale), whether there are observable differences between men and women at this early stage and whether this has changed over time for different cohorts.

Again this is a question which has not, to our knowledge, been looked at in the literature. It would appear, from anecdotal evidence, that a lot of people don't think there are many differences between men and women at this stage (and the LFS seems to back this up), and hence this type of question may be seen as low priority. There is some evidence, however, from Booth et. al (2000) and Booth et. al. (2002) that women at this stage in their career are much more likely to have temporary appointments rather than permanent posts compared to men with similar backgrounds and these temporary posts are less well paid.

Again, a rich longitudinal data set would be needed and all the earlier caveats about accounting for unobserved factors, would apply equally here.

3.2.3 Career Progression and family decisions

If we return to Figure 3.1, we see that in our simple model there are a number of factors which a quantitative study would ideally like to take into account when looking at career progression and family formation. The first is what determines the composition of individuals undertaking postgraduate studies in economics and whether this is different from other disciplines and whether this varies by gender. The next is looking at the determinants of whether an individual pursues an academic or non-academic career in economics and whether this is different for economics compared to other professions. The third, and perhaps most important, is how decisions about family formation affect a person's career choice, labour market activity and outcomes.

Most of the quantitative literature looking at gender differences in the academic economic profession have focussed on some aspect of career progression and the differences experienced by men and women. Some of these have also considered how choices about family formation impact on these decisions *in so much as the consequences of these decisions can be observed in their data.*[3] None of the papers, however, have accounted for initial career decisions which may have been influenced by an individuals' future plans regarding children and family as well as other unobserved preferences and tastes, as this is very difficult to do in a quantitative framework.[4]

The quantitative papers on the whole have look at differences in choices (or the selections) made by men and women of whether to pursue an academic versus non-academic career in economics,[5] differences in the outcomes observed as a result of those choices (such as promotion,[6] job offers,[7] wages,[8] research grants[9]) and in some cases papers have actually take into account the effects of academic versus non-academic career selection on outcomes.[10]

The key paper in the UK context is the study carried out by Booth et. al. (2002). They use data collected by the Royal Economic Society in 1999 to look at the representation of ethnic and other minorities in academic economics in the UK. The data are reasonably rich and contain information on such things as productivity (measured by quality of publications), earnings, academic attainment at university, and job offers received. They find that men with similar observed characteristics are more likely to be promoted and also received higher wages. They argue that one of the key driving factors may be the role of outside offers, as it appears men gain a higher pay response to outside job offers. This difference in outside job offers my be due to discrimination.

The study tells us a lot about what might be happening in the UK academic economics job market but some important questions are left unanswered because of the limitations of the data. Firstly, the data is just a cross section and does not tell us whether the findings have been changing over time. Secondly, the sample sizes they have available are quite small and this means they cannot estimate their models separately for men and women. This means they have to assume that observed characteristics are valued identically for men and women, and in many quantitative studies this has been found not to be the case (see for example the study by Filmer et. al. (1998) in their study looking at this issue for

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[3] This is usually measured by such things as labour market experience, tenure, marital status and/or children variables.

[4] Decisions about whether to have children or not are clearly not exogenous and will affect peoples labour market decisions. Finding ways of accounting for the endogeneity of fertility decisions is notoriously tricky but it is equally evident that treating these decisions as exogenous seriously bias quantitative findings (see for example Angrist (2000) and Iacovou (1999) who look at the endogeneity of fertility decisions regarding the decision to have more than two children).

[5] E.g. McDowell et. al.

[6] E.g. McDowell et. al., Booth et.al.

[7] E.g. Booth et.al.

[8] E.g. Booth et. al. and Filmer et.al. (1998).

[9] NatCen paper

[10] E.g Mc Dowell et.al.

the World Bank). Thirdly, the sample only deals with academic economists, and not the economics profession as a whole, so we cannot see whether the type of women who select into academic economics is different to those who choose other career paths and whether this affects the results. McDowell *et. al.* argue that this type of selection is potentially very important. Finally, Booth et al assume that decisions about having children and family formation are essentially exogenous and can be captured by experience and marital status variables.[11] This is unlikely to be true in reality and there is some evidence that this could significantly affect the results obtained.[12]

In the most general case we would model the evolution of outcomes over time for men and women in the academic and non-academic economics profession and try and identify gender differentials. We would then want to establish how much is due to differences in observable characteristics between men and women that we can measure (or could hopefully measure in some quantitative survey) and how much is due to differences in the prices paid to observable characteristics for men and women, which may be related to discrimination. While this would help to establish some basic facts, in order to be convincing we would need some convincing strategy for taking into account the effects of unobservable differences in characteristics including tastes and preferences. This would be very difficult to do in a convincing way, regardless of how rich the quantitative data we had.

Some examples can help to illustrate this point. Say for example a women after completing her post-graduate studies is keen to start a family in the future. She may choose an academic career over a non-academic career because she feels that it gives her more flexibility when she eventually starts that family. On the other hand, lets assume an otherwise identical man does not allow his future family formation plans to affect his initial career decision. Then these differences in taste that would be difficult to observe, may explain some of the differences in outcomes between men and women in academic economics. On the other hand, if the most ambitious and motivated female economic graduates tended to choose academic careers whereas similar males tended to choose non-academic careers, then the results of studies like Booth et. al. (2002) may understate the level of discrimination in economics.

What is clear is that many unobservable characteristics, tastes and preferences are going to be key in what decisions people make about career choices and what outcomes they achieve and it is unlikely that we will be able to get at this using quantitative methods. What quantitative studies do provide us with is some interesting facts about observed differences between men and women in economics and it is clear that further quantitative analysis could add to our knowledge. Some of the key findings of these studies are highlighted below.

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[11] Their data does not have information on whether the respondent has children or not.
[12] See for instance Angrist (2000) and Iacovou (1999) who examine the importance of treating the decision to have more than two children as endogenous in female labour supply decisions.

3.3 Key findings from quantitative studies

In this section we highlight some of the key findings from the quantitative studies that have looked at gender differences in career progression amongst graduates including academic economists.

The key findings are:

- It is clear from most quantitative studies that there are significant differences in the outcomes (participation, wages, promotion, etc.) experienced by men and women with graduate qualifications, though these differences are much lower than for less educated individuals.

- The observed differences in outcomes for men and women (such as pay and the probability of promotion) are generally reduced, though never entirely eliminated, when account is taken of differences in observed worker characteristics such as age, experience, productivity and education.[13]

- This remains true even in studies controlling for possible self-selection into academia and the presence of observed and unobserved heterogeneity.[14]

- There is also clear evidence that these observed differences between men and women have been decreasing over time,[15] but still persist.

- These unexplained differences could be due to discrimination or other non-discriminatory processes that are difficult to observe quantitatively.

- In studies where there are sufficient sample sizes to estimate the determinants of outcomes separately for men and women, it is clear that differences are not only due to observed differences in the characteristics of men and women, but also due to the fact that the reward or price paid for observed characteristics differs between men and women. This could reflect discrimination and/or could simply be due to omitted variable bias.[16]

- One important explanation could be the impact of outside job offers. There is evidence in the UK that men receive more outside offers than women of comparable characteristics and gain higher pay increases in response to these outside offers.[17] Again this could reflect discrimination or some other unobserved factors.

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[13] For example, Booth et. al. (2002), Filmer et. al. (1998) and McDowell et. al.
[14] For example McDowell et. al.
[15] See for example McDowell et. al.
[16] See for example Filmer et. al (1998).
[17] See Booth et. al (2000).

- One suspects that one of the most important unobserved factors may be future plans regarding children and family as well as other unobserved preferences and tastes. Controlling for this type of selection is very difficult in a quantitative study and is why other more qualitative information is probably needed to understand whether the findings of the quantitative studies are due to discrimination and/or other factors.

3.4 Summary

The basic conclusion from this section is that the existing quantitative literature points to the fact that there are clear differences in the outcomes of graduate women and men, even after accounting for differences in observed characteristics. While quantitative analysis on new and improved data could probably add more flesh to these findings, it is highly unlikely that it could help unravel the key question of whether these observed differences are due to unobserved preferences/tastes/life choices or due to actual discrimination. We are unlikely ever to get at this using quantitative data (even the richest data set we could imagine) and our only real hope is drawing together the existing quantitative findings, doing new quantitative work using existing data sources which will look at the issues which have not yet been undertaken using quantitative methods, but also undertake new qualitative research which can tell us more about the issues which quantitative work cannot answer.

4 Survey of the existing literature

This section reviews some of the main articles that deal with gender inequality amount skilled workers. It is not a complete literature review. For example, we have not looked at the literature on 'insiders and outsiders' (for example blacks in America). A full list of all of the references we considered is given in Table 7 (at the end of the report) and some brief notes on each article. Here we give a more in depth discussion of what we saw as the main articles.

4.1 Booth, Frank and Blackaby (2002) "Outside Offers and the Gender Pay Gap: Empirical Evidence from the UK Academic Labour Market"

Description of data set: The Royal Economic Society Working Party on the Representation of Ethnic and Other Minorities in the Economic profession conducted a survey of academic economists in 1999. The survey was sent to Heads of Economics Departments in the UK, who were asked to distribute the forms to full-time academic staff. There was no follow-up. The survey achieved 516 responses: approx. 32% response rate. However, smaller samples may often need to be considered because complete answers are not given by many respondents. In general 351 respondents answered enough relevant questions to be used. The questionnaire contains 44 questions on individual and university characteristics, but no data on children or domestic division of labour. There is information on research funding obtained, outside offers, and perceptions of discrimination.

Compared to HESA data from 1996, the authors claim this survey looks representative in the respect that 16.8% of respondents are female, compared to 17.5% in academic economics as a whole. Gender is not mentioned as the purpose of the survey, so there should not be an over-sampling of women identifying with the objectives of the survey. However, there is higher participation in the survey by full professors and by higher-ranked research departments.

Findings: The article finds that there is a gender promotions gap and a within-rank gender pay gap, after adjusting for productivity. The only variable that has a significantly different impact for men and women is outside offers. For men earnings are positively correlated to the number of outside offers over the last five years, whereas for women they are negatively correlated. Women are also less likely to receive outside offers than comparable men. No evidence is found from the earnings regressions that the pay gap is directly due to career breaks or experience in the labour market outside the university sector. However, there is a possible indirect route since career breaks are found to have a negative effect on outside offers, which in turn have a positive effect on earnings (for men at least). There is evidence that women have a lower publication productivity than men with comparable characteristics. Finally, it is found that individuals suffering from a pay gap- relative to their observable characteristics- attribute this to discrimination. It is found that perceived discrimination is highly correlated with the unexplained component of earnings.

The authors argue that their findings are consistent with a 'loyal servant' hypothesis. This says that women are less mobile than men, and are therefore less likely to accept outside offers. Consequently, they are less likely to get outside offers than men, if it is assumed a rejected offer is costly to the potential employer. Furthermore, women's current employers are less likely to match outside offers, as they believe women are unlikely to leave. The negative correlation between outside offers and earnings for women is explained because the women seeking outside offers are those who are already dissatisfied with their earnings; when the offers are received they are either not matched or not taken up. The positive correlation between outside offers and earnings for occurs because universities are more likely to match men's outside offers but also because men are more likely to accept them. The authors also note that the higher number of outside offers for men is consistent with the presence of an 'old boys network'.

It is concluded that universities are paying women less as an optimal cost-minimization strategy, rather than as a taste for discrimination. The authors believe that their findings are not specific to academia, and could apply across the labour market.

Criticisms: One of the major problems with the study are the small sample sizes, particularly among women, which means that many interesting questions cannot be looked at. Because the sample is restricted to those in academia, we cannot compare academic and non-academic career routes in economics which may be an important part of the story we are trying to uncover, especially if different type of men and women select into academia. Also, the survey does not have information on children which is an important omission.

How is the article relevant?: The research is the only recent evidence that looks directly at the economics academic profession. The article highlights the possibility that outside offers may play an important part in women's absence at the top of the academic profession.

4.2 Hardy (2001) Small Step or Giant Leap? Towards Gender Equality at Work. Policy Paper by the Industrial Society

This report contains an overview of the research into women's position in the labour market as a whole.

It shows that there is a persistent gender pay gap of 18% for full-time employees (not conditioning on anything). For every hundred pounds a woman earns a man is paid one hundred and eighteen. This gap is larger than the corresponding figure for most other European countries (Equal Pay Task Force, *Just Pay*, EOC, 2001).

Different wages for the same work

When women do the same or comparable work to men their earnings are often lower. The Law Society, for example, has recently found that among solicitors with similar qualifications experience and skills, women generally earned less than men. The average

starting salary for a women solicitor was found to be 6.2% below the average starting level for men (£15,194 and 16131 respectively), a gap which increased further up the pay scale. (The Law Society, 'Private Practice Solicitors: Salaries 2000' *Salary Data 2000*)

The Independent Review of Higher Education Pay and Conditions found that, on average, full-time male academics in older universities are paid £4,395 a year more than their female counterparts. (Sir Michael Bett, Independent Review Chairman, *Independent Review of Higher Education Pay and Conditions*, 1999)

Research by the Equal Opportunities Commission indicates that in all occupations men earn on average more than women. The extent of the gender pay gap is found to vary considerably between occupations. In 1998, the pay gap was widest in craft and related occupation (at 60% of weekly earnings) and narrowest in clerical and secretarial occupations (at 88%).

Men comprise the majority of employees in most the occupations where average earnings are highest. Conversely, women form the majority of employees in most of the occupations where average earnings are lowest. (see pg 5 of 'Women and Men in Britain, Pay and Income' EOC).

Masculine Structure

The author asserts that "many professional and management roles are still largely (and automatically) constructed as 'two-person' careers, defined by long hours and high workloads, requiring regular travel and even relocation, and assuming domestic support, typically by an unpaid spouse. As women bear responsibility for the majority of domestic work, they are placed at an evident disadvantage in competing alongside many men. Those who can afford to do so must bear the added expense of hiring domestic support. In reality many women bear a double burden of home and work responsibilities." (pg6)

Masculine culture

The report suggests that the cultures of organisations are often highly masculine, disadvantaging anyone who does not fit in. Such organisations reward behaviour that is "rational, objective, logical, decisive, tough, competitive and aggressive- values traditionally associated with men". Women and men who reject the dominant masculine culture may feel alienated. To colleagues and managers they may appear detached and uncommitted. Those who seek to 'get on' but don't feel that they fit with the prevailing culture also face difficulties. They must constantly manager how they 'seem' to others. This form of 'identity' work has been may result in an unhealthy emotional denial and a feeling of detachment because of the high levels of self-control required. Women (and some men) who get to the top may then opt out, feeling that they can no longer conform to the type of behaviour required for the top jobs.

Networks

The author notes that success within many organisations relies on access to "powerful networks where contacts are made and business is done". These networks consist mainly of men and are dominated by male culture, disadvantaging women who try to use them.

Bargaining power

Women may be constrained in moving jobs easily by domestic and childcare responsibilities. This in turn constrains their ability to 'play the market' by negotiating a higher salary with each move. Women therefore have less power at the negotiating table and are more likely to tolerate poorer pay and conditions. On the other side of the bargain, bosses believe that men are more likely to be poached by rival firms and are prepared to match the rates of pay offered by other employers. However, women are generally know to be less likely to leave, so bosses make less generous offers. Employers also rely on previous salary data as an indication of an individual's market worth when making an offer. For women, whose existing salary is likely to be lower than their male counterparts, the use of salary history by employers when negotiating terms and conditions is disadvantageous and serves to keep them on lower pay scales in comparison with men.

4.3 McDowell, Singell and Ziliak (2001), Gender and Promotion in the Economics Profession

Description of data set: The paper uses unique panel data from members of the American Economics Association to test for differences in promotion over the period from 1960s to 1980s.

Findings: They find that professional attainment and career advancement for female economists are inferior to comparable males, although they are declining over time. These differences remain even after controlling for unobserved heterogeneity and self-selection between academic and non-academic jobs.

How is the article relevant?: The article tries to specifically take into account selection into academic economics as well as the effects of observed and unobserved heterogeneity which is unusual in this type of study.

4.4 Coe and Boddingtom (2002) Study of the Factors affecting the Career Choices of Chemistry Graduates. A report commissioned by the Royal Society of Chemistry

Description of data sets: the quantitative analysis in the report is based on data from the Higher Education Standards Agency (HESA) staff records for 1994/95, 1995/96, 1996/7 and student records for 1988-1997.

The qualitative analysis is based on focus group discussions with 42 participants: 22 male 20 female. Interviewees are from inside and outside HE, those inside representing a range of seniorities. HE interviewees are drawn from one university in Midlands and one in London; non-HE interviewees are also based in one of these areas.

Findings, Quantitative: using quantitative analysis of the HESA data the report finds that only civil engineering offers worse promotion prospects than chemistry for women. There is a sharp fall off in numbers as women move through chemistry in academia, from 33% of post-graduates to less than 1% at professorial level. The quantitative analysis provides some indicator as to why chemistry may be worse at retaining women than other subjects. The HESA data shows that, in general, women are more likely to be:

- Found in smaller departments
- Employed in newer universities
- Work alone rather than in teams
- Work part-time and on short-term contracts

However, the structure and demands of chemistry are unsuited to these tendencies, as there is a concentration of jobs in large teams and large departments, and in the established universities. Part-time working is also rare.

Findings, Qualitative: The authors also draw 'tentative' conclusions from their qualitative work, and stress that their findings are only indicative. They identify a number of barriers to the promotion of women in chemistry:

- Attitudes. Both male and female attitudes appear to militate against the progress of women in chemistry. Men see chemistry as 'a hard-edged discipline not emotionally suited to women', while women have an expectation that they will be treated differently or unfairly, which the small number of potential role models continually reinforces.
- Isolation: women report feeling isolated as socialising is mainly dominated by male activities, because there have traditionally been so few women.
- Size of Department: the nature of chemistry requires large departments with large teams working full time. This is difficult for women because they tend to prefer to work in smaller units, and elsewhere in academia are more likely to be found as lone workers or in part-time posts.
- Cultural barriers: chemistry has an exceptionally competitive culture that is inimical to women's way of working. There is an emphasis on results, and being the first to get them. This leads to the pervasiveness of "macho" attitudes, where the measure of merit is getting results out first. Women, however, report being more interested in exploring how to reach a solution and in learning from the process, rather than in arriving at a result and rushing to publish. There is, then, an issue of whether there is a 'female way' of doing science which women are not being allowed to follow owing to the dominance of male culture.

- Promotion criterion: women suggested that some chemistry departments function largely as male clubs, with promotion depending more on an individual's fit with the current culture, than on transparent assessment criteria

- Hours: Women who have families reported that long hours at the bench made it more difficult to find time for a family; the work is more difficult to do on a flexible or part-time basis or at home; and longer hours translates into a requirement for more childcare- which low pay in chemistry makes unaffordable.

- Difficulty of combining work and family: participants were virtually unanimous in believing that it was impossible for women to advance in chemistry and have a family. Even single women were seen as disadvantaged because so many men in chemistry relied on having a supportive spouse. Professorship and family were seen as mutually exclusive by almost all the female respondents.

There may also be more outside offers for men than women. The report suggests that women are better at: acquiring transferable skills during their PhD; recognising the value of these skills; and selling these skills to potential employers outside academia. They are therefore better placed than men to take up employment opportunities outside higher education.

The authors conclude that the low numbers of women in senior positions is explained by:

- a working environment that puts off large numbers of women

- a structure that creates barriers to their promotion

- a greater number of outside offers (from industry) for women, enticing them away from academia (by implication, women are also more likely to accept outside offers than men owing to the first two factors)

How is the article relevant?: though there is, of course, fundamental differences between chemistry and economics, some of the factors cited in the article may be more generally applicable, in particular:

Is there a 'woman's way of working' which the dominance of male values in academia inhibits? Are women with children disadvantaged compared to men with children due to the typical domestic division of labour? Are childless women disadvantaged compared to childless men because of the higher likelihood of female academics also being single (and hence lacking a supportive spouse)? (the NCSR results seem to corroborate the view that they are).

4.5 Blake and La Valle (2000) Who applies for Research Funding? Blake, La Valle National Centre for Social Research

Description of the data set: The sample was drawn from all academic staff employed in higher education institutions in Great Britain in the 1998/1999 academic year. A total of 54 institutions were invited to take part, 10 refused, leaving a final sample of academics drawn from 44 institutions. The issued sample included 7721 academics. A completed questionnaire was returned by 3090 sample members, giving a response rate of 40%. The following issues were covered in the questionnaire: employment circumstances; employment history; promotion, and factors affecting it; personal career values and strategies; research areas; qualifications, publications, and other academic activities (e.g. peer review); perceptions of eligibility for grants; grant and fellowship applications; support in applying for grants; and family/domestic circumstances.

Findings:

Research activities

Grants: The survey found that women were less likely than men to have applied for grants in the last five years: 59% of men had applied for grants, whereas 50% of women had. Women also made a smaller number of applications: 16% had applied for more than four grants, compared with 23% of men. The results on the most recent grant applications showed that: women were less likely to be the principal applicant; the grants women applied for were generally for shorter periods of time; and women tended to seek lower levels of funding. However, once the application had been submitted, no gender bias was found in success rates: 51% of women and 50% of men who had submitted funding applications had obtained half or more of the grants they had applied for.

Fellowships: The gender differences apparent in grant applications were not found to apply to fellowships. 17% of respondents had applied for competitively awarded fellowships in the past five years: 18% of women and 16% of men. 44% of women and 41% of men were successful in half or more of the fellowships they had applied for.

Eligibility for grants

Women were less likely than men to be eligible to apply for grants provided by all Research Councils and the Wellcome Trust, except for the ESRC (where they were as likely as men, due to differences in rules on eligibility across disciplines). Gender variations in terms of eligibility to apply to each funding body partly reflects women's representation in different disciplines, but also their over-representation among lower grade academic staff and those with fixed term contracts, as many of the grant schemes provided by the main funding bodies are not open to academic staff in these groups. Indeed, women were much more likely to be eligible to apply for grant schemes which have no requirements related to employment conditions, such as ESRC grants.

Percentage eligible to apply to each funding body for a grant by gender

Funding body	Men %	Women %	Total%

BBSRC	28	20	26
MRC	48	35	44
NERC	24	13	20
EPSRC	24	14	21
ESRC	38	45	40
PPARC	19	11	16
Wellcome Trust	23	18	22
Base (unweighted)	1271	1819	3090

Employment characteristics

Seniority: The survey found that senior academics were both more likely to apply for grants, and to be more successful in attaining them. Women are under-represented at senior levels, and when controlling for seniority most gender differences in propensity to apply for grants became much smaller or were even reversed.

Tenure: 37% of respondents had fixed term contracts, with women more likely than men to report this (44% and 33% respectively). Academics on fixed term contract were less likely than those with a tenured to academic position to have applied for grants (52% and 59% respectively).

Career history: A break for family reasons was the career history feature most likely to have a negative influence on application activities: just over a third of respondents who had taken a break in the previous 10 years had applied for a grant; most of those who reported a career break to look after the family were women. A job outside academia or research in the past 10 years was also associated with a lower than average application activity: 42% of respondents who reported this had applied for a grant, again women were more likely than men to be found in this group.

Barriers: There were some important differences in the proportion of women and men who reported barriers in their careers:

- 54% of women said that lack of career guidance had been a problem for them, compared with 43% of men
- Women were also more likely than men to believe that their career had suffered because they did not know the 'right people', with the respective figures being 46% and 40%
- Lack of influential role models and mentors was reported by 42% of women, compared with 32% of their male colleagues.
- A similar difference was found in relation to lack of support from senior staff, with 40% of women and 33% of men mentioning this problem.

The results indicated that these barriers might have an effect on application behaviour. Academics who reported not having had access to influential role models, having lacked

career guidance, or having lacked good connections were all less likely to have applied for grants than those who had not reported such barriers.

Family/domestic responsibilities

Family: The survey found considerable differences between men's and women's family circumstances:

- Women were less likely to be in a relationship than men: 71% of the former and 82% of the latter were married or living with a partner.
- Women in all age groups were less likely than their male colleagues to have dependent children
- Among youngest respondents (aged 35 or under), 16% of women and 22% of men had dependent children.
- In the 36-50 age group 55% of women and 72% of men had dependent children; among respondents over 50 the proportions of women and men with dependent children were 18% and 36% respectively

Domestic: Women were considerably more likely than their male colleagues to have domestic and caring responsibilities:

- among those with dependent children, 55 % of women and only 5% of men had main responsibility for childcare
- 10% of women had responsibility for looking after a disabled, sick or elderly relatively or friend, the corresponding figure for men was 5%

Over a third of respondents said the need to compromise and negotiate in a dual career household had been a problem in their career, but this was more likely to be reported by women (43%) than men (29%). 47% of respondents reported difficulties in combining work with family responsibilities, but virtually no gender difference was found here.

Institutional support: In terms of what HE institutions are doing to help academics with caring responsibilities, 65% of academics were able to work from home, and 47% had access to a workplace crèche. Only about a fifth of academics had access to other family friendly provision, such as parental leave and career breaks.

How is the report relevant?: In as much as research funding is a key element in becoming a successful academic, the fact that women apply for less grants may be a contributory factor in their low representation. But the report seems to indicate that the causality runs in the opposite direction, with low representation at senior grades reducing the number of women applying for grants. The report also points to some important factors which seem to affect women more than men: career breaks; barriers to career progression; and family and domestic responsibilities. It may be the interaction of these factors that means women do not progress, or choose to leave academia.

The data collected for this report could potentially be used to look differences between fertility amongst men and women at different grades. Although it is just a cross section, this is one of the best sources we are aware of for this sort of descriptive information.

4.6 Blackwell, Lynch and Jomes (2001) Scientific employment and family life: a longitudinal perspective

Description of data set:

This paper uses the ONS Longitudinal Study (LS), which is a 1% sample of the population of England and Wales. It consists of linked census and vital events data, and currently contains information from the 1971, 1981 and 1991 censuses. This paper uses the sub-sample of the LS who are graduates in science, engineering and technology (SET), focussing on their economic activity and occupation at 10 yearly intervals, as well as information about their child-bearing, cohabitation, and marriages.

Though the authors do not set out clearly the sample sizes in their description of the data, it would appear that there are a relatively small number of graduates in science, particularly women from older cohorts. For example in the 1991 sweep of the LS there were around 160 women born around 1930 who were SET graduates, approximately 300 born around 1940, roughly 600 born around 1950 and 900 born around 1960. As soon as these samples become split by subject, occupational grouping, by previous employment status, marriage status and childbearing, numbers can become very small.

Findings:

Summary

The number of people remaining in science occupations was highest in the health-related occupations for both men and women. Women typically continued in health-related occupations after childbearing and (amongst older cohorts) through to their retirement. Other science and technology graduates were much more likely to leave science-related occupations as they got older. It is reported that many went into teaching (this category includes academic research) – though the data analysis which shows this is not presented in the paper. Attrition from all the science-related occupations was higher amongst women than men.

The paper also reports some correlations between the subject studied (technology, natural sciences, health-related) and subsequent marriage rates and child-bearing behaviour. More of those with health-related qualifications aged between 25-44 in 1991 were married than those with other science subjects, whilst fewer similar women with technology-related qualifications were married. Considering cohabitation as well as marriage makes these differences less clear cut, pointing to the fact that at least some of these results are probably driven by age-effects rather than any more meaningful differences in partnership behaviour (since there will be more younger women with technology degrees as these subjects expand). Some differences in the age at which

women have children and whether or not they have children between different subject and occupational groups are also reported.

Considering the results in the paper in more detail,

(i) Numbers of male and female science graduates, by cohort

Male science graduates outnumber female science graduates in each cohort observed (those born around 1910,1920,1930 etc. through to 1960), though this gap has closed a little amongst more recent cohorts (mostly due to the growth in the proportion of women in health-related subjects). In 1991 there were more than four times as many science graduates amongst women born in 1960 compared to those born in 1930, though amongst those born in 1960 men were still more than twice as likely to be science graduates than women of the same age.

Women are well-represented amongst those with health-related qualifications: by 1991 almost half of those with these degrees born around 1960 were women. The number of women in "technology" subjects (computing, engineering, architecture) has grown very rapidly, though women still continue to be under-represented in these subjects compared to men.

(ii) Employment outcomes for science graduates

A higher proportion of male science graduates work in science-related occupations by the time they are 25-34 years old than female graduates – though the gap between science employment rates between men and women was narrower for those in younger cohorts (i.e. those who were this age in 1991 rather than in 1971); the science employment rate is higher in health-related subjects than any other – showing that these degrees are very vocational in their nature. By 1991 we observe a smaller proportion of men and women science graduates going into teaching and higher proportion going into managerial and professional non-SET occupations.

Fewer science and technology graduates remain in science related occupations over time compared to health-related graduates– 49% of female graduates and 32% of male graduates aged 25-34 who were in SET occupations in 1981 had left by 1991 compared to 13% and 8% respectively for those in health-related occupations. Women who became mothers between the 1981 and 1991 censuses were more likely to stay in SET occupations if they were in health than science and technology. Those in science and technology were more likely to leave employment all together if they became mothers.

(iii) Marriage and cohabitation

Women with degrees aged between 25-44 in 1991 are less likely to be married than those without degrees (whether science or non-science subjects). Sample sizes are mostly not big enough to say whether there are significant differences between subject areas; those with technology degrees appear to marry less than other women with science degrees, but if the number of women with technology degrees is expanding rapidly over time this result could be driven by the fact that these women are younger on average than other

subject groups. Once cohabiting is taken into account the difference is no longer significant. Women with health-related degrees are more likely to marry than those with other degree subjects.

For men aged between 25-44 in 1991, those with health-related degrees are most likely to be married, with those without degrees second most likely.

People with degrees are most likely to marry or cohabit with other people who have degrees. People in similar fields often marry each other, e.g. health professionals.

(iv) Child-bearing

The age at which women have children, or whether they have children at al,l is systematically related to qualification level - those without degrees aged 25-34 were much less likely to be childless than those with degrees. There were not many differences between subjects: but women with technology degrees are more likely to be childless.

Child-bearing and occupational status are also related. This paper estimates survival hazards for first entry into motherhood. It shows that women in teaching and health-related occupations are less likely to remain childless than women in other occupations whereas women in technology and science are more likely to.

Criticisms:

This is not a very well written paper and the analysis is fairly poor and unfocussed. There is scope for doing more interesting modelling, at a minimum some simple multivariate analysis, with this data. As it stands we would not give too much weight to the conclusions, particularly with regard to differences in marriage, childbirth, and cohabitation between people with different subject degrees and in different occupations.

How is the article relevant?:

This article uses a publicly available, national level longitudinal dataset to examine the issue of women's employment in science occupations, with particular focus on the impact of family formation and childbirth. More work could be done with this data.

4.7 MIT reports

Report of the School of Engineering

Description of data set: Members of the Committee on Women Faculty in the School of Engineering interviewed almost all of the female faculty members in the School.

Findings:

Outside Professional Activities: The committee collected quantitative data which indicated that male faculty spend more time doing compensated outside professional activity than female faculty, while senior female faculty spend more time doing uncompensated outside activities than male faculty.

The authors of the report note that "Professional marginalization is insidious because it so often sounds like complaints about an individual's specific situation. Yet the cumulative impact of the Committee's interview data is strongly suggestive, demonstrating a consistent pattern of marginalization for many of the women faculty in the School of Engineering". The report highlights a number of ways in which female faculty are treated differently to comparable males:

Academic duties

- Inclusion: Women reported not being included in collaborative research activity; not being asked sit on PhD thesis committees within their own research areas; and being left off influential committees

- Teaching: Women noted that they had been asked to teach lower level undergraduate subjects rather than specialised graduate subjects relating to their own research; some were asked to change their teaching assignments more often than their male peers

This marginalization compounds over time. For instance while not being asked to be a member of a single thesis committee probably has little impact by itself, continued exclusion from thesis committees over a period of years can lead to further exclusion from research grants and other important professional opportunities.

Mentorship: About half the junior women spoke about problems such as lack of advice and feedback, conflicting advice from different senior faculty, and refusal of senior faculty to act as a mentor. However, the report could not determine whether male faculty also suffer from a lack of adequate mentoring. But the problem of mentoring for female faculty may be particularly difficult owing to women's propensity to work in interdisciplinary or non-traditional areas. In these cases it is easy for females to become isolated because there is no existing group of faculty to interact with. This means she is solely responsible for selling the work to her colleagues and for building research funding. Those in charge may not value her work precisely because it is different and doesn't fit the standard disciplinary moulds. On the other hand, some female faculty reported that they felt highly valued precisely because of their interdisciplinary work.

Work and family issues: The authors noted that "virtually all the female engineering faculty who have children, and many who do not, told the Committee how hard it was to balance family obligations with an MIT faculty career." About half of the women in the faculty of engineering do not have children; among tenured women the percentage decreases to about 40%. By contrast 20% of the men on the faculty at MIT reported that they did not have children.

The qualitative evidence suggests that female faculty were less likely to have children than male faculty because they believed that to have children would severely compromise their future career opportunities both because it was frowned upon by those in charge, and because the demands of engineering precluded having children.

Unconscious gender bias: The report cites a recent study in which a curriculum vita was distributed to two groups of faculty from the same throughout the United States who were then asked if they would hire the candidate. Both groups had similar numbers of male and female faculty. All copies of the curriculum vita were identical, except that half had a man's name while the other had a women's. Fewer than half the faculty who reviewed the woman's curriculum vita said she should be hired, while nearly three-quarters of the faculty who reviewed the man's curriculum vita said he should get the job. Strikingly, it wasn't just the male faculty members who favoured the male candidate. There was no statistically significant difference in the evaluation of the curriculum vita by male and female faculty. The authors believe such studies demonstrate the power of unconscious bias against women in the evaluation process. (Steinpreis, RE, Anders, KA, and Ritzke, D. (1991) "The impact of gender on the review of the curricula vitae of job applicants and tenure candidates: A national empirical study". Sex Roles. 41, 509-528).

Criticisms: We are not given the sample size or frequencies of responses, nor does the committee interview men which would give the counterfactual.

Relevance: Points to a number of factors that may cause women to dislike academia: subtle, unconscious compounding marginalization, problems combining work and family, lack of mentoring.

Report of the School of Humanities, Arts and Social Sciences (SHASS)

Description of data set: The School of Humanities, Arts and Social Sciences Gender Equity Committee conducted "lengthy interviews" with all tenured women (30), and 15 tenured men who were named by the women as comparable in terms of career path. The Committee also collected quantitative data on issues such as salaries, rates of promotion and grants.

Quantitative findings:

Salaries: The committee found that although a wide variation in salaries by department characterizes the School, gender discrimination does not occur within any department. That is, the highest salaries in each department are as likely to belong to women faculty as to men.

However, major salary differences were found to occur between disciplines and insofar as proportions of women to men vary from unit to unit, and insofar as those units with the smallest percentage of women are those that pay the highest salaries, gender-correlated discrepancies do exists within the faculty. The authors comment that "Researches in higher education have long noticed that those fields characterized by a higher proportion of women in them reveal a decrease in prestige and in material benefits as the numbers of

women increase over time. Scholars have termed this process of devaluation linked to increased numbers of women in certain disciplines "feminisation"".

Promotion and grants: The report finds that there was no gender bias in promotion or for internal grant application and reward.

Service on committees: The authors reviewed the membership of the largest and/or most important University committees from 1990-2000. They found that although in 1999-2000 senior women constituted 20% of SHASS faculty, from 1990-2000 they represented a mean of 43% of University committee membership from SHASS, and on six out of fifteen committees, SHASS women constituted 45% to 86% of the members from SHASS. It therefore appears that women in SHASS are doing a lot more committee work than some of their male counterparts.

Qualitative findings:

Mentoring: The authors observe that "One of the most frequent comments in interviews was a complaint about receiving insufficient professional support and advice from colleagues, in particular a tremendous lack of mentoring." The scarcity of senior women leads to few role models for women coming up through the ranks, and an absence of women in administrative positions who are able to nurture and groom younger colleagues for leadership positions.

Information: Interviewees reported instances of poor communication of important information to junior faculty, and many felt that such information was distributed unequally. The aspects of MIT culture encouraging entrepreneurial efforts were seen to result in male faculty being able to find and make use of resources more easily. Inadequate information was also tied to a number of complaints about decision-making being overly hierarchical and "behind the scenes" in several units.

Outside offers: The authors make the point that "It is commonly known that one way, and at times the only way, to boost one's salary and prestige at MIT is to present the administration with an outside offer from another university at or above the calibre of MIT." Female faculty appear less likely to pursue outside offers as they say obtaining such offers strikes them as "hustling" if not dishonest. The authors speculate that women who are content to stay at MIT are therefore being valued less than men who are prepared to hustle for more offers.

Atmosphere: Complaints included

- A "locker-room feeling", in which men welcome each other but were suspicious of, and sometimes hostile to, women, producing feelings of marginalization
- The existence of certain gendered expectations of them- that they should "defuse tense situations" and "smooth the way in a gracious manner"
- Women felt like they were being accorded less respect than males, and were being treated dismissively by colleagues and administrators on a regular basis

- There was a sense that women's accomplishments were resented by men because of envy

- There was an apprehension that "There's one style, the hustling style, and if that is not your style, you are made to feel inferior". And insofar as these attitudes are more acceptable and prevalent among men than women, women will feel more uncomfortable.

Criticisms: With all of the MIT reports we do not know the number of times a statement has been made, or in what context the question was asked. Also, it may be the case, though, that MIT is quite different from British universities

Relevance: Gives a lot of ideas about ways in which academia may be more unpleasant for women than for men, and hence cause them to leave.

4.8 World Bank Report – Filmer, Grosh, King and van de Walle (1998), Pay and Grade Differentials at the World Bank

Description of data set: They use World Bank personnel data covering all regular fixed-term staff in the professional (non-support) grades who were on active duty as of May 23, 1997. Their data does not include full pay and promotion histories, but include both entry and current levels so that average annual increases over time can be measured. A large proportion of the professional staff of the World Bank are economics graduates and so the findings using this data provides some insights into pay and promotion prospects for economic professionals in a non-academic environment. In their study they split their data by gender but also by Part I countries ("developed" countries not entitled to borrow from the bank) and Part II countries ("developing" countries who are entitled to borrow from the bank). Their data has information on tenure and experience, year and age of entry, education including country undertaken and discipline, dummy variables identifying where economics PhDs were obtained, marital status, and nationality.

Findings: They find that among Part 1 staff, women are paid 14.2 per cent less than men. Of this difference, 8.6 percentage points are explained by women having different characteristics than men, but the remaining 5.6 percentage points (or 39 per cent) reflects the fact that women are rewarded differently from men for their observed characteristics – what the authors call "structure". They find that the largest between-group difference is that between Part II women and Part I men with Part II women being paid 19.3 per cent less on average than Part I men, with 10.6 percentage points (53 per cent) being due to structure, not characteristics. They also find similar patterns for between-group differences in salaries at entry.

They also look at gender differences in the grades of men and women. They find that for those from Part I countries, women are 0.7 of a grade lower than men, with 0.2 (28 per cent) of this due to structure. For individuals from Part II countries, women are also on average 0.7 of a grade below men, with 0.3 (43 per cent) of this difference being due to structure.

The authors then do a number of experiments and examine a number of hypotheses to see whether omitted variables or other factors such as quotas might explain these results. They conclude that these do not appear to be compelling explanations for the disparities and that discrimination probably exists, though less than would be implied by a cost minimising hiring policy.

How is the article relevant?: Obviously this paper does not cover academic economics, but shows that in an economics dominated professional organisation like the World Bank, differences exist between men and women and the findings are broadly similar to what is found in academic economics. The obvious advantage of the study is the large sample size and the clear evidence that similar characteristics are valued differently for men and women.

4.9 Kymlicka (2002) Contemporary Political Philosophy, An introduction: chapter 9 on Feminisim, pg 380-382

A philosophical treatment of the question of sexual discrimination. Kymlicka points out that equality of treatment does not remove disadvantages to women if the roles that women are attempting to fill have already been defined in a gendered way. For example, a job (like a firefighter) may require that the person filling it is of a certain height and strength. This rule effectively screens women out. However, the employer may have no intention of doing this, and may pay no attention to the gender of the applicants, or may in fact wish to hire more women. There is gender neutrality, in that employers do not attend to the gender of applicants, but there is no sexual equality, for the job was defined under the assumption that it would be filled by men.

Kymlicka quotes Radcliffe-Richards: "if a group is kept out of something long enough, it is overwhelmingly likely that activities of that sort will develop in a way unsuited to the excluded group. We know for certain that women have been kept out of many kinds of work, and this means that the work is quite likely to be unsuited to them. The most obvious example of this is the incompatibility of most work with the bearing and raising of children; I am firmly convinced that if women had been fully involved in the running of society from the start they would have *found* a way of arranging work and children to fit each other. Men have no such motivations, and we can see the results."

How is this discussion relevant? It may be that the role of an academic has been defined with men in an inherently masculine way, as academia was almost exclusively male until recently. Women trying to succeed in academia are hence forced to act like men to succeed. To be a good academic it is perhaps not necessary for you to not have a family, or to work in an overly competitive way, or to publish lots of articles; these traits have developed as notions of productivity and merit which are suitable for men's working characteristics but not for women's. Women attempting to fill such roles may not be able to, even though they are given an 'equal' shot at doing so, because what is being asked of them is something that has already been defined in a way to unsuited them.

5 Data Sources

Table 6 summarise the main data sources that we are aware of and provides some descriptive detail.

Table 6: Main data sources

Name of dataset	Country, Field	Type of data	Collection Method	Variables of note	Comments
CWE datasets Mumford for CWE, Booth and Burton, Burton, Rowlatt, Joshi	UK Academic Economists	Aggregate 1996, 1998, 2000	Questionnaire sent to heads of department at about 90 institutions. Data covers about 2000 economists. Response rate 92%, 86%, 60% in 96, 98, and 2000.	Staff appointments and student enrolments broken down by gender. 2000 also covers ethnicity	A subset of 82 institutions responded to surveys 1 and 2. A subset of 72 institutions responded to surveys 2 and 3.
RES Working Party on the Representation of Ethnic and Other Minorities in the Economic profession Dataset; Booth et al		Individual 1999	Questionnaires sent to staff (via head of department) 516 responses: 32% response rate. In general 351 respondents answered enough relevant questions to be useful. 16.8% respondents are female	44 questions on individual and university characteristics. Details of productivity (number and quality of articles), research funding obtained, outside offers, perceptions of discrimination	The small sample size means analysis of subsets becomes difficult
AEA women's committee (CSWEP) data	US Academic Economists	Aggregate 1993-2001	Questionnaires sent out to 120 Ph.D. granting institutions **[response rate?]**	Students and staff by gender **[stock or flow?]**	Data exists for 1993-2001. Allows for monitoring changes overtime
Nat Cen, Blake and La Valle	British Academics, all disciplines	Individual, cross section 1999/2000	Sample of 3090 academics, drawn from 44 institutions	Employment history; personal career values and strategies; research areas; qualifications, publications; grant and fellowship applications; family/domestic circumstances.	This looks like a very useful dataset. The focus of the Blake and La Valle report was grants, but this data could be used to examine other factors, for example status and promotion.

Panel of AEA economists, McDowell	American academic and non-academic economists	Individual, 1960s to 80s.		Research productivity, Ph.D. quality, life-cycle attributes, fields of specialisation, promotion	
Survey of Earned Doctorate Recipients, Ginter and Hatys and Kahn	Doctorate recipients from US institutions	Individual longitudinal survey, 1977-199?		Demographic characteristics, educational background, primary work activity, employer characteristics, salary.	There have been changes in variable definition over time
Survey of Graduate Students and Post-doctorates in Science and Engineering, Kahn	US				Has data on economists
Cross section of Scottish Academics , Ward	Academics working in five Scottish Universities	Individual, cross section 1995/6	Questionnaires sent out, 900 replies, (30% response rate)	Personal background, education, working history, productivity and job satisfaction.	
World Bank dataset, Filmer et al	Employees at the World Bank	Prob. individual			Not sure about the details, perhaps Lorraine could fill them in
HESA data					
ONS Longitudinal Study, Blackwell et al	1% sample of the population of England and Wales	Individual			Consists of linked census and vital events data, and information from the 1971, 1981 and 1991 censuses

6 Conclusions and Recommendations

In this section we summarise our understanding of where we think the literature has got to, what empirical regularities have (and have not) been established and what are the key questions that are left unanswered in the literature.

Before we turn to that it is useful to consider what are the main factors that affects outcomes in academic economics. The main ones are: outside offers, publications, prestige activities (editorships, etc.), raising research funding, teaching (negative?), time spent doing remunerated versus non-remunerated (e.g. serving on committees) activities

One factors that clearly account for some of the observed differences between men and women is children. Women take more time out of work than men and thus lose experience. In addition, women are usually the prime carer of young children and thus work shorter hours and as result may be less mobile, and thus get few job offers, which may in turn affect promotion opportunities.

Other factors that could be factors include: attitudes of (educated) men and women towards risk, perceptions of own quality. Another important factor could be the culture of academic institutions. The culture of long hours in academia had not evolved for reasons linked to productivity, but because male academics used the long hours to socialise. The market has not removed the inefficiencies of long hours (i.e. women can't work them) because the 'end' of an academic department is not only academic output, but also the social payoffs of its members.

What are the big questions that are left unanswered by the literature?

- Is the rate of promotion of females in academic economics different from other academic disciplines or from other economics professions
- Are women more successful in some types of academic departments?
- Are women more successful in policy-oriented economics and not in more technical economics?
- Where do women go when they leave academic economics?
- What are the mechanism by which they leave?
- Why the disproportionate representation on fixed term and part time contracts?
- What is the effect of an international labour market, e.g. most MSc students do not come from Britain, and maybe have no intention of staying?
- Is the culture of economics male oriented? In what ways and how does this culture relate to production (or is it a consumption good), or is just state dependence [from policy perspective, could we have a change in culture that was pareto improvement, or would men lose while women gained?]

- etc.

6.1 Work using existing data

[idea for using LFS or similar data: so assume participation decision is exogenous of promotion possibilities (not true), say you have to work 5-7(?) years after PhD to become a professor (so 9-11 years after undergraduate degree); how many women in this cohort work this long (and how many work full time for this long?); this sort of gives us a base for what we'd expect if women in economics behaved as women elsewhere; is this a sensible thing to look at? not suggesting we do it for this version of the report, but we could suggest this sort of thing would be useful to do before further data collection]

[with HESA data, could we:

- [We would like figures for the last 20 years, so we could estimate whether today's low stock of professors is simply a reflection of low numbers of female entrants 20 years ago.]

- *[hard/soft dichotomy]*

- [which universities do women do well at, we have HESA data by institution (but only for one year, could get for other years]

6.2 Collecting new data

The basic conclusion here is that the quantitative literature probably tells us quite a lot about what we are likely to find from a quantitative study, even with superb data, namely that there are differences between men and women, even after taking into account differences in observed characteristics like productivity, education, experience etc. What is not clear is whether these differences are due to unobserved preferences/tastes/life choices or due to actual discrimination. We are unlikely ever to get at this using quantitative data (even the richest data set we could imagine) and our only real hope is drawing together the existing quantitative findings, doing new quantitative work using existing data sources which will look at the issues which have not yet been undertaken using quantitative methods, but most importantly undertake new qualitative research which can tell us more about the issues which quantitative work cannot answer.

[time use and attitude studies]

Appendix: all the possible hypotheses

This section records all of the possible hypotheses that we found in the literature, from talking to people, or from brainstorming. Our idea was to go down the list of hypothesises and ask 'if this is true what would we also expect to see'? Eg, if women are much more risk averse than men and so do badly in academe as it is risky, then we should also expect to see less women gambling. If we don't see this, we can discount this hypothesis as a major player.

Cohort effect

Nature of women

Aptitude- the best women are going into another area

Ambitions

Preferences: women chose to exit the labour market permanently, or return to a more family-friendly employer.

Childbearing

- Leads to costly career break in which skills atrophy and experience is lost
- Coincides with the period where most publishing is required (i.e. late 20s, early 30s)
- Even women without children are damaged because of their potential to have them

Women have to look after dependent children, elderly parents

Domestic division of labour is skewed to towards women

Women academics tend to be single (indicating the trade-off between family and career)

Women tend to be secondary earners

- making them less mobile
- they may pursue their careers less aggressively

Women get less outside offers because

- Loyal servant: women less mobile (because of family/secondary earners), and dislike hassling for offers so get less
- Men more aggressively pursue outside offers

- Men have access to an ‘old boys’ network
- Outside offers are costly for potential employers to make, so they are less likely to make them to women because they are less likely to accept them

Universities don’t match women’s outside offers as they believe women won’t accept them

Women are less successful at networking (partly due time constraints arising from domestic and family commitments)

Women have different ways of working

- Prefer interdisciplinary
- Prefer concentration on method rather than results
- Prefer to work with other women/don’t like working with men
- More likely to be found working on their own, but some academic work requires group working. Women prefer working in groups but just not groups of solely men.

Women get comparatively better offers than men from private sector as they are better at selling their skills and they are more sought after, so the opportunity cost of academia is higher for women

Nature of academe

Academic roles have already been defined in a gendered way, so while women may be being treated in the same ways as men, this will not lead to equality of opportunity, as the academic positions will be inherently more suited to men.

Long hours, few part time opportunities (suits the primary earner in a household, but not a women with family commitments)

Women are disproportionately represented on P/T and fixed contracts.

Lower pay for women

promotions

- based on male measures of merit and productivity
- informal appointments through traditionally male networks
- peer review favours men due to conscious or unconscious discrimination

Compounding: one individual case is fairly innocuous, but overtime the small problems compound to disadvantage women in a significant way.

Allocation of tasks

- women get more teaching
- women serve on more committees

Women are left off influential committees, which leads to

- male research agenda and attitudes prevailing
- Few female role models

Women may be excluded from collaborative research activity

Few female mentors, makes the problem of mentoring more acute for women

Junior women start by feeling supported and become increasingly marginalized as they become more senior. This may be because marginalization compounds over time.

Women have less access to information than men who can access informal networks, and whose more aggressive style gives them an advantage

Atmosphere

- 'Macho' atmosphere, welcoming to men, hostile to women: 'male habitous'
- gendered expectations: women are expected to perform certain roles
- women accorded less respect than men, consciously or otherwise
- the competitive culture of academia inimical to women's way of working
- sexual harassment

Consequently, women leave as fast as they enter: the revolving door.

Attitudes

Women lack self confidence, they expect to be discriminated against

Men may feel that women are unsuited to academia, and that motherhood is a disqualifying characteristic.

There is a distinction between a situation actually existing in reality and women only perceiving it to exist. However, women will decide their behaviour on the basis of their perceptions; so these perceptions are important regardless of the reality.

Academe is a risky environment and men are more risk-loving than women, therefore they tend to do better

Nature of males

The system has evolved to suit them, so they are better fitted to it

They erect barriers to women's progress, because of a natural tendency to protect the status quo. The end of an academic institution is not productivity, but maximising the utility functions of its members (majority men). A male club

Males better groomed by the existing male hierarchy- male academics are more likely to look after their own

Access to informal and formal networks is better because men can devote all their time to it, whereas women have competing domestic and family commitments.

More aggressive and blatantly careerist

Other points

Will a competitive market always reward women with lower wages and fewer promotions because they are disadvantaged compared to men as they may have career breaks.

Feminisation is an interesting phenomenon= sectors with a preponderance of women tend to be lower paid (for both men and women within that sector). This may be because women are willing to accept lower offers (as they may be secondary earners, and because they are less aggressive in wage bargaining and because women value the flexibility of academe more than men and are therefore prepared to accept a lower wage as they yield more benefits from the job than men do).

Table 7: Full list of articles

Reference	Study in	Field	What inequality	Type of data	comments
Booth, A and Burton, J (1999) "The Position of Women in UK Academic Economics"	UK	Academic Economics	Status	Agg.	
Burton, J, Rowlatt, A and Joshi, H (1997) "The Gender Balance of Academic Economics in the UK 1997"	UK	Academic Economics	Status	Agg.	
Kingsmill, D (2002) "A Review of Women's Employment and Pay"	UK	All employment	Wages, status etc.		
Harkness, S (1996) "The Gender Earnings Gap: Evidence from the UK"	UK	All employment	Wages	Mixture	
Kahn, S (2002) "The Status of Women in Economics during the Nineties: One step forward, Two steps back" AEA	US	Academic Economics	Status	Individual	Summary of US trends. Uses random sample of 103 females and 103 males. Email survey of 28 women. Data source is Survey of earned Doctorates and Survey of Graduate Students and Postdoctorates in Science and Engineering. www.nsf.gov/sbe/srs/pubdata.htm
Mumford (1997) "The Gender Balance of Academic Economics in the UK 1997"	UK	Academic Economics	Status	Aggregate	
Mumford, K and Propper, C (2000) "Changes in the Position of Women in UK Academia" Royal Economic Society Newsletter	UK	Academic Economics	Status	Agg.	Summary of findings of 1. and 2. above, some comparison with European countries.
"Editorial Board Composition" Royal Economic Society Newsletter, January 1999	UK	Academic Economics	Status	Prob. Agg.	4% female editors, 6% are women on boards.
Van Ours, J and Ridder, G Fast track or Failure: A Study of Completion Rates of Graduate Students in Economics	Netherlands	Academic Economics	Completion rates	Individual	Research productivity of supervisor is an important determinant of the completion and dropout rates of PhD students.
"Signs of Disintegration: A Report on UK Economics PhDs and ESRC Studentship Demand"	UK	Academic Economics	Pay for academics	Individual and agg., a lot of qualitative	
Annual reports of CSWEP (AEA)	US	Academic Economics	Status	Agg.	Similar results to CWE reports
Gender and Economics in Sweden	Sweden	Academic	Status	None- descriptive	Discussion of the evolution of gender and

		Economics		historical analysis	economics in Sweden.
Shaw, Carter, Brierton (2001) "Unequal entrepreneurs: why female enterprise is an uphill business."	Britain	British labour market	Ownership of business		Discrimination in the labour market leads women to start businesses with less managerial experience, worse access to financial and other networks, less capital to invest, and poorer prospects for business growth.
Hardy (2001) "Small Step or Giant Leap? Towards Gender Equality at Work"	Britain	British labour market	Equality in the workplace		Flaws in the 'classic' organizational approaches to tackling gender equality.
McDowell, J, Singell, L, Ziliak, J "Gender and Promotion in the Economics Profession"	US	Academic Economics	Promotion	Individual: 'unique data panel of AEA econs.' From 60s to 80s	No gender specific differences remain in promotion by the end of the 1980s. Mathematical treatment **Useful because often referred to.**
Ward, M "Gender, Salary and Promotion in the Academic Profession"	5 Scottish universities	Academia	Status, promotion	Individual	**Evidence of barriers to female promotion is reported.**
Ginther, D, Hayes, K "Gender Differences in Salary and Promotion for Faculty in the Humanities" http://papers.ssrn.com/papers=267533	US	Academic Humanities	Promotion/wages	Individual, survey of PhD recipients.	Substantial gender differences in promotion to tenure exist after controlling for productivity and demographic characteristics. Authors conclude that gender **discrimination for academics in the humanities tends to operate** through differences in promotion, which in turn affects wages.
Booth, A, Frank, J, Blackaby,D "Outside Offers and the Gener Pay Gap: Empirical Evidence from the UK Academis Labour Market"	UK	Academic Economics	Outside options, promotion, status	Individual RES ethnic minorities data from questionnaire	http://www.leeds.ac.uk/esrcfutureofwork/downloads/workingpaperdownloads/Paper16.pdf **Refers to all three of the above modelling articles, and uses RES data which we could get hold of.** Criticises Ward and Hayes for only showing inter and not intra rank discrimination
Filmer, Grosh King, van de Walle "Pay and Grade Differentials at the World Bank."		Within the World Bank	Salaries and grades	Prob. Individ.	Argued that discrimination probably exists
Blake and La Valle (2000) Who Applies for Research Funding? National Center for Social Research.	Britain	Academia	Grants for research	Individual, 44 British instit., **3090 academic**	*Success* once a grant has been applied for is about even. But women apply for less grants.

				staff Participate in the quest.	A career break (mostly taken by women) reduces grant applications. Is successful grants linked to academic success? Pg20- shows female academics less likely to be in relationships then male. Are females who want a family put off academia?
Mary Osborn, Mainstreaming Gender Equality: EC report.	Europe	Science, both academic and business	Status		EC paper on position of women in sciences. Suggests heavy bias against women, at: http://www.cordis.lu/improving/src/hp_women.htm. Points to old boys network, outdated practices.
Similarities between Science at MIT and Economics in the UK	US	Academic Science	Status, resources, promotion	Individual	Unconscious discrimination against women via socialization at MIT. **Anecdotal, no evidence presented, but sure of its conclusions:** 'a pattern of powerful, but unrecognized assumptions and attitudes that work systematically against women, even in the light of obvious goodwill'
The Status of Women in Economics during the Nineties: One step forward, Two steps back. Shulamit Kahn, Jan 2002 AEA report	US	Academic Economics	Status	Individual	Summary of US trends. Uses random sample of 103 females and 103 males. **Includes interesting Email survey of 28 women, which discount family as important factor.** Data source is Survey of earned Doctorates and Survey of Graduate Students and Postdoctorates in Science and Engineering, **which is available online.** www.nsf.gov/sbe/srs/pubdata.htm **Not crucial**
An Equal Opportunity Cost Carol Propper Published in Times Higher Education	UK	Academic Economics	Status	Informal, individual	Informal discussions with female phd students, reveals some worries about role models and isolation at more senior

Supplement, April 17 1998 **Want to mention these findings at some point in the report**					levels, but direct discrimination is not an issue.
Higher Education Standards Agency (1996) *Resources of Higher Education Institutions 1994/5. Cheltenham.*	UK	Academia	Status	Prob. Agg	Mumford (1. above, pg6) refers to this: "for standard academic jobs economics has similar proportions of women to biology, maths and physical sciences. Its sits well below the other major subject groupings of arts (excluding languages); administration, business studies and social studies; and medicine, dental and health studies". **Useful economics comparing economics to other disciplines, though abit out-of date** Could use NCSR data instead, or Europe data below
Laafia, I and Larsson, A "Women in public research and higher education in Europe"	Europe	Academia	Status	Agg	This report states the same findings as reported by above, i.e that humanities have more women at senior level than sciences. **Good for comparing disciplines, looks like data must be paid for**
Women in the Government Economic Service (8K) Amanda Rowlatt Published in the Royal Economic Society Newsletter, June 2001	UK	GES	Status	Prob. Agg.	Summary of survey of 600 GES members, appears to show less women in senior positions despite apparently unbiased promotions and 'family friendly services'. **Useful for the 'difference of differences' approach,** if civil service is comparable.
The Bett Report, 1999	UK	Academia	Working conditions, wages		One of the most referred to reports I have come across. Finds large wage inequalities in academia
Study of the factors affecting the career choices of chemistry graduates. Report by Ea for the Royal Society of Chemistry. http://www.rsc.org/pdf/policy/factors.pdf	UK	Academic science	Status	Qualitative data from individual interviews with male and female	Attitudinal, structural, cultural and environmental reasons are cited to explain low number of female profs. This report clearly highlights some areas

				chemistry post-grads	that any further study should examine.
Blackwell (2002) Women's Scientfic lives study	UK	Academic science	Status	Longitudinal data from SET statistics	http://www.set4women.gov.uk/set4women/research/scientific_lives.htm
Sexism and Nepotism in Peer-review Christine Wenneras and Agnes Wold (*Nature* 387:341-343) 1997	Sweden	Academic science	Promotion, grants	Individual, actual scripts from interviews were obtained	Seminal paper which created a storm of interest in the science world . Report. by the NCSR on who gets higher education funding was in part a response to this paper, and EC document refers to it. **Finds using regression analysis that women have to be 2.5 times better than men.**
Report of School of Humanities, Arts, and Social Sciences http://web.mit.edu/faculty/reports/pdf/sohass.pdf And other reports, eg. Overview, Engineering, business etc. all at MIT http://web.mit.edu/faculty/reports/	US	Humanities, Arts, and Social Sciences- MIT	Status, promotion, wages	Individual:30 female Profs. 15 male profs. Interviewed	
Higher Education and Research Opportunities (HERO). Christina Hughes. www.warwick.ac.uk/fac/soc/conted/GEA	UK				The main problems women face is exclusion or being reduced to informal research networks and hierarchies.
Women and Men in Britain: management, by the EOC http://www.eoc.org.uk/cseng/research/management.pdf	UK	All management	Status	NOS data	Family and management incompatible, so female managers tend to be single
EOC (2001) "The life Cycle of inequality"					http://www.eoc.org.uk/cseng/research/wm_lifecycle_of_inequality.pdf