

Exploring the Present Through the Past

Claudia Goldin on human capital, gender
and the lessons from history

An interview with introduction by Brian Snowdon

Women's increased involvement in the economy was the most significant change in labor markets during the past century.

Claudia Goldin (2006)

Gender-based inequality is a phenomenon that affects the majority of the world's cultures, religions, nations and income groups.

Hausmann, Tyson and Zahidi (2007)

To understand where the economy is and how it is evolving one needs to study not only the present but the past.

Robert Fogel (1999)

Introduction

Claudia Goldin is one of the world's leading economists and economic historians. By utilising her expertise and training in economic theory and quantitative analysis, Professor Goldin has made a series of outstanding and original contributions to the cliometric literature.¹ Her research interests

Brian Snowdon is Professor of Economics and International Business at Newcastle Business School, Northumbria University, UK. **Claudia Goldin** is the Henry Lee Professor of Economics at Harvard University.

¹ Cliometrics, sometimes referred to as 'The New Economic History', is the 'application of economic theory and quantitative methods to the study of history' (Goldin, 1995a). The Cliometric Society, founded in 1983, is an academic organization of individuals 'interested in using economic theory and statistical techniques to study economic history' (<http://eh.net/Clio>).

and publications are wide-ranging and include innovative work on the economic history of North America, the economics of slavery and the American Civil War, historical demography, labour and employment history, education and its impact on the US economy, and social and cultural history relating to race, ethnicity and gender. During her academic career, Professor Goldin has authored/co-authored and co-edited six books as well as numerous articles in leading academic journals in the fields of economics and economic history.²

Professor Goldin graduated from Cornell University in 1967 with a BA in Economics (*Magna Cum Laude*) before completing her Masters (1969) and PhD (1972) degrees in Economics at the University of Chicago. Before moving to Harvard University in 1990, where she is currently the Henry Lee Professor of Economics, Claudia Goldin was an Assistant Professor of Economics at the University of Wisconsin (1971–73) and Princeton University (1973–79); and an Associate Professor (1979–85), then Professor of Economics (1985–90) at the University of Pennsylvania. Professor Goldin has also been a member of the Institute for Advanced Study at Princeton (1982–83), a Visiting Fellow at Princeton University (1987–88) and the Brookings Institution (1993–94), a Visiting Scholar at the Russell Sage Foundation (1997–98), Marshall Lecturer at Cambridge University (2002), Ely Lecturer at the American Economics Association (2006), and in 2005–06 was the Katherine Hampson Bessell Fellow at the Radcliffe Institute for Advanced Study. Professor Goldin is a Research Associate of the National Bureau of Economic Research where she is also Director of the American Economy Program. Remarkably, it was not until 1990, that Harvard University appointed its first female tenured Professor of Economics. That person was Claudia Goldin.³

Among other achievements and honours, Professor Goldin has been Vice President (1988–89) and President (1999–2000) of the Economic History Association, Vice President of the American Economics Association (1990–91), a Fellow of the National Academy of Sciences (2006–to date), a Fellow of the Econometric Society, and is currently a

² Details of Professor Goldin's publications can be found on her personal webpage at Harvard University: <http://www.economics.harvard.edu/faculty/goldin/goldin/html>.

³ Professor Goldin was also the first woman to gain tenure at the University of Pennsylvania's Department of Economics. Currently (November, 2007) the Harvard Department of Economics has 9 female Faculty out of a total of 66. The breakdown by academic rank is: 1 Visiting Lecturer, 4 Assistant Professors, 2 Associate Professors, and 2 Full Professors (Athey and Goldin). See <http://www.economics.harvard.edu/people/faculty.html>.

member of the editorial board of several prestigious academic journals, including the *American Economic Review*, *Quarterly Journal of Economics*, *Explorations in Economic History*, and *Journal of Economic History*.

In the interview that follows I discuss with Professor Goldin several important issues relating to her research on economic history and cliometrics, the economics of slavery, US economic history, corruption in America, the role of human capital and education in US economic development, wage inequality, female labour force participation and the ‘Quiet Revolution’, the influence of the contraceptive pill, women’s surnames, the reversal of the college gender gap, and women in the economics profession. First, as background to the interview, I briefly highlight and discuss several issues relating to the importance of history, the global ‘gender gap’, and ‘the status of women in the academic economics profession’.⁴

The role of history

Is a knowledge of history in general, and economic history in particular, useful to economists? Claudia Goldin’s answer is an unambiguous *yes*. In her paper, ‘Cliometrics and the Nobel’, Goldin observes that... ‘Only the oblivious can ignore history in modern economics, and only the unenlightened would choose to do so’.⁵ There are several useful ways that history can enlighten the research of economists, namely:

1. it is often essential to take a long-term view because conclusions based on short-run transient phenomena are risky;
2. by engaging with the vast laboratory of human experience, history provides a gigantic natural ‘experiment station’ for the testing of economic theories;
3. to investigate many important problems, history provides a longer time series of useful data, broadening the base of knowledge;
4. economic history is closely related to development economics, and the well documented economic history of developed countries can often inform the developing world of what is within the ‘realm of the possible today’;

⁴ I also provide extensive references to enable interested readers to further investigate the issues raised in this article.

⁵ Goldin, 1995a. See also Goldin, 1997; Stearns, 1998; Coclanis and Carlton, 2001.

5. in their research, economic historians ‘consider the entire system’ and ‘follow the patient over the long run’;
6. economic history informs contemporary investigators about what data are likely to be useful and relevant in answering their research questions;
7. economic historians have been at the forefront in highlighting the importance of institutional context for economic efficiency and growth.

The emergence of the ‘New Economic History’ (Cliometrics) in the late 1950s led to an increasing formalisation of the discipline. Now, more than ever, some fifty years after the birth of Cliometric research, increasing numbers of economists are using the enormous laboratory of economic history to test their theories, especially with respect to long-run growth and development.⁶ The contemporary interests of economists, especially those working in the field of economic growth and development, cannot help but reflect the big issues of the past because, as Goldin states, ‘Economic history links together different periods, eras and years in a seamless piece of cloth’.⁷ Since the present influences the future, so also must the past. History is indispensable in analysing the causes of, and process of change. Sara Horrell’s insightful comment captures the ‘wonderful usefulness of history’: ‘The economy does not operate in a cultural and historical vacuum. A lantern on the stern can help with navigation ahead’.⁸

As the interview with Claudia Goldin illustrates, her research has made extensive use of economic history, providing new insights into important issues such as the economics of slavery, the importance of education and human capital, and the changing role of women in the US economy. Along with other eminent economists, such as Nobel Laureates Douglass North and Robert Fogel, Professor Goldin has led the way in ‘exploring the present through the past’.

⁶ Especially noteworthy have been the seminal contributions of economists such as Daron Acemoglu and Oded Galor. See Acemoglu, Johnson and Robinson, 2001; Galor, 2005; Snowdon, 2007a.

⁷ Goldin, 2004a. Dimand, Forget and Nyland (2004) discuss the issue of ‘Gender in Classical Economics’.

⁸ Horrell, 2003.

The 'global gender gap'

At the United Nations Millennium Summit in 2000, one of the 8 adopted Millennium Development Goals is the promotion of gender equality and empowerment of women.⁹ Recent research indicates that, at least for developed industrial economies, gender wage differentials have decreased considerably. For example, Weichselbaumer and Winter-Ebmer find that the gender wage differential declined from around 65 percent in the 1960s to around 30 percent in the 1990s.¹⁰ Possible causes of this decline include improvements in female productivity due to greater access to education and training, as well as technological change and industrial restructuring that in many occupations has reduced the importance placed by employers on physical strength. Also important has been the influence of the feminist movement and the introduction of anti-discrimination laws.¹¹ Their research also confirms Gary Becker's hypothesis that increasing market competition reduces discrimination.¹²

While substantial progress has been made in the high-income developed economies, gender discrimination in many countries remains endemic, particularly in the developing world.¹³ One of the most shocking

⁹ The 8 Millennium Development Goals (to be achieved by 2015!) are: 1. eradicate extreme poverty and hunger; 2. achieve universal primary education; 3. promote gender equality and empower women; 4. reduce child mortality; 5. improve maternal health; 6. combat HIV/AIDS, malaria and other diseases; 7. ensure environmental sustainability; 8. develop a global partnership for development.

¹⁰ See Weichselbaumer and Winter-Ebmer, 2005, 2007. Blau and Kahn (2004) report that there was a slowing down of the narrowing of the gender wage differential during the 1990s.

¹¹ See Humphries, 1995; Hewitson, 1999. The 'famously abrasive' Betty Friedan (1921–2006) was the most important figure in the feminist movement in the US, and her best selling book, *The Feminine Mystique* (1963) was highly influential. In 1966, Friedan founded the National Organisation for Women (NOW). In the UK, the most important figure in the feminist movement was Germaine Greer whose controversial book, *The Female Eunuch* (1970), became an international best seller.

¹² Nobel Laureate Gary Becker (1957) argued that increasing economic freedom and market competition will reduce discrimination since profit-seeking employers who do not discriminate will have a competitive cost advantage over discriminating employers. Firms who discriminate (by gender or race) in their hiring of workers will find it very difficult to survive in the long run. Take two firms in competition who have access to the same technology and who differ only in that Firm A employs women and pays lower market determined wages (W_{aF}) to its female employees than Firm B (W_{bM}) who employs only men. If female (q_F) and male productivity (q_M) are identical for both firms then, assuming that labour is the only variable input, profit per unit of output in Firm A (π_a/Q_a) will be $P_a - [W_{aF}/q_F + k]$, where P_a = price, k is average fixed cost, and W_{aF}/q_F is unit labour cost. With $W_{aF}/q_F < W_{bM}/q_M$, Firm A will be more profitable for any given level of output. Firm A's profit maximising price will be lower than Firm B's, and competitive pressures will ultimately pressurise Firm B to employ females. Competitive labour market forces will also lead to female wages rising towards equality with male wages.

¹³ See, for example, Lewis and Lockheed (2007) on the problem of girls being excluded from education in developing countries. Lawrence Summers (1992), during his tenure as Chief Economist at the World Bank, argued that the education of girls in developing countries is a very effective way of reducing gender inequality. In a recent interview at the World Economic Forum Annual Meeting in Davos in 2006, Summers commented that... 'The education of girls is the single most important investment that can be made in the developing world' (<http://www.weforum.org>).

research findings is that culture-induced gender discrimination in some parts of the developing world—in particular, China and the northern and western provinces of India—has led to a male dominated gender imbalance in the population, a problem referred to by Nobel Laureate Amartya Sen as the ‘Missing Women’. In some communities the neglect of female children with respect to nutrition, health and education, leading to higher female mortality, has now been compounded by technological developments that allow parents to engage in gender discrimination before birth via sex-selective abortions.¹⁴

The global gender gap in opportunities between males and females not only reduces the quality of life for more than three-and-a-quarter billion women, it also represents a significant economic inefficiency since by failing to engage and employ the full talents of half their populations, nations are not making the best use of their scarce human resources.¹⁵ To address this issue, in 2005 the World Economic Forum launched their first gender-related report entitled *Women’s Empowerment: Measuring the Global Gender Gap*.¹⁶ This was followed in 2006 with the publication of the first *Global Gender Gap Report*.¹⁷ The *Global Gender Gap Report 2007* has expanded the data set to include 128 countries, containing over 90 percent of the world’s population, and measures gender-based inequality by constructing a ‘Gender Gap Index’ (GGI). By focussing on the estimation of *gaps* rather than *levels*, the rankings of countries are independent of their level of development.

Four dimensions of inequality form the basis of the GGI, namely: economic participation and opportunity, educational attainment, health and survival, and political empowerment (Table 1 summarises the main variables used to measure each of these four dimensions of inequality). A weighted average of the variables in each of the four categories is then used to create each sub-index score before aggregating an un-weighted average of these scores to form the GGI.¹⁸ As Figure 1 illustrates, a weighted average of all 128 countries included in the GGI reveals that the

¹⁴ For evidence and discussion of this issue see Sen, 1992; Klassen and Wink, 2003; Bhaskar and Gupta, 2007; World Bank, 2007.

¹⁵ As Landes (1998, p. 217) observes, establishing gender equality implies a ‘doubling of the pool of talent’.

¹⁶ The United Nations annual *Human Development Report* also contains extensive data on gender-related development, empowerment, education, economic activity, and the political participation of women. See <http://www.hdr.undp.org>. See also United Nations, 1995; World Bank, 2001.

¹⁷ See Hausmann, Tyson and Zahidi, 2006.

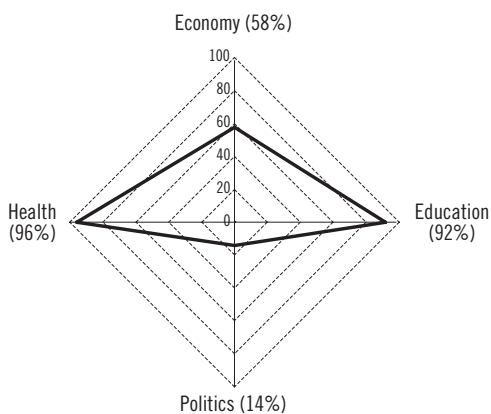
¹⁸ All the data are in the form of female/male ratios so that the final score for each country lies in the range 0–1.

Table 1: Structure of the Gender Gap Index (GGI)

Sub-index	Variables
A: Economic Participation and Opportunity	Ratio: female labour force participation over male value Wage equality between women and men for similar work (converted to female-over-male value) Ratio: estimated female earned income over male value Ratio: female legislators, senior officials and managers over male value Ratio: female professional and technical workers over male value
B Education Attainment	Ratio: female literacy rates over male value Ratio: female net primary enrolment over male value Ratio: female net secondary level enrolment over male value Ratio: female gross tertiary level enrolment over male value
C: Health and Survival	Ratio: female healthy life expectancy over male value Sex ratio at birth (converted to female over male ratio)
D: Political Empowerment	Ratio: females with seats in parliament over male value Ratio: women at ministerial level over male value Ratio: number of years of a female head of state (last fifty years) over male value

Source: Hausmann, Tyson and Zahidi, 2007.

Figure 1: The global gender gap diamond



Source: Adapted from Hausmann, Tyson and Zahidi, 2007

health and education outcome gaps have been closed by 96% and 92% respectively, whereas only 58% of the economic outcomes gap, and 14% of the political empowerment gap have been closed.¹⁹ The large gender disparities in ‘voice’ and political participation severely limit female influence on important local, regional, and national resource allocation decisions.²⁰

Table 2 provides the GGI rankings for selected countries, and the main findings from the 2007 Report include the following:

1. a gender gap is present in *every* country in the world;
2. the lowest gaps are in the Nordic countries with Sweden being the top performer having eliminated over 81 percent of its gender gap;
3. the Philippines (6) ranks highest among developing countries;
4. South Africa (20) is the highest performer in sub-Saharan Africa;
5. the UK (11) ranks higher than the US (31), which also performs worse than 14 other European countries;²¹
6. Italy (84) is the lowest ranked European country;
7. unfortunately, among countries with populations exceeding 100 million, performance varies considerably and is generally relatively poor, with the following rankings: Russia (45), China (73), Brazil (74), Indonesia (81), Japan (91), Mexico (93), Bangladesh (100), Nigeria (107), India (114), and Pakistan (126);
8. ranking the gender gap by region indicates the following: Oceania (1), Western Europe (2), North America (3), Latin America and Caribbean (4); Eastern Europe (5), sub-Saharan Africa (6), Asia (7), and Middle East and North Africa (8);
9. Arab countries perform below the world average with Kuwait (96) the highest ranked country;
10. finally, the Report concludes (p. 20)... ‘Women account for half of the world’s population and half of its talent. The costs of not developing and using this talent are huge’.

¹⁹ In the US, ‘men and women have become increasingly similar as economic actors during the past four decades’ (Lundberg and Pollack, 2007).

²⁰ The research conducted in India by Chattopadhyay and Duflo (2004) confirms that ‘a politician’s gender does influence policy decisions’.

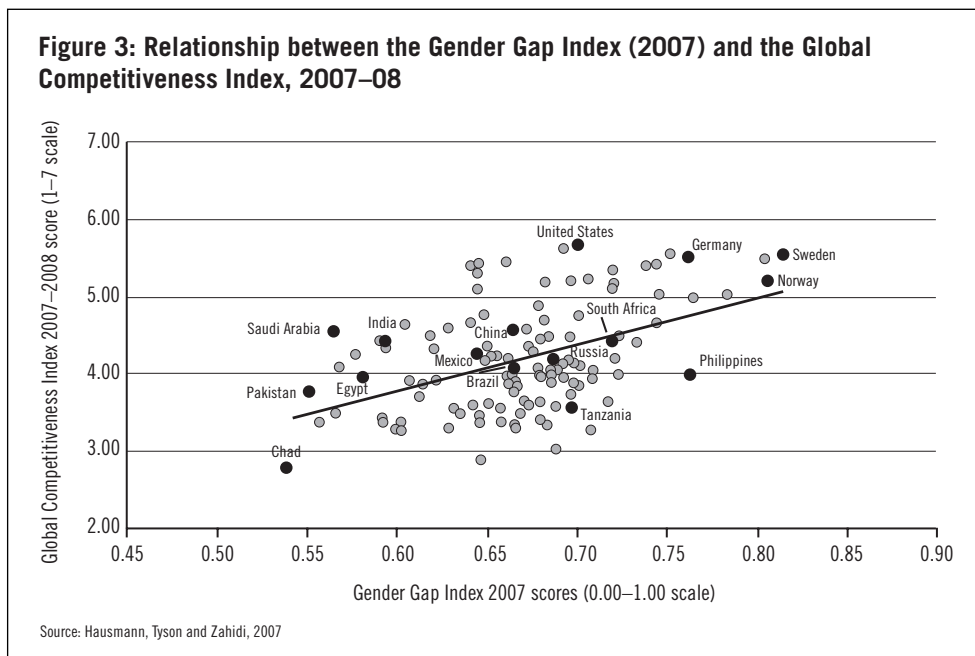
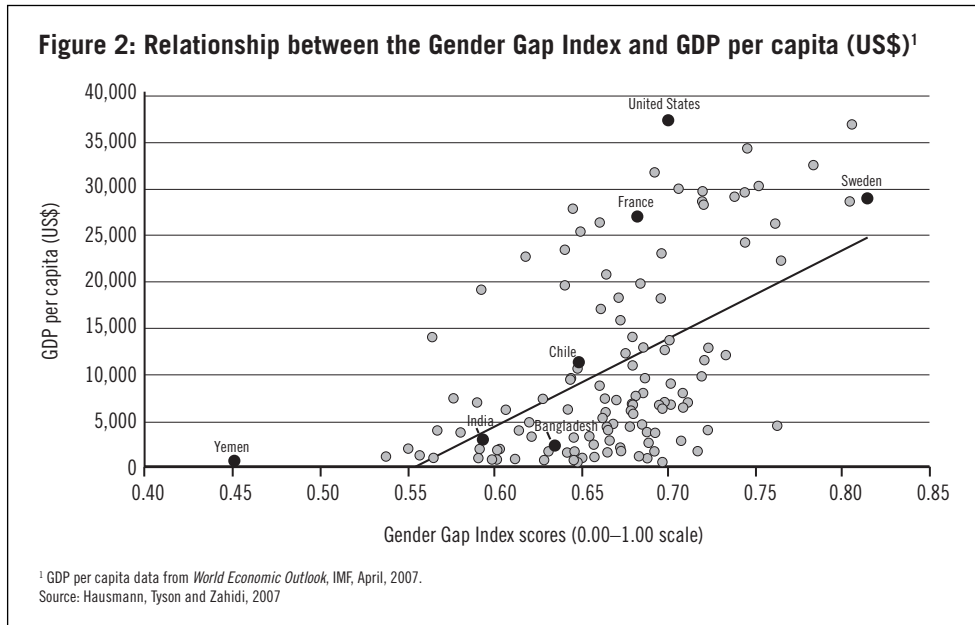
²¹ The UK’s GGI increased from 0.7222 to 0.7441 between 2000 and 2007.

Table 2: The Gender Gap Index (GGI): selected global rankings, 2007

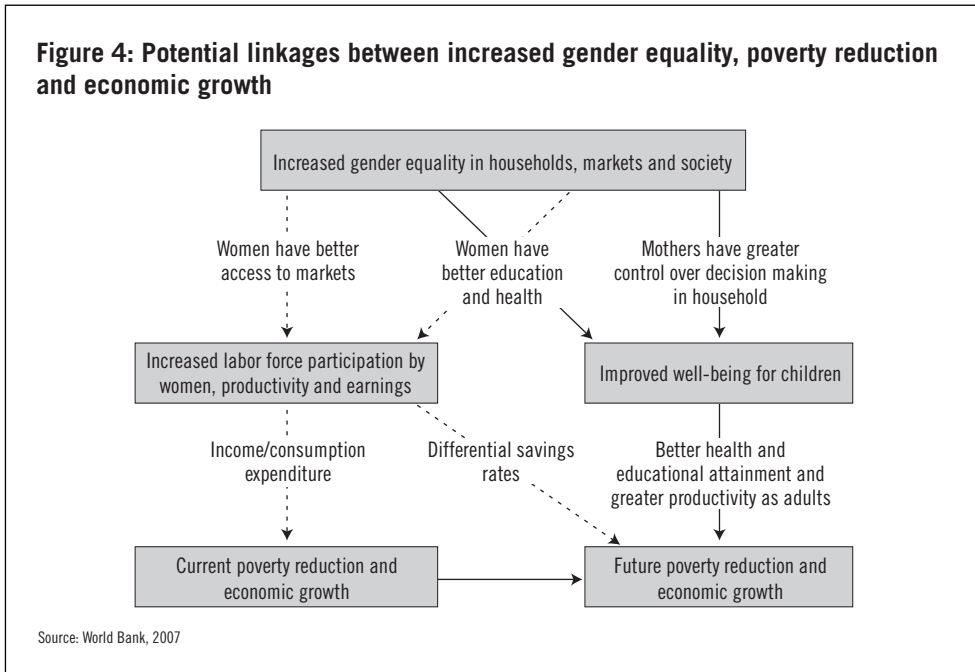
Country	2007 GGI Rank ¹	Score 0–1 scale ¹	A Rank 2007 ¹	B Rank 2007 ¹	C Rank 2007 ¹	D Rank 2007 ¹	GDP per capita US \$PPP 2006 ²	WEF GCI Rank 2007–08 ³	UN GRDI Rank 2004 ⁴
Sweden	1 (1)	0.8146	6	27	73	1	33,326	4	5
Norway	2 (2)	0.8059	10	17	51	3	46,981	16	1
Finland	3 (3)	0.8044	22	21	1	2	34,330	6	11
Iceland	4 (4)	0.7836	23	67	95	4	37,270	23	2
New Zealand	5 (7)	0.7649	8	19	67	9	25,640	24	20
Philippines	6 (6)	0.7629	2	1	1	14	4,940	71	66
Germany	7 (5)	0.7618	29	35	56	6	29,910	5	21
Denmark	8 (8)	0.7519	18	1	96	13	35,323	3	15
Ireland	9 (10)	0.7457	48	1	80	8	34,931	22	4
Spain	10 (11)	0.7444	84	39	74	5	28,140	29	19
UK	11 (9)	0.7441	32	1	67	12	34,590	9	16
Australia	17 (15)	0.7204	12	1	71	35	35,600	19	3
South Africa	20 (20)	0.7194	85	52	65	10	12,580	44	92
United States	31 (23)	0.7002	14	76	36	69	44,242	1	8
Argentina	33 (41)	0.6982	75	33	1	25	16,440	85	32
Russian Fed.	45 (49)	0.6866	16	22	37	120	12,186	58	51
France	51 (70)	0.6824	61	1	1	67	32,760	18	14
Ukraine	57 (48)	0.6790	26	73	74	109	7,680	73	62
Poland	60 (44)	0.6756	74	1	37	63	14,170	51	33
Czech Rep.	64 (53)	0.6718	71	53	37	78	20,430	33	28
China	73 (63)	0.6643	60	91	124	59	7,530	34	64
Brazil	74 (67)	0.6637	62	84	1	96	9,130	72	55
Indonesia	81 (68)	0.6550	82	93	81	70	3,780	54	81
Kenya	83 (73)	0.6508	59	97	104	104	1,510	99	111
Italy	84 (77)	0.6498	101	32	82	80	30,210	46	18
Japan	91 (80)	0.6455	97	69	37	94	31,105	8	13
Malaysia	92 (72)	0.6444	93	71	97	101	11,340	21	51
Mexico	93 (75)	0.6441	109	49	1	57	10,820	52	45
Kuwait	96 (86)	0.6409	80	63	110	126	33,820	30	31
Bangladesh	100 (91)	0.6314	116	105	122	17	2,000	107	102
Nigeria	107 (94)	0.6122	72	118	100	106	1,230	95	120
India	114 (98)	0.5936	122	116	126	21	3,910	48	96
Iran	118 (108)	0.5903	123	90	58	122	NA	NA	74
Egypt	120 (109)	0.5809	120	101	83	123	4,800	77	NA
Turkey	121 (105)	0.5768	118	110	87	108	9,050	53	71
Morocco	122 (107)	0.5676	121	113	84	103	5,110	64	95
Saudi Arabia	124 (114)	0.5647	127	87	60	128	13,486	35	72
Pakistan	126 (112)	0.5509	126	123	121	43	2,580	92	105
Chad	127 (113)	0.5381	58	128	60	102	2,280	131	131
Yemen	128 (115)	0.4510	128	127	1	127	NA	NA	117

Sources:¹ GGI data adapted from Hausmann, Tyson and Zahidi, 2007. Ranking for 2006 in parentheses, 0 = inequality, 1 = equality.² GDP per capita data adapted from the World Economic Forum's *Global Competitiveness Report, 2007–08*.³ World Economic Forum, Global Competitiveness Rankings (WEF GCI) for 2007–08 adapted from the *Global Competitiveness Report, 2007–08*.⁴ United Nations Gender-related Development Index (GRDI) data, adapted from the *Human Development Report, 2006*. The GRDI, first introduced in 1995, is based on three dimensions, namely, life expectancy, knowledge, and income per capita (PPP\$).

Figure 2 illustrates the relationship between GDP per capita and the GGI, and Figure 3 shows the relationship between the GGI and the Global Competitiveness Index.



While correlation never proves causality, the positive association in each case is consistent with the theory that ‘empowering women translates into a more efficient use of an economy’s human resources, and thus affects the overall productivity and economic performance of countries’.²² Greater gender equality could positively influence development outcomes with respect to economic growth and poverty reduction via several feasible routes, and these possibilities are illustrated in Figure 4.²³



Clearly an economy with a high stock of human capital, consisting of an educated and skilled labour force, will be more productive than an economy

²² See Buvinic and King, 2007.

²³ The importance of improvements in health and ‘technophysical evolution’ in raising the productivity of labour has been confirmed by the research of Nobel Laureate, Robert Fogel. See Fogel, 1994, 1999, 2004a, 2004b; and Weil, 2007. Therefore, the stock of human capital in a country is a composite input that will be enhanced by increasing both the education and health of *all* workers. One development of significant concern is that data from the World Health Organisation confirm that obesity is more prevalent among females than males except in a small number of countries. See Case and Menendez, 2007. Cawley and Liu (2007) find evidence that in the US ‘maternal employment is associated with an increased risk of childhood obesity’ since employed women allocate less time ‘to activities related to child diet and physical activity’ and this is only ‘partly offset by husbands and partners’.

where few people have access to education and training.²⁴ If gender discrimination prevents or limits access to education for half of the population then this will have an enormous retarding effect on an economy's productive capabilities and hence the overall standard of living of its population. As DeLong, Goldin and Katz emphasise, a consensus of economists agrees that 'the overall effect of education on growth is large'.²⁵ Therefore, human capital accumulation plays a key role in contemporary growth models, and is certainly as important, if not more important, than physical (non-human) capital. In the standard Solow neoclassical growth model, the accumulation of human capital increases the effective quantity of labour; and in their 'augmented' Solow model, Mankiw, Romer and Weil (MRW) explicitly include the accumulation of human capital as well as physical capital.²⁶ By adding human capital to the model, the MRW aggregate production function is:

$$Y_{(t)} = K_{(t)}^{\alpha} H_{(t)}^{\beta} (A_{(t)}L_{(t)})^{1-\alpha-\beta} \quad (1)$$

Here we have four factors of production combining to produce output ($Y_{(t)}$), where $K_{(t)}$ is the stock of physical capital, $H_{(t)}$ is the stock of human capital and $A_{(t)}L_{(t)}$ is the labour input measured in efficiency units, and captures both the quantity of labour and the productivity of labour determined by available technology (knowledge).²⁷ The intensive form (output per efficiency unit of labour) of this production function is:

$$y = (k_t^E)^{\alpha} (h_t^E)^{\beta} \quad (2)$$

where $y = Y/AL$, $k^E = K/AL$, $h^E = H/AL$. In endogenous growth models of the Romer–Jones vintage, human capital influences the rate of growth through its impact on technological progress via R&D and the creation of new ideas.²⁸ In developing the GCI, Xavier Sala-i-Martin has also emphasised the importance of innovation for maintaining the competitiveness of

²⁴ Becker, 1964. Bloom *et al.* (2007) find that a decline in fertility contributes to a 'demographic dividend' that has a significant positive impact on the output per capita by raising the capital–labour ratio, increasing female labour force participation, and encouraging investment in female education by raising the potential economic returns to female schooling.

²⁵ DeLong, Goldin and Katz, 2003.

²⁶ For a discussion of this model and growth theory in general, see Snowdon and Vane, 2005, Chapter 11.

²⁷ The coefficient on the capital stock (α) measures the elasticity of output with respect to capital and the coefficient on the human capital input (β) measures the elasticity of output with respect to human capital. MRW assume that $\alpha + \beta < 1$, implying diminishing returns to reproducible factors, K and H.

²⁸ See Snowdon and Vane, 2005. See also the interview with Charles Jones in Snowdon, 2002.

developed economies.²⁹ The creation and ability to utilise new knowledge is crucial to maintaining the competitiveness of countries such as the US and UK.³⁰ Consequently, any culture that fosters or encourages gender discrimination in the labour market will inhibit and narrow human capital accumulation, thereby penalising itself in terms of lowering the productivity (y) of its workforce.

Such is the importance of education and skills accumulation for the productivity of labour that Goldin has labelled the twentieth century '*the human capital century*'.³¹ In analysing US economic growth, DeLong, Goldin and Katz argue that 'increases in educational investment have been a major source of American economic growth for at least the past century and a principal cause of America's economic edge over other industrial nations in the twentieth century'. Moreover, a major feature of the development of public education in America is that it has been 'gender-neutral'.³² This should be a major lesson to those developing countries where the school enrolment rates for girls remain well below average.

Using standard Solow–Dennison growth accounting techniques, Goldin and Katz find that increases in educational attainment accounts for 23 per cent of the increase in US labour productivity during the period 1913–96. In 'the increasingly knowledge-driven economy' of the current century, dominated by globalisation and technological change biased towards skills and the substitution of mental for physical effort, 'human capital is likely to remain crucial'.³³ The economic role of women in such a world must inevitably continue to grow.³⁴

Women economists in academia: US data

Thirty-six years ago, concern in the US relating to the gender balance and the status of women working in academic economics led to the formation

²⁹ See Snowdon, 2006, 2007a; Snowdon and Stonehouse, 2006.

³⁰ Following Fagerberg, Srholec and Knell (2007) we can consider the GDP (Y) of any country to be a function of technological knowledge (A) created both inside and outside the country, combined with the capability to utilise and exploit such knowledge (C). Hence $Y = f(A, C)$.

³¹ Goldin, 2001.

³² See DeLong, Goldin and Katz, 2003; Goldin 2001; Goldin and Katz, 2003.

³³ Goldin and Katz, 2001a.

³⁴ Bhagwati (2004, chapter 7) argues that the beneficial effects on the overall welfare of women arising from the forces of globalisation outweigh the negative effects. Black and Brainerd (2002) find evidence that trade may benefit women 'by reducing firms' ability to discriminate'. For a critical view of the impact of globalisation on the position of women in capitalist societies, see Odih, 2007.

of the *Committee on the Status of Women in the Economics Profession* (CSWEP). As the Mission Statement of the CSWEP states, 'CSWEP was founded in 1971 to eliminate discrimination against women, and to redress the low representation of women, in the economics profession. CSWEP is based on the principle that economics is a woman's field as much as it is a man's field' and thereby engages in efforts 'to promote the advancement of women in the economics profession'. To this end, the CSWEP publishes an Annual Report to the American Economics Association on the contemporary status of female economists in US academia.³⁵

In 2005, Professor Goldin was the recipient of the Carolyn Shaw Bell Award, created in 1998 as part of the twenty-fifth anniversary celebration of the founding of the CSWEP.³⁶ This annual award is given to an individual 'who has furthered the status of women in the economics profession, through example, achievements, increasing our understanding of how women can advance in the economics profession, and mentoring of others'.³⁷ In the accompanying announcement of the award to Professor Goldin, the CSWEP commented that her work 'stands as a model in the field of economic history', and that she has 'been an inspiration to many other women, readily sharing her own experiences while simultaneously demonstrating the possibilities of success with her own stellar record'.

There is no question that academic economics remains a male dominated occupation. In Mark Blaug's mid-1980s surveys of 100 *Great Economists Before Keynes* and 100 *Great Economists After Keynes*, only 3 females are listed! The Marxist economist Rosa Luxemburg is the only entry before Keynes, and Irma Adelman and Joan Robinson are the only two listed after Keynes.³⁸ As the information in Appendix I confirms, since 1969, of the 61 recipients of the Nobel Prize in Economics, not one

³⁵ See Dimand, Dimand and Forget (2000) for a survey of the contribution of women to economics.

³⁶ Full details of Professor Goldin's academic career can be found at: <http://www.economics.harvard.edu/faculty/goldin/goldin/html>

³⁷ Previous winners of the award are: Alison Rivlin, 1998 (Brookings Institution); Sandra Ohn Moose, 1999 (Boston Consulting Group); Eva Mueller, 2000 (Professor Emerita, University of Michigan); Francine Blau, 2001 (Cornell University), and Marianne Ferber, 2001 (Professor Emerita, University of Illinois, Urbana-Champaign); Margaret Garritsen de Vries, 2002 (IMF, retired); Robin Bartlett, 2003 (Denison University); Barbara Bergmann, 2004 (Professor Emerita, American University and University of Maryland); and Barbara Fraumeni, 2006 (Professor of Public Policy, University of Southern Maine).

³⁸ Polkinghorn and Thomson (1998) identify 8 prominent female economists as *Adam Smith's Daughters*, namely, Jane Marcet, Harriet Martineau, Millicent Fawcett, Rosa Luxemburg, Beatrice Webb, Joan Robinson, Barbara Bergman, and Irma Adelman.

has been female!³⁹ (Appendix II provides information on the gender composition of all Nobel Laureates). Of the 30 recipients of the John Bates Clark Medal, only one has been a woman, namely Professor Susan Athey of Harvard University, who was awarded the JBCM in April, 2007, for her ‘important contributions to economic theory, empirical economics, and econometrics’.⁴⁰

What is the current status of women in the academic economics profession in the US, and have there been any significant changes since the foundation of the CSWEP in 1971?

The representation of female economists, at all levels within US academia, increased significantly between 1971 and the 1990s. A CSWEP survey conducted in 1972 found that 8.8 percent of Assistant Professors, 3.7 percent of Associate Professors, and 2.4 percent of Full Professors were women. In its recent 2006 survey of ninety-six departments, the CSWEP⁴¹ note that the percentage of women at the Assistant Professor grade had increased to 28.6 percent (Untenured) and 21.1 percent (Tenured); at the Associate Professor grade to 24.6 (U) and 24.1 (T) percent. However, while 8.3 percent of tenured Full Professors in 2006 were women, an improvement on 1971, this is virtually the same as it was in 1996 (see Figure 5, and Tables 3 and 4). The share of female Full Professors had also declined from 8.4 percent in 1996 to 5.8 percent in 2001, before recovering to a high of 9.4 percent in 2003 (see Table 4).⁴² Also, during the period 1972–2006 the share of PhDs in economics awarded to females increased from 7.7 percent to 32.7 percent. While rising to a high of 39 percent in 2000, the percentage of first year female PhD students in 2006 was 31 percent, only fractionally higher than it was in 1996 (see Table 4).

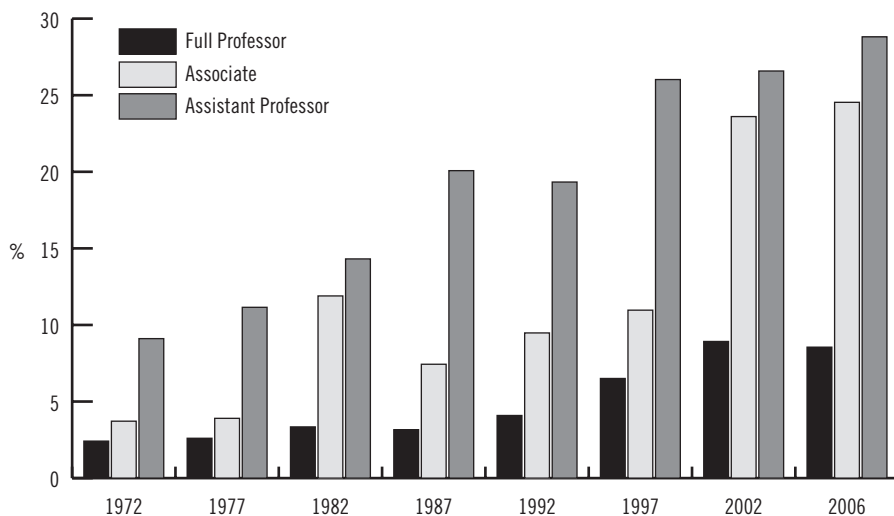
³⁹ See Vane and Mulhearn, 2005. Some economists believe that the strongest female candidate for a Nobel Prize in Economics, during the period 1969–83, was Professor Joan Robinson (1903–83) of Cambridge University, UK. For example, in 1981, Skouras concluded that... ‘Joan Robinson has two distinctions in the economics profession. She is the only great economist that has ever lived who is not a man. She is also the only great living economist who has not been awarded the Nobel Prize. These are the great scandals of the economics profession’. Marjorie Turner (1989) concludes that Joan Robinson did not receive the Nobel Prize because as an outspoken woman with anti-American, Marxo–Keynesian views, she made too many enemies within the neoclassical establishment (see also Feiwel, 1989; Harcourt, 1995; Emani, 2000). There is no doubt that Robinson’s radical and increasingly eccentric views during the last twenty years of her life, including her naïve admiration and support for Mao’s strategy in China and Kim-II-sung’s in North Korea, adversely influenced the possibility of her consideration for a Nobel Prize.

⁴⁰ The John Bates Clark Medal in Economics has been awarded biannually, since 1947, ‘to that American economist under the age of forty who is adjudged to have made the most significant contribution to economic thought and knowledge’. The JBCM is widely recognised as the second most prestigious award in economics, and, to date, eleven recipients of the JBCM have also been awarded the Nobel Prize (see Appendix 1).

⁴¹ CSWEP, 2006.

⁴² Females are much better represented in liberal arts institutions compared to PhD granting institutions.

Figure 5: Percentage female faculty by rank, US, 1972–2006



Source: CSWEP, 2006

Table 3: Percentage female for PhD granting economics departments

A. Faculty composition (2006–07 academic year)	Female	Male	% female
Assistant Professor	164	415	28.3
Untenured	160	400	28.6
Tenured	4	15	21.1
Associate Professor	100	313	24.2
Untenured	8	25	24.6
Tenured	29	288	24.1
Full Professor	105	1,166	8.2
Untenured	0	7	0
Tenured	105	1,159	8.3
All tenured track	368	1,894	16.3
Other (non-tenured track)	116	221	34.4
All faculty	484	2,115	18.6

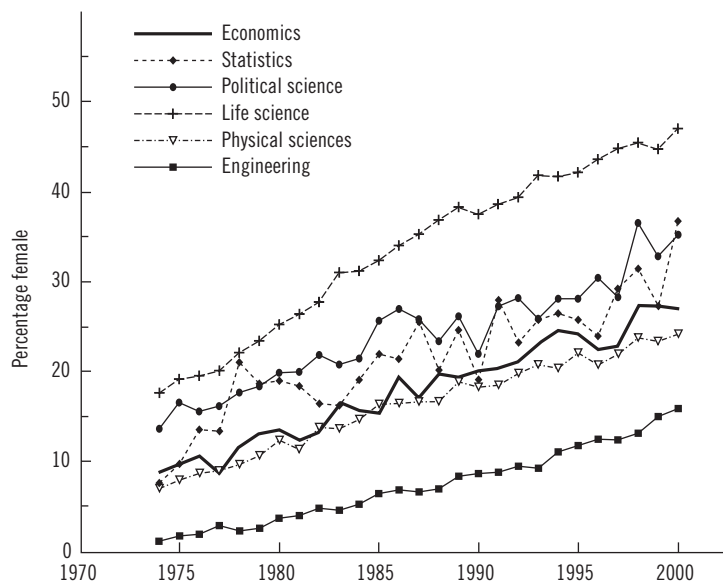
Source: Adapted from CSWEP, 2006.

Table 4: Percentage of economists in the 'pipeline' who are female

All PhD awarding institutions	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1st year students	30.5	31.3	32.2	35.6	38.8	31.9	33.9	34.0	33.9	31.9	31.0
New PhD	24.1	25.0	29.9	34.2	28.0	29.4	27.2	29.8	27.9	31.1	32.7
Assistant Professor (U)	23.8	26.0	25.9	27.8	21.4	22.5	23.2	26.1	26.3	29.4	28.6
Associate Professor (U)	9.1	11.1	15.9	27.3	17.2	10.0	17.2	24.0	11.6	31.2	24.6
Associate Professor (T)	15.4	13.4	14.0	15.1	16.2	15.3	17.0	19.9	21.2	19.2	24.1
Full Professor (T)	8.4	6.5	6.1	6.5	7.4	5.8	8.9	9.4	8.4	7.7	8.3
Number of Departments	98	95	92	77	76	69	83	95	98	93	96

Source: Adapted from CSWEP, 2006.

Ginther and Kahn compare the percentage of PhDs granted to females in six disciplines for the 1974–2000 period. Their data, reproduced in Figure 6, show that Economics lags behind Life Sciences, Political

Figure 6: Percentage of Doctorates granted to females, 1974–2000 Survey of Earned Doctorates

Source: Ginther and Kahn, 2004

Science and Statistics, is marginally ahead of the Physical Sciences, and is well ahead of Engineering.⁴³

Data from the American Economics Association on the total number of Bachelors, Masters, and PhD economics degrees awarded indicate that, for a total of 217 institutions in 2004–05, the percentage female in each category was 33.9, 39.9, and 29.5 respectively (see Table 5). At the undergraduate level, few women majored in economics in the early 1970s, with only 11 percent of Bachelors degrees in economics being awarded to women. By 1985 this had risen to 34 percent, before falling below 30 percent in 1991.⁴⁴ John Siegfried’s recent analysis shows that the percentage of economics degrees awarded to females has declined from a peak of 34.4 percent in 2001, to 31 percent in 2006. While during the 1991–2006 period the share of females among graduates in economics increased from 29.3 to 31 percent, this modest expansion must be viewed against a backdrop where the share of females in the total undergraduate population has increased from 53.9 to 59 percent.⁴⁵ Siegfried concludes that... ‘Although economics superficially appears to be holding its own in terms of attracting females to the discipline, it is actually falling behind other disciplines by failing to take advantage of the growing fraction of women among all undergraduate students’.

Goldin’s data, reproduced in Figure 7, show the clear upward trend of the female/male graduation rate since the mid-1920s. More recent data

Table 5: Degrees awarded in the US, July 1, 2004–June 30, 2005

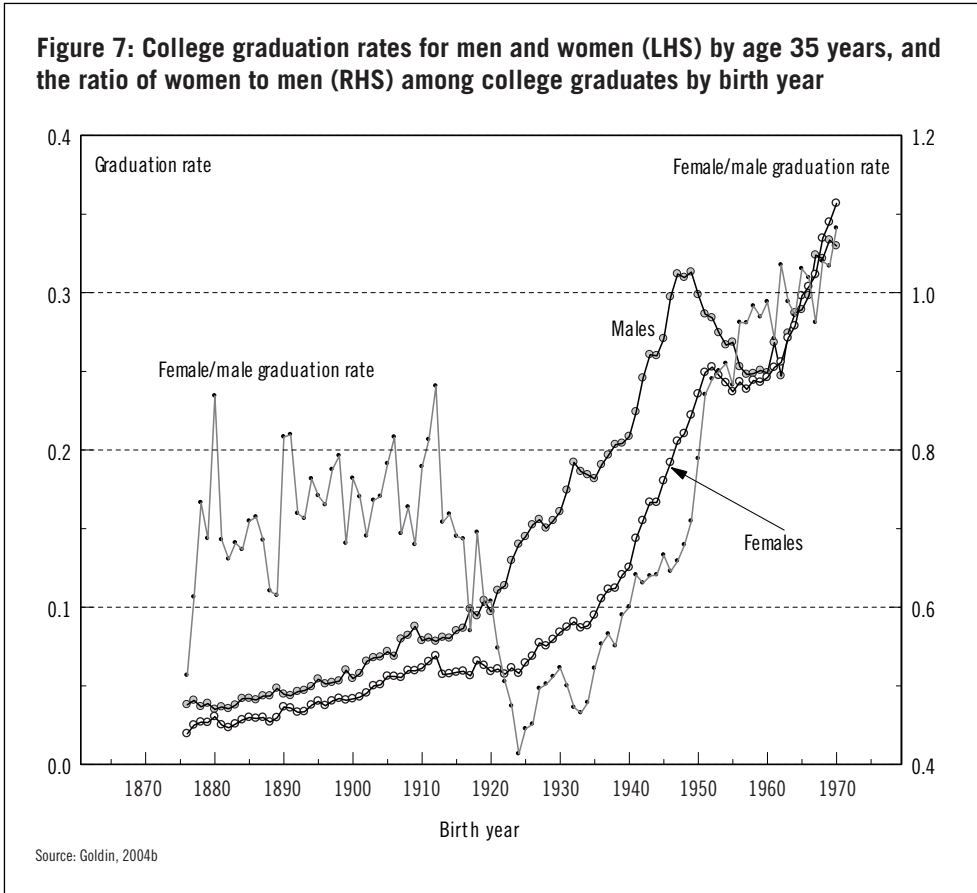
	63 PhD institutions		29 MA institutions		125 BA institutions		All institutions	
	Total	% female*	Total	% female	Total	% female	Total	% female
BA	9,906	31.3	1,968	42.4	3,356	36.3	15,230	33.9
MA	1,020	37.4	474	45.4			1,494	39.9
PhD	571	29.5					571	29.5

*Percent female based only on those institutions reporting breakdown by gender.
Source: American Economic Association.

⁴³ Ginther and Kahn (2004) choose these disciplines for comparison with economics because they ‘require mathematical skills and analytical abilities that attract people with a comparative advantage in these skills’. Political Science is also included because they consider it ‘the closest’ of the social sciences to economics.

⁴⁴ See Kahn, 1995.

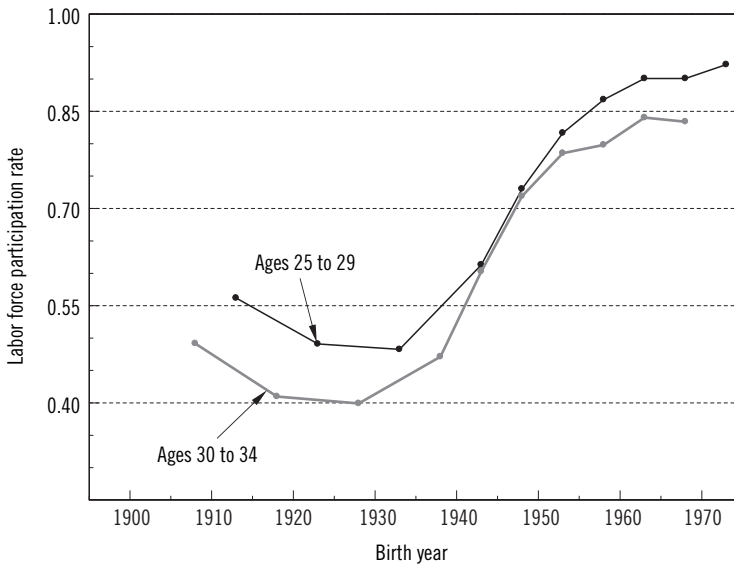
⁴⁵ See Siegfried, 2007.



confirm that by 2003 the female/male graduation ratio from four-year college education was 1.35. Figure 8 illustrates the dramatic increase in the labour force participation rates of college graduate women by age group, and Figure 9 shows the significant increase in the ratio of female to male bachelors degrees in Business and Management. The remarkable upsurge since the early 1970s of females participating in professional programs such as dentistry, medicine, law and MBA education is shown in Figure 10.

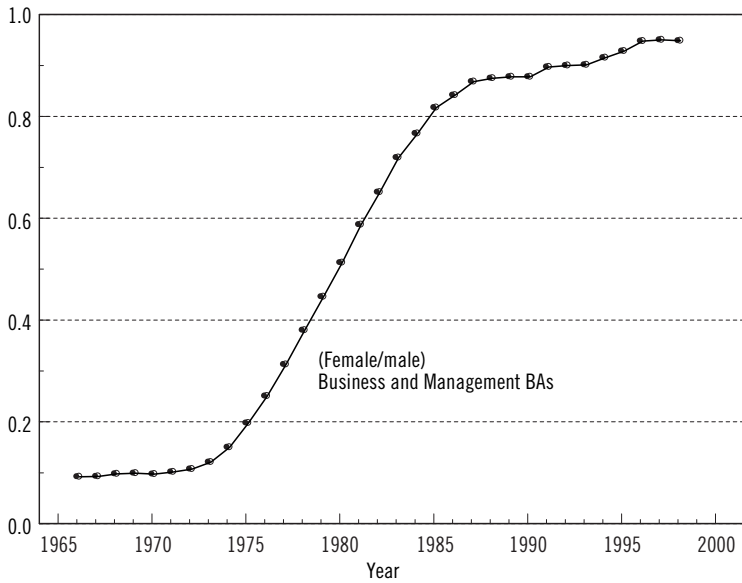
According to Goldin, the rising female participation in higher education was stimulated by two important transformations, namely, an increase in female life-cycle labour force participation combined with a 'large shift in female employment out of the most traditionally female dominated occupations' into many 'previously male-dominated jobs'. These transformations

Figure 8: Labour force participation rates of college graduate women by age group

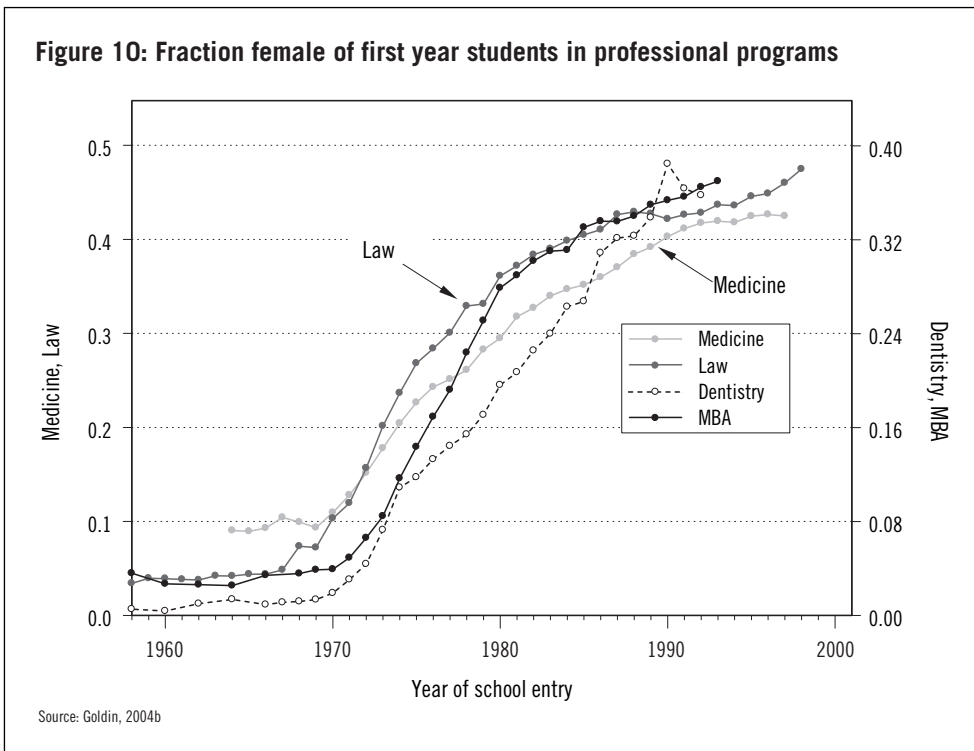


Source: Goldin, 2004b

Figure 9: Ratio of female to male BAs in Business and Management field



Source: Goldin, 2004b



‘greatly increased the pecuniary return to women’s higher education’.⁴⁶ However, despite these important developments, the data also highlight the continuing failure of economics to attract greater female participation at both undergraduate and graduate levels.⁴⁷

Women economists in academia: UK data

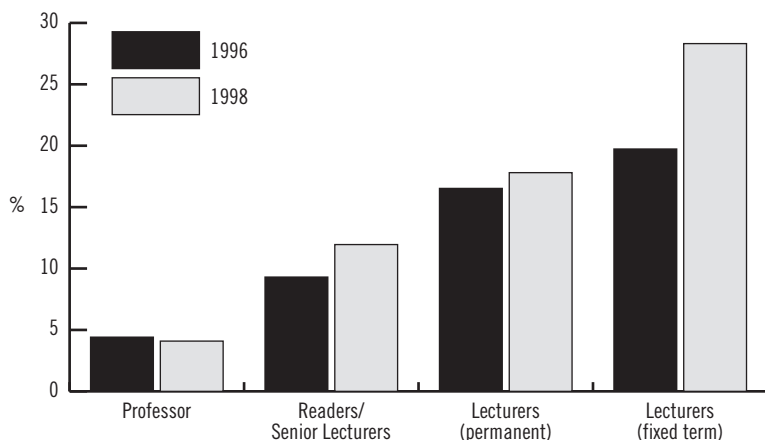
Research into the gender balance of economists in UK academic institutions in 1998 revealed an even greater male dominated profession than in the US.⁴⁸ Among the ‘stylised facts’ with respect to full-time staff (Faculty), Booth, Burton and Mumford report the following data (see Figure 11 and Table 6):

⁴⁶ See Goldin, Katz and Kuziemko, 2006.

⁴⁷ See Worthington and Higgs (2004), who conclude that ... ‘The evidence provided suggests that the choice of an economics major is a function of student personality, interest in the economics profession, and non-economics secondary studies, *and to a lesser extent, gender*’ [emphasis added].

⁴⁸ See Booth, Burton and Mumford, 2000. The response rate to the questionnaire was 85.4 percent. See also, Blackaby and Frank, 2000; and Blackaby, Booth and Frank, 2005.

Figure 11: Percentage of females by rank, UK academic appointments, 1996 and 1998



Source: Booth, Burton and Mumford, 2000

Table 6: Academic staff, grade and gender, all UK institutions, 1998

	Female	Male	Total	% female
Panel A—All staff: full-time				
Professors	13	308	321	4.06
Readers and Senior Lecturers	41	324	365	11.24
Lecturers (permanent)	110	530	639	17.13
Lecturers (fixed term)	35	90	125	28.11
Senior Researchers	10	42	52	19.23
Researchers (permanent)	4	16	20	20.00
Researchers (fixed term)	71	102	173	41.16
Other (permanent)	0	1	1	0.00
Other (fixed term)	3	7	10	30.00
Totals	287	1,418	1,706	16.81
Panel B—All staff: part-time				
Academic (permanent)	7	19	26	26.92
Academic (fixed term)	28	73	101	27.72
Senior researchers	2.00	2.50	5	44.44
Researchers (permanent)	0	0	0	0
Researchers (fixed term)	19	17	36	52.78
Other (permanent)	0	6	6	0
Other (fixed term)	43	94	137	31.39
Totals	99	212	311	31.88
Grand total	386	1,630	2,017	19.13

Source: Adapted from Booth, Burton and Mumford, 2000.

1. in 1998, only 4.06 percent of Professors, 11.24 percent of Readers/Senior Lecturers, and 17.13 percent of permanent full-time Lecturers were female;
2. the proportion of female PhD and MSc students was 33 and 34 percent respectively;
3. in total, 16.81 percent of full-time staff and 31.88 of part-time staff were female, and 19.13 percent of all academic economists were female.

More recently, in a Royal Economic Society survey conducted in 2006 by Georgiadis and Manning,⁴⁹ the authors find several interesting features relating to gender balance in UK academic institutions, including the following (see Table 7):

Table 7: Primary employment function—all academic staff in UK economics departments and research institutes (responding sample, 2006)

Primary employment function	Female	Male	Total	% female
All staff: full-time				
Professors	22	232	254	8.66
Readers	14	54	68	20.59
Senior lecturers	39	166	205	19.02
Lecturers—permanent	78	246	324	24.07
Lecturers—fixed term	2	13	15	13.33
Senior Researchers	4	16	20	20
Researchers—permanent	10	13	23	43.48
Researchers—fixed term	16	25	41	39.02
Totals	185	765	950	19.47
All staff: part-time				
Professors	2	20	22	9.09
Readers	0	1	1	0
Senior lecturers	4	7	11	36.36
Lecturers—permanent	3	6	9	33.33
Lecturers—fixed term	5	3	8	62.5
Senior researchers	4	2	6	66.67
Researchers—permanent	1	3	4	25.0
Researchers—fixed term	7	4	11	63.64
Totals	26	56	82	36.11
Grand total	211	821	1032	20.44

Source: Georgiadis and Manning, 2007.

⁴⁹ Georgiadis and Manning, 2007. Unfortunately, the response rate to this survey was a disappointing 47 percent, with only 45 responses from the 97 institutions contacted.

1. in 2006, 8.66 percent of Professors, 20.59 percent of Readers, 19.02 percent of Senior Lecturers, and 24.07 percent of permanent Lecturers were female;
2. in total, including full-time, part-time, and research appointments, 20.44 percent of academic staff were women;
3. the representation of female economists varies inversely with seniority;
4. compared to 2004 there has been a small increase in the proportion of women in higher grades.

The overall conclusion of the RES report is that, in the UK, ‘women remain a small minority among academic economists, and are heavily under-represented among the more senior grades’.⁵⁰

Explaining the ‘gender gap’ in the academic economics profession

Thirty-two photographs hang on the curving wall along the spiral staircase that connects the economics department offices in the Littauer Center. They portray Harvard’s past lions of the discipline: Schumpeter, Leontief, Dunlop, Gerschenkron, Galbraith, Eckstein, Kuznets, and more. There are no lionesses; none of the honoured scholars is a woman.⁵¹

In *developed economies* the ‘gender gap’, defined as ‘systematic differences in the outcomes that men and women achieve in the labour market’,⁵² has declined significantly over the last one hundred years. Gender differences in labour force participation, occupations and earnings have all gradually been eroded. However, one of the significant gaps that remain, that should be of particular interest and concern to economists, is the relatively low proportion of women in the academic economics profession as well as the low female representation among undergraduate and postgraduate economics students in both the UK and US.

With respect to the low proportion of females employed in academia, several possible explanations that have been suggested⁵³ and include demand-side factors, such as discrimination and nepotism in appointments and promotions, and supply-side factors such as a possible lack of interest

⁵⁰ See also Morley (1994) for an earlier general discussion of the position of women in the UK’s academic workforce.

⁵¹ *Harvard Magazine*, 2005a.

⁵² Goldin, 1990, 2004c.

⁵³ See Booth, Burton and Mumford, 2000.

among females in the content of economics, as it is currently presented in most universities,⁵⁴ the increasingly technical/mathematical nature of the subject, a lack of sufficient female role models and mentors within academia,⁵⁵ and a difference in individual gender preferences for field of study.⁵⁶ Booth, Burton and Mumford suggest that...‘For a long time, economics has been viewed as a predominantly male preserve and a male subject, and it is possible that this has created an environment that was unattractive to many women’.⁵⁷

Ginther and Kahn provide evidence (Figure 6) that the percentage of Economics PhDs granted to females in the US is significantly less than in the Life Sciences, Political Science, and Statistics. In the Humanities and other Social Sciences the percentage increased from about 30 to 50 percent over the 1974–2000 period. The annual reports of the CSWEP have also drawn attention to the ‘leaky academic pipeline’ that links potential female economists enrolled on PhD programmes to the university tenure track, and progression to Full Professor. There is no doubt that active discrimination against women within academia played an important role in preventing and deterring the career progression of female economists prior to the 1970s.⁵⁸ While gender discrimination is unlikely to have been entirely eliminated, in countries where anti-gender discrimination

⁵⁴ See Hewitson, 1999. See also, Mavin, Bryans and Waring (2004) who argue that ‘UK business and management schools continue to operate a gender blind approach (or at best gender neutral) to management education’.

⁵⁵ Hoffman and Oreopoulos (2007) find that same sex instructors improve the academic grade performance of students and the likelihood of completion of the course, but the ‘magnitude of these effects are small’. Rothstein and Davey (1995) highlight the importance of mentoring and interpersonal networks as antecedents to career success.

⁵⁶ Caplan (2000) argues that there is empirical support for the view that... ‘There is a segment of the population that finds the “economic way of thinking” relatively congenial. It is not the wealthy, however, nor is it conservative ideologues. Rather, the empirical core of this paper shows that people tend to agree with economists if: they are well-educated (especially college graduates), *male*, recently experienced income growth, expect income growth, and have a high degree of job security. These findings are remarkably strong and consistent across a wide variety of beliefs’ [emphasis added].

⁵⁷ Booth, Burton and Mumford, 2000, p. F 313. See also, Trower and Chait, 2002.

⁵⁸ Alice Rivlin, a distinguished economist, former Vice Chair of the Federal Reserve Board, and currently a Senior Fellow at the Brookings Institution, recalls an example of the kind of gender prejudice that she experienced at Harvard during the 1950s. The following incident happened when Rivlin was a graduate tutor in economics whilst studying on the Harvard doctoral programme. She recalls... ‘The second year that I taught a section of the introductory economics course, I was expecting a baby in March and did not teach the Spring Semester. The man who took over my class announced to the class that, since no woman could teach economics adequately, he would start over and the first semester grades would not count. It was an exceptionally bright class and I had given quite a few A’s, so the students were upset. The department chair had to intervene’. Rivlin’s earlier application to join Harvard’s Graduate School of Education had been rejected on the grounds that ‘a woman of marriageable age was a poor risk’. See the interview with Rivlin at <http://www.cswep.org/rivlin.htm>

legislation has been enacted and regularly enforced, convincing explanations of the gender gap in academic economics may need to focus elsewhere.⁵⁹ In particular, one problem that faces all female academics who plan to have children relates to the potential conflict between the ‘tenure clock and the biological clock’.⁶⁰ The average female PhD recipient in the US is aged 34 and, as Wolf-Wendel and Ward argue:⁶¹

...as more women enter the academic profession, there is an increasing need to understand the personal and institutional barriers, challenges and triumphs that women faculty who opt to have children face as they attempt to balance the often conflicting demands of academic and family life... the challenge for women is great given the simple logistics of age, the biological clock, the tenure clock, and the physical demands of pregnancy and childbirth.

Commenting on this dilemma in *The Harvard Crimson*, Claudia Goldin also notes that college women today have more options but must still make sacrifices. ‘The most important question facing women graduating today is whether they can find a job where it is possible to combine family and career’.⁶²

The Summers controversy

On January 14, 2005, Harvard President, Lawrence Summers gave an invited lunchtime address at a ‘Diversifying the Science and Engineering Workforce’ symposium held at the National Bureau of Economic Research. His lecture focussed on the issue of ‘Faculty Diversity: Research Agenda’.⁶³ As Figures 12 and 13 show, in 2005, females occupied 19 percent of tenured posts in Harvard’s Faculty of Arts and Social Sciences but a mere 8 percent in the sciences. Summers (‘speaking

⁵⁹ See Goldin, 2002, for a general discussion of discrimination.

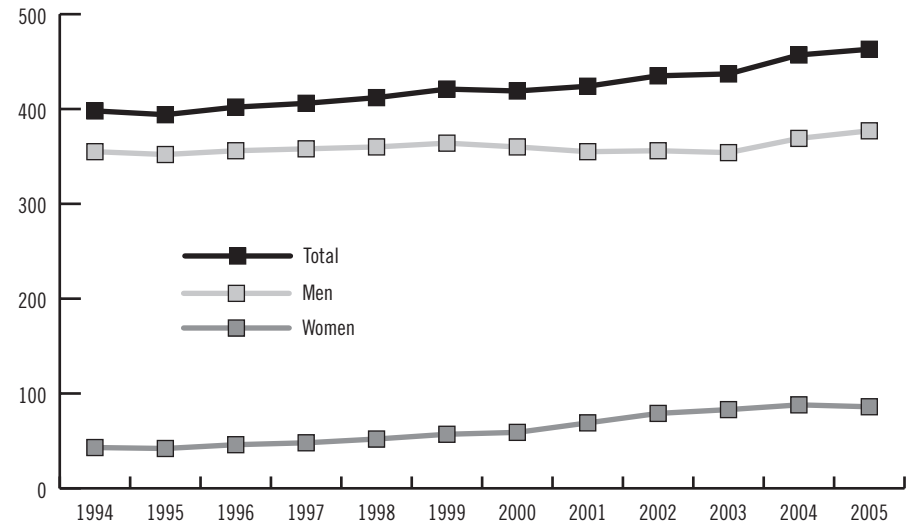
⁶⁰ See the collection of short articles by Drago *et al.* on ‘Work and Family in Academia: Striking the Balance’, in the CSWEP Newsletter, Spring/Summer, 2007. See also Drago, 2007.

⁶¹ Wolf-Wendel and Ward, 2006.

⁶² *The Harvard Crimson*, April 26, 2007.

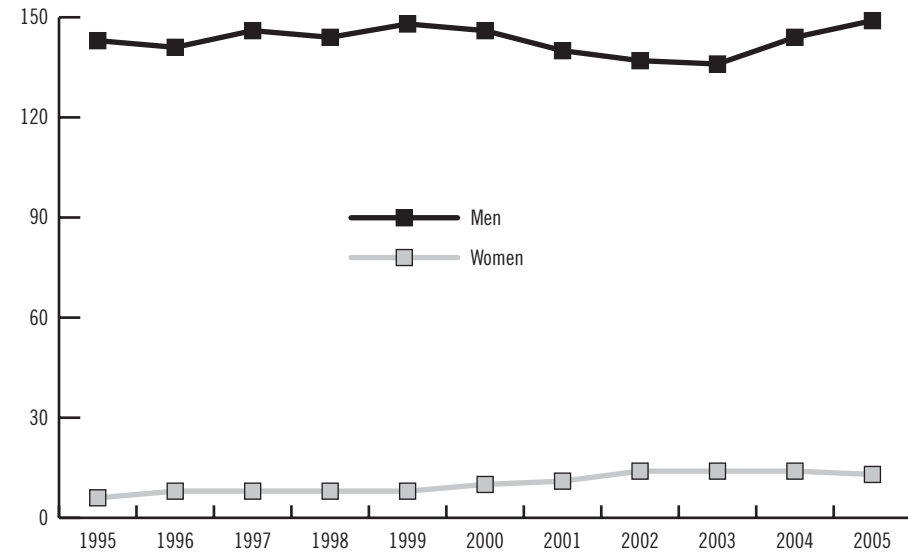
⁶³ See Summers, 2005. Lawrence Summers has a distinguished academic record as an MIT–Harvard trained economist and in 1993 was awarded the John Bates Clark Medal. He is currently the Charles W. Eliot University Professor at Harvard and has rejoined the Department of Economics. He was formerly Assistant and Associate Professor of Economics at MIT (1979–83), Professor of Economics at Harvard (1983–91), Chief Economist at the World Bank (1991–93), and between 1993–2001 he was Undersecretary for International Affairs (1993–95), Deputy Secretary (1995–99), then Secretary to the US Treasury (1999–2001). In this capacity he acted as the principle economic advisor to President Bill Clinton. In 2001 Professor Summers was the Arthur Okun Distinguished Fellow in Economics, Globalisation and Governance at the Brookings Institution in Washington DC. He was President of Harvard University from July, 2001, until June, 2006.

Figure 12: Tenured Professors, Faculty of Arts and Sciences, Harvard



Source: Harvard Magazine, January–February, 2005a

Figure 13: Tenured Faculty in Sciences, Harvard, by gender



Source: Harvard Magazine, March–April, 2005b

unofficially') considered the merits of three broad hypotheses, that had been previously documented at the NBER Conference, for explaining the 'very substantial disparities' in the percentage of females in 'high-end scientific positions', namely, and in order of importance: (1) the 'high-powered job hypothesis'; (2) 'different availability of aptitude at the high end'; (3) 'different socialisation and patterns of discrimination in a search'. Summers concluded his lecture with the following observation: 'My best guess, to provoke you, of what's behind all this is that the largest phenomenon by far, is the general clash between people's legitimate family desires and employers' current desire for high power and high intensity, that in the special case of science and engineering there are issues of intrinsic aptitude, and particularly of the variability of aptitude, and that those considerations are reinforced by what are in fact lesser factors involving socialisation and continuing discrimination'.⁶⁴

With respect to the 'high powered job hypothesis', and differential gender socialisation, the results of recent research, conducted at the University of Pittsburgh's Experimental Economics Laboratory by Niederle and Vesterlund (2007), suggest that although there were no gender differences in performance in the experiments conducted, there were 'large gender differences in the propensity to choose competitive environments'.

Niederle and Vesterlund conducted laboratory experiments where male and female participants had to solve a real problem, first under conditions of a non-competitive piece rate scheme, and second, under conditions of a competitive 'tournament' incentive scheme. When choosing their preferred compensation scheme for their next performance assessment, 73 percent of men selected the competitive tournament scheme compared to 35 percent of women. Niederle and Vesterlund consider four possible explanations for the observed gender differences in tournament entry, namely:

- Hypothesis 1* Men have greater preferences to compete than women. This is due in part to 'nurture' (socialisation) and in part to 'nature' (evolution).
- Hypothesis 2* The willingness of men to enter competitions results from their overconfidence.

⁶⁴ Ishada and Nosaka (2007) note that 'even in countries where gender differences in education attainment no longer exist, in general the pattern of skill acquisition has been highly segregated by gender'.

- Hypothesis 3* Men enjoy competition because they are less risk averse.
Hypothesis 4 Men are more willing to enter tournaments because they are less averse to negative feedback.

Niederle and Vesterlund find that the gender gap in tournament entry results mainly from the overconfidence of men combined with their greater ‘preferences for performing in competitions’. Thus in attempting to explain the absence of women in male dominated fields and occupations, not only must investigators consider the possible influence of factors such as gender discrimination and the trade-off facing women between choosing a high powered career (involving long working hours) and raising a family, they also need to consider how ‘we can create environments in which high-ability women are willing to compete’.

In contributing to the research programme that tries to explain why women are generally underrepresented in ‘high-profile jobs’, the remarks made by Summers ignited a vociferous response that was immediate and largely negative.⁶⁵ However, Claudia Goldin and Lawrence Katz, writing in the *Boston Globe*, provided their support, arguing that ‘Summers was properly calling attention to the troubling social phenomenon: the stalling of the quiet revolution that has transformed women’s education and employment during the last thirty five years’.⁶⁶ Goldin and Katz point to the ‘considerable evidence’ that shows that females do make different choices to men with regard to the ‘family-career trade-off’. For example, in the US, female economists ‘occupy positions that have less intense tenure pressure’. However, Goldin and Katz conclude that:

The fact that women make decisions that compromises their careers, before or after beginning their families, does not take institutions off the hook. Rigid promotion policies can impact women’s careers more than men’s. Academic tenure clocks, for example, tick at the same pace as women’s biological clocks. As economists we are concerned that women’s educational investments may be inefficiently used....All employers need to make career paths more amenable

⁶⁵ See Bombardieri, 2005. See also the response to Summers at <http://wiseli.engr.wisc.edu/news/Summers.htm>

⁶⁶ See Goldin and Katz, 2005; Postrel, 2005. In his lecture, Summers called for Universities to pay more attention to issues relating to child care, extending tenure clocks, and providing family benefits, and for academics in general to think hard about ‘how to do better on these issues’ in order to meet ‘all our common goals of equality’. Ginther and Kahn (2004) conclude their study by observing that economists have experienced large and persistent ‘unexplained’ gender differences with respect to academic advancement. Consequently...‘we are left to wonder whether institutional and departmental behaviours contribute to the gender gap’.

to combining work and family if our nation is not to lose a valuable and growing source of talent.⁶⁷

With respect to her own professional career, Claudia Goldin plays down the potential difficulties of being a female academic in a predominantly male dominated economics profession.⁶⁸ Neither has she been deterred by the subject matter of economics, or its technical and quantitative character. As the interview demonstrates, Professor Goldin's career, as a professional economist/economic historian, has been a journey of discovery, and her 'stellar record' as a leading scholar in the field 'has been an inspiration to many other women'.⁶⁹

INTERVIEW⁷⁰

Background information

How did you get into economics and economic history?

When I was young and wondering what I was going to do, there was only one profession that interested me. My only aspiration was to become a scientist. To me scientists were the most important people because they made important discoveries. By comparison doctors were plumbers. So I went to the Bronx High School of Science determined to become a scientist, and in particular I intended to do microbiology. But even the best High Schools in those days did not teach much outside the classical fields. You did history, literature, languages, math, biology, physics, and chemistry, all the primary colours. After High School, when I went to Cornell University, I discovered that there were lots of other interesting fields, disciplines, and ideas that I had never previously been exposed to. One of these fields was economics, and I gradually became enthralled by it. I guess my science/math background helped move me in this direction.

⁶⁷ Recent research by Lynda Gratton *et al.* (2007a) at the Lehman Brothers Centre for Women in Business, at the London Business School, suggests that working groups that comprise fifty percent women and fifty percent men 'deliver optimal performance in most areas that drive innovation' (Gratton and Walker, 2007b).

⁶⁸ See the latter sections of the interview that follows. However, in another interview for *The Harvard Crimson* (April 26, 2007) entitled, 'Goldin Demystifies Gender Economics', Professor Goldin comments that she did at times feel marginalised in the early part of her career at Princeton University during the early 1970s.

⁶⁹ See Carolyn Shaw Bell Award citation (2005) at www.cswep.org

⁷⁰ I interviewed Professor Goldin at the National Bureau for Economic Research, Cambridge, Massachusetts, on May 31, 2007.

Were there any particular individuals who influenced and inspired you during this formative period?

Very much so. One was Alfred Kahn.⁷¹ He was an amazing teacher and encouraged many individuals. He just had this joy of teaching. His field was industrial organisation and regulation. So when I decided to go to Graduate School I chose to study economics and industrial organisation, mainly because of the influence of Fred Kahn.

When you went to Graduate School at Chicago, who were the influential figures?

Oh, just about everybody [laughter]. I can't think of anybody who didn't have some influence on me. George Stigler, Sam Peltzman and Lester Telser were there, and Ronald Coase was in the Law School.⁷² So there were a large and varied group of economists working in, and broadly defining, the field of industrial organisation to include theories of government and political economy. I became fascinated by various aspects of product markets and anti-trust cases. But then Gary Becker arrived at Chicago in 1969, and he turned on lights in my head that up until then I had no idea existed.⁷³ To me he just exploded the field of economics to include so much more than had previously been the case. Gary was using microeconomic analysis to investigate *all* of human behaviour, and I found that to be more interesting than firm behaviour. At that point I became interested in labour economics. The combination of my interest in labour economics and the notion that most economic problems evolve over long periods of time led me, quite naturally, into economic history.

You were a student during the 1960s which was a tumultuous time in United States history, especially with respect to the Civil Rights movement, President Lyndon

⁷¹ Alfred E. Kahn is Professor Emeritus at Cornell University. He was advisor to President Jimmy Carter on deregulation, and in 1977–78 he was Chair of the Civil Aeronautics Board. He is the author of *The Economics of Regulation: Principles and Institutions* (MIT Press, 1988) as well as numerous other books and articles.

⁷² George Stigler was awarded the Nobel Prize in Economics in 1982 'for his seminal studies of industrial structures, functioning of markets and causes and effects of public policies'. Ronald Coase was awarded the Nobel Prize in Economics in 1991 'for his discovery and clarification of the significance of transaction costs and property rights for the institutional structures and functioning of the economy'.

⁷³ Gary Becker was awarded the Nobel Prize in Economics in 1992 'for having extended the domain of microeconomic analysis to a wide range of human behaviour and interaction, including non-market behaviour'. See the 'Symposium on the Economic Analysis of Social Behavior in Honor of Gary S. Becker', in the *Journal of Political Economy*, December, 1999.

Johnson's 'Great Society' programmes, and the escalation of the war in Vietnam. Did these events impact on you?

Tumultuous is an appropriate word for describing the many different movements of those years. The period 1967–72 was really intense. The political and social turmoil was not so much about policies but more about democratisation, and the opening of American society. The important concerns among people in the streets, and in the hearts and minds of the young, were the Vietnam War, the feminist movement, and people power. They were much less concerned about the impact of President Johnson's domestic programmes.

Economic history, economics, and 'cliometrics'

During recent years many economists have become re-engaged with economic history, especially those researching into economic growth. I am thinking about people such as Daron Acemoglu, James Robinson, Robert Lucas, and Oded Galor.⁷⁴ In the UK, over time, economic history has tended to drift out of undergraduate teaching programmes in economics, but I get the feeling that it is alive and well here in the United States. Why is this the case?

Institutionally, in the UK, economics and economic history have always tended to be separate departments within universities. Economic history is also separate from history departments. In the US it is an exception to have that separation. Economic historians are located in departments of economics, although I believe there was once something like the UK separation at the Universities of Wisconsin, Pennsylvania, and Berkeley. The 'Cliometric Revolution' of the early 1960s originated in the US and connected economic history to economics.⁷⁵ The 'new' economic historians began to apply economic theory and statistical methods to the study of history. Economic history has always been very much concerned with economic development and economic growth over the long term, and these are precisely the issues that have captured the interest of an increasing number of leading economists during the last twenty years.

⁷⁴ Lucas, 2001; Galor, 2005; Acemoglu and Robinson, 2006. See also, Snowdon, 2007a, 2007b. See also Goldin, 1995a, 1997; Coclanis and Carlton, 2001; Horrell, 2003.

⁷⁵ See Goldin, 1995a, 1997; Cain, Lyons and Williamson, 2007.

The economics of slavery

Robert Fogel and Stanley Engerman's book on slavery, Time on the Cross, was very controversial and caused quite a stir when it came out in 1974.⁷⁶ About this time you were also researching into the economics of slavery and the economic costs of the American Civil War.⁷⁷

My research in the area of urban slavery was actually done before Fogel and Engerman's book was published. My work on slavery evolved out of a paper that I wrote for Bob Fogel's class when I was a graduate student. They had already written their relative efficiency paper,⁷⁸ but I had no idea that they had begun to research their influential volumes until after I wrote my paper. A lot of Fogel and Engerman's arguments are now pretty much accepted, judging by the content of textbooks in the field.⁷⁹ Ignoring the distribution of income, we know that in the antebellum period the South was not poor or stagnant compared to other agricultural regions, although it declined into relative poverty in the 1860–80 period. In 1860, income per capita was higher in the South than it was in the agricultural mid-West. With respect to the economic costs of the American Civil War, my paper with Frank Lewis provided systematic estimates of both direct and indirect costs to the North and the South.⁸⁰ We found that the costs were both large and persistent compared to previous estimates. We also rejected the Beard–Hacker thesis that the Civil War stimulated industrialisation and faster growth rates in the post-bellum period, compared to what otherwise would have been the case.⁸¹

If the American civil war had not happened, how long do you think slavery would have lasted in the Southern states?

⁷⁶ Robert Whaples (1995), in his survey, 'Where Is There Consensus Among American Economic Historians?', observes that... 'Perhaps the most exciting time in the history of the profession was the period in which the issue of slavery dominated the agenda'.

⁷⁷ See Fogel and Engerman, 1974; Goldin, 1973, 1975a, 1975b, 1995a.

⁷⁸ Fogel and Engerman, 1971.

⁷⁹ See, for example, Hughes and Cain, 2003. See also Whaples (1995) who comments, 'There is near unanimity that slavery was *not* a system irrationally kept in existence by plantation owners and that the slave system was *not* economically moribund on the eve of the Civil War'.

⁸⁰ Goldin and Lewis, 1975.

⁸¹ Beard and Beard, 1930; Hacker, 1940.

Two nations in the western hemisphere abolished slavery after the United States, the last one being Brazil in 1888. So that gives us some idea. There had always been much more opposition to the slave trade than to slavery. There are three factors that would have influenced the timing of abolition had there not been a civil war. First, the unfavourable image that the US would have portrayed to the rest of the world if slavery had continued. Second, the strength of abolitionist forces in the north, although I would discount this as a major factor. Third, and this is important, are the forces for change that come from greater profits from engaging in other activities than slavery. More recently, similar forces have been a major factor in the dramatic changes we have witnessed in both China and Russia.

US economic history

Yesterday, returning to Boston from Rhode Island, I visited the Plymouth (Plimoth) Plantation to get some idea of the kind of lifestyle experienced by the early Puritan settlers in North America in the 1620s. It is amazing to think how the biggest and most powerful economy in the world could have emerged from early settlements like this.

You should read the book, *The Island at the Centre of the World* by Russell Shorto.⁸² I think this would change your whole perspective of the early history of North America. His book is all about the early Dutch settlement of New Netherland and its capital New Amsterdam. This settlement eventually grew to become what is now New York City on Manhattan Island. Shorto constantly reminds the reader that we have had a very English-centric history of America's early beginnings that concentrates on the English settlers in Massachusetts as well as those in Jamestown, Virginia. What we Americans have become, in terms of the diversity of this nation, did not originate in Plymouth, but in the colony further south on what is now Manhattan island. At some point in the 1660s the English bring their gunboats in and Pieter Stuyvesant is forced to cede this colony to the English.⁸³

⁸² Shorto, 2004.

⁸³ Pieter Stuyvesant (1612–72) was a major figure in the early history and development of New Amsterdam, later renamed New York, and was the last Dutch Director-General of the Colony of New Netherland from 1647 until it was ceded to the English in 1664.

Point taken [laughter]. By the 1890s the United States had become the world's leading economy, defined in terms of labour productivity, and has remained so ever since. According to the US Bureau of Economic Analysis, the total US GDP in 2006, in current dollars, was over 13 trillion! What, in your view, have been the major factors that have contributed to this amazing transformation of the US economy from its humble beginnings?

First of all, there are some economic historians today who argue that in across-the-board manufacturing, total factor productivity was so much higher in the US than other economies, in particular the UK, *before* the 1890s.⁸⁴ Stephen Broadberry and Douglas Irwin argue that the US had a substantial productivity lead in the industrial sector before the Civil War, certainly by the 1840s, although the UK had higher service productivity, and equivalent productivity in agriculture.⁸⁵ The only reason that the US did not have higher per capita income until later was because the US was such an agricultural nation, with a much higher proportion of the labour force engaged in low productivity agriculture, as well as having lower labour force participation rates. But this whole issue remains very controversial because no one has really scrutinised the data. If one looks at the leading sector, manufacturing, and asks how the US became ascendant in this sector, there is a huge literature.⁸⁶ The major factors contributing to US leadership include natural resource abundance, economies of scale advantages from a large single common market, the standardisation of goods, and the establishment of the mass production techniques and use of interchangeable parts associated with the 'American system of manufactures'.⁸⁷ You would also have to identify the reasons for the emergence of dynamic and vibrant entrepreneurship and inventiveness in America. Here Ken Sokoloff's work on why the US had so many more patents and inventions is important.⁸⁸ The way that I like to teach this is to ask students the question... 'Why did America become number one?' Clearly there are a number of factors, not just one. A set of enabling institutions was very important. The abundant land fed into greater equality, which fed back into greater schooling and education, that in turn fed back into

⁸⁴ See, for example, Prados de la Escosura, 2000; Ward and Devereux, 2003.

⁸⁵ See, for example, Broadberry, 1998; Broadberry and Irwin, 2006. See also Goldin and Sokoloff, 1984.

⁸⁶ See, for example, Wright, 1990; Nelson and Wright, 1992; Abramovitz and David, 2001.

⁸⁷ See Rosenberg, 1994.

⁸⁸ Sokoloff, 1988; Khan and Sokoloff, 1993, 2001. See also, Baumol, 2002; Baumol, Litan and Schramm, 2007.

ideas and technology. So there was a system. Paul Romer's excellent short paper, 'Why, Indeed, in America', is a good starting point for this kind of discussion.⁸⁹ Romer uses growth theory to tell the tale of American economic history, and he emphasises resource abundance and the impact of huge economies of scale from parts of the American system. The fact that the United States was a single economic space, a single market, was enormously important. This was not something that at the time of the Plymouth colony was destined to be. It almost didn't happen.

*You mention the importance of enabling institutions in fostering the economic success of America. How important was the establishment of the American Constitution and democracy in this story? Some economists stress the importance of democratic institutions for the protection of property rights, which in turn are seen to be a crucial prerequisite for successful investment, capital accumulation and growth.*⁹⁰

There are two things here that are related. One has to do with property rights and the rule of law. The second issue is to ask, Yes... but whose rule of law? Whose definition of property rights? In American history we have over fifty different definitions. The importance of America becoming a unified single economic space cannot be overstated. There could have been fifty separate currencies, and numerous trade restricting barriers. The US could have evolved into another Europe. The Articles of Confederation envisaged a very loose federation with the ability to have tariffs and other forms of trade barriers. So just having property rights and the rule of law is not enough, because many European states had that but failed to develop, until recently, into a single economic space.

In your 1998 co-authored and co-edited book, The Defining Moment, consideration is given to the extent to which the Great Depression of the 1930s marked a watershed in twentieth-century American history.⁹¹ In what ways did this event have a long-run impact on the US economy?

⁸⁹ Romer, 1996.

⁹⁰ North, 1990, 2005; Acemoglu and Robinson, 2006.

⁹¹ Bordo, Goldin and White, 1998.

That book is about how the Great Depression changed government policies. It changed the American people for sure, but a key counterfactual is... How would monetary, fiscal, social, regulatory, trade and other policies have evolved in the US had the Great Depression not occurred? The bottom line of that book is that most of the subsequent changes in regulations and laws that did happen would probably have happened anyway, with the exception of the changes that occurred in two areas, agriculture and unionisation. Of course, the US lost one-third of national income in real terms in a period of three years.⁹² Over ten years, if you add up the losses, a quarter of national income vanished. But if we ask the question... What important pieces of legislation would not have been passed had it not been for the Great Depression? The answer is not many.

Corruption in America

We hear a great deal from the World Bank and elsewhere about the importance of corruption as a retarding factor to economic growth in many parts of the developing world.⁹³ Your recent co-authored and co-edited book, Corruption and Reform: Lessons from America's History, shows how corruption in America was once much more widespread than it is today.⁹⁴ Are there any lessons that we can glean from American history that could help other countries reduce corruption?

When Ed Glaeser and I did that volume we first of all had to think of some way of measuring corruption. Somehow we needed to gauge how corrupt America was in the past. We thought very hard and came up with a measure that used the reporting of corruption in hundreds of newspapers for the period 1815–1975. We were able to do huge searches using optical recognition software. What we discovered was that there were periods when very high amounts of corruption were being reported in the press. This reaches what appears to be a peak in the 1870s, during President Grant's administration, then it comes down by a tremendous amount. By the 1920s, while corruption is still present, the reporting of corruption, which should have improved over time as newspapers became more independent of political parties, has declined. The rise of an independent

⁹² See Romer, 1993, for a discussion of the macroeconomic impact of the Great Depression on the US economy.

⁹³ www.worldbank.org/wbi/governance. See also the surveys by Tanzi, 1998; Jain, 2001; and Aidt, 2003.

⁹⁴ Glaeser and Goldin, 2006.

press between 1870 and 1920 was an important factor in supporting and encouraging movements for reform.⁹⁵ However, we were left with a question for which I do not have an answer. If there was so much corruption in the nineteenth century, why did this not have a significant adverse effect on the economic growth performance of the United States? Why did corruption not paralyse the effective working of markets? Naomi Lamoreaux and Jean-Laurent Rosenthal have an interesting paper in the volume which is less about corruption and more about fraud.⁹⁶ During the nineteenth century the corporate form takes over and is very important for raising finance and is part of the engine of change and growth. Minority share holders are being ripped off all over the place and yet the corporate form continues to take hold. Our volume is about the extent and forms of corruption in the US. A second volume needs to address the question, Why did corruption not bring US economic growth to a halt? Research suggests that corruption in developing countries today does adversely affect their economic performance. Why the difference? I don't have an answer.

The 'human capital century'

In your 'Human Capital Century' paper you show how, in the US during the twentieth century, there were vast changes in educational institutions and the commitment by government to expand educational provision.⁹⁷ America led the way in providing formal education to the masses.

I don't think that anyone doubts that education, in its broadest sense, is an important input contributing significantly to the economic performance of any economy. Education feeds into productivity, innovation, and the diffusion of technological progress. A well-functioning democracy is also inconceivable without a literate population. A rapid expansion of human capital is obviously a key factor in the economic success of the US during the twentieth century. There have actually been three significant educational transformations in the US. The first relates to primary schooling and took place in the mid-nineteenth century. The 'high school movement'

⁹⁵ See Gentzkow, Glaeser, and Goldin, 2006.

⁹⁶ Lamoreaux and Rosenthal, 2006.

⁹⁷ 'The twentieth century was the human capital century. America led other nations by a wide margin in the provision of general, formal education to the masses and did so because of characteristics, what I have called virtues, that were shaped by New World endowments and Republican ideology' (Goldin, 2001).

was an early twentieth century transformation, while major changes in college education occurred in the mid-to-late twentieth century. At the beginning of the twentieth century, the US was the only country to have more than a trivial percentage of its young people engaged in full-time secondary school education.⁹⁸ During the 1910–40 period there was a massive increase in high school enrolment and graduation rates and a wide gap emerged between the US and the other major industrial nations, Germany, Britain, and France. It was undoubtedly the publicly funded American high school system of mass education that differentiated the US from all other countries during this period. By the early 1960s, the US high school graduation rate was seventy percent. Contrast that with Britain where in the early 1960s, only about fifteen percent of seventeen-year-olds were still at school. A major factor driving the ‘human capital century’ was the rapid increase in the demand for skilled labour associated with the emergence of the ‘new’ economy fuelled by rapid technological change. Consequently, the demand for skilled and literate blue and white collar workers increased rapidly. The US also chose to expand general schooling rather than promote apprenticeships and more specific on-the-job training favoured in Europe.

In that paper you also talk about the importance of a number of ‘virtues’ that include the idea of a publicly funded mass secondary education that is ‘open and forgiving, academic yet practical, secular, gender neutral, and funded by small fiscally independent districts’. These virtues were important in the emergence of mass education in the US, in particular the High School system.⁹⁹ It is puzzling to me that the expansion of mass education should occur in the US before it happened in Europe given that Europeans are much more willing to redistribute income from rich to poor than are Americans.¹⁰⁰

A very simple model goes a long way in explaining this. The US had an extremely decentralised system of education compared with Europe. Centralisation is not about who chooses the Principal or who chooses the textbooks. It’s about who pays the bills and decides the system of funding. Where are the key decisions being made, at the nation level, at the state

⁹⁸ Goldin, 1999.

⁹⁹ Goldin, 2001.

¹⁰⁰ See Alesina and Glaeser, 2004; Alesina, Di Tella and McCulloch, 2004.

level, at the township level, or at the district level? I believe that the more rapid expansion of mass secondary education in the US compared with Europe is due to a combination of factors that include the decentralisation of educational decision making, an ideology that supported the ideals of democracy, and higher levels of wealth. With respect to the fact that Americans are less concerned about inequality than Europeans, it is important to appreciate that in America, people have much less of a sense that they would follow in the footsteps of their parents or grandparents. The whole notion of upward mobility has always been more important in America than in Europe. For a migrant coming to America, when they step off the boat, they soon appreciate that they have come to a very different environment.

It is strange that labour mobility within Europe, even today, is relatively low compared to the US, and yet during the nineteenth century, as your Harvard colleague Jeffrey Williamson's research highlights, labour mobility was very high across the Atlantic.¹⁰¹ This seems somewhat paradoxical.

Joe Ferrie and Jason Long have also done some very careful work on this.¹⁰² If we think about the period of high European migration to the US during the late nineteenth and early twentieth centuries, it is pretty clear that there must have been a flow of information coming back across the Atlantic to Europe that persuaded potential migrants that there were wonderful opportunities in America, in terms of employment and wages, relative to those in Europe. Within their own countries, such large differentials in opportunity did not exist, so the costs of migrating to another city or region outweigh the benefits. So I think the answer to this question can be found in the lack of opportunities in Europe.

In terms of sustaining US economic growth, you have advocated the need for a 'renewed commitment to invest in education' as probably 'the most important and fruitful step that federal, state, and local officials can take'.¹⁰³ Why do you say 'renewed' commitment? Has there been some reduction of commitment towards the importance of education?

¹⁰¹ Williamson, 2004; Hatton and Williamson, 2005.

¹⁰² See Ferrie and Long, 2003; and papers online at <http://www.colby.edu/economics/faculty/jmlong/research/>

¹⁰³ See DeLong, Goldin and Katz, 2003.

The high school graduation rate in 1970, the fraction of eighteen-year-olds who have a high school diploma, was below eighty percent, and it still the same today. In European nations the proportion is higher. The US education system has virtues of openness and forgiveness, although it has a lack of national and state standards. Europe has just the reverse. So by a renewed commitment I do not mean in terms of funding, but in terms of thinking about the role of the state in promoting education.

Wage inequality in the US

How do you account for the changing pattern of inequality in the US?

We have two different types of data to consider when we look at this issue. First, we have, for the period since 1940, data on the full distribution of income. Second, for the full period from the 1890s to the present we have data on earnings by occupation, where we can infer something about the educational requirements, and we have various information from 1915 on earnings by education. The longer time series on returns to education, or wage ratios, shows that the premium to education declined in a series of steps from around 1915 to the 1950s, before flattening out until around 1980. Since then the premium to education doesn't just rise but surges upward. So we need to explain both the decrease and the increase, because the twentieth century is really a story of two periods of inequality for the US economy. There are several possible explanations, but we can go a long way towards an explanation using a simple demand and supply for relative skills framework. The supply side includes factors such as education and training for the native born, immigrant skills, and demographic factors. On the demand side are skill-biased technical change, outsourcing, and other factors that alter the demand for relative skill. The surge in inequality and the wage premium in the post-1980 period is due to an accelerating demand in relative skills. Those who think that we have never before seen such a rapidly rising demand for skills do not know American history because we have had many technological revolutions, and in each case there was a significant impact on the demand for skills. In the research that Larry Katz and I have done, we find that if you take a very simple model, where the demand for relative skills shifts out fairly constantly throughout most of the twentieth century, without too much

acceleration, and layer on top of that relative supply, then this pretty much goes a long way to explaining what happened to wages and the education premium in the US.¹⁰⁴ The relative supply of educated workers increases enormously with the high school movement and the shift into higher education. If you look at the educational attainment of the workforce in the US it increases every decade by about a year, which is enormous. Then, beginning around 1980, it flattens out.

Female labour force participation

An important empirical regularity is the ‘U-Shaped’ female labour force participation rate.¹⁰⁵ As income per capita rises from low levels, female participation rates tend to fall. Then as incomes rise further, the participation rate increases, producing the U-shaped pattern. How can we explain this?

Basically we can explain this pattern using orthodox microeconomic theory and the familiar interaction of income and substitution effects, and how they affect labour supply. Also important are the various structural changes that occur as an economy develops. For example, in the initial stages of development, agriculture and light manufacturing are important, as well as home production. Women make an important contribution to the family economy and it is often hard to say who is the breadwinner in a family. Then, as economic development takes place, we see the emergence of larger firms, towns, cities, and industrialisation. These changes shift the locus of economic activity from the home to the factory. Men want to restrict women’s participation in the market because of various norms and stigmas. Factory work in most instances is far less pleasant than working at home. There are fixed costs involved. Women have to go into the big city which can be nasty and brutish. The hours are very long and stressful. As these changes occur, we are moving from the top part of the ‘U’ to the bottom part of the ‘U’. Rising incomes allow families to purchase the home production of the wife as well as enjoying the reduced social stigma associated with women working. As the economy progresses further the number of ‘white collar’ jobs increases and women get greater access to education. We are now on the upward portion of the ‘U’ shaped

¹⁰⁴ Goldin and Katz, 1999, 2001b, 2007; Goldin and Margo, 1992; Goldin, 1999.

¹⁰⁵ See Goldin, 1995b. See also, Goldin, 1977, 1980, 1984, 1989, 1995c. See also Humphries, 1995.

labour force participation function. The social stigma associated with women working declines as ‘nice jobs’ become increasingly available.¹⁰⁶

Many people believe that a very important factor that stimulated a permanent increase in labour force participation of married women was the influence of the Second World War, which, through a variety of mechanisms, drew women into employment. In your paper, which discusses the influence of WW II on women’s employment, you conclude that, while the war had several effects on women’s employment in the US, the direct effects were much more modest than popular opinion would have us believe.¹⁰⁷ How do you account for the changes in participation that occurred during the 1940s?

Some of the time series data on women’s labour force participation show a distinct break in the 1940s. The simple assumption made is that women replaced men in many jobs during the war, and that they kept those jobs after the war was over. We know that this is not true. Many women entered the labour force during the war, for a variety of reasons, but the majority exited after 1945. The Palmer Survey data show that around fifty percent of married females working in 1950 were already working in 1940. Only twenty percent of females working in 1950 had joined the labour force during the war. So what did have an effect on increasing female participation during the 1940s? Can we find the roots of what happened in the 1940s in changes that occurred earlier in the 1920s and 1930s? I believe we can. There was a huge change in educational opportunities.

The ‘quiet revolution’

In your Richard T. Ely Lecture you begin by noting that... ‘Women’s increased involvement in the economy was the most significant change in labour markets during the past century’.¹⁰⁸ What were the main driving forces which led to this change?

In that paper I show that the role of women in the American economy evolved during the twentieth century in four stages, the first three of

¹⁰⁶ Bloom *et al.* (2007), in their investigation of the relationship between female labour force participation and the fertility rate, find that a decline in fertility produces a ‘demographic dividend’ that has a significant positive effect on the steady-state output per capita, and also on long-run economic growth.

¹⁰⁷ Goldin, 1991.

¹⁰⁸ Goldin, 2006. See also, Goldin, 1990, 2005.

which were evolutionary, and the final stage was a 'Quiet Revolution' in the sense that it was not a Big Bang. The shift from evolution to revolution involved a change in women's choices relating to their time '*horizon*', short-run or long-run participation, their '*identity*', in the sense that a job is part of a person's identity, and the context of their '*decision making*', that is, were labour market participation decisions made jointly with their husbands.

The four phases that I identify are as follows. The first phase runs from the end of the nineteenth century to the 1920s. During this phase female workers were generally young and unmarried. They did jobs that required little formal education beyond elementary school. Most of these women would leave the labour force once they got married. In the formal language of economics, the negative income effect from having a husband's income was larger than the positive substitution effect of an increase in a wife's wage. The labour supply was therefore highly inelastic. Any increase in labour force participation rates between the 1890s and 1920s therefore has to be explained via *shifts* in the labour supply function, induced by increased education, declining fertility, an expansion of 'nice jobs' and other factors that changed peoples attitudes to women working.

The second phase begins around 1930 and runs through to around 1950. During this period the labour force participation of married women increased substantially. This was in response to a large increase in the demand for more 'respectable' clerical and office jobs as well as a significant increase in female high school enrolment and graduation. Now the substitution effect began to dominate the income effect and female labour supply became more elastic. Shifts in the demand for labour and supply played a role in increasing female labour force participation.

Phase three occurs between the 1950s and 1970s. The elasticity of female labour supply increases as the substitution effect increasingly dominates the income effect. During this phase, increased participation was largely demand driven. We can think of significant demand shifts along a very elastic labour supply function.

Now we come to the fourth phase, the revolutionary phase. This runs from the 1970s to the present. During this period we do not observe significant increases in female participation. The 'Quiet Revolution' is marked more by changes in the three indicators I mentioned earlier: horizon, identity and decision making. This was the era when young women

had very different expectations from their mothers and grandmothers. Female college participation and graduation increased significantly. Increased investment in education indicates that young women were expanding their expectations of the length of time they expected to be in the labour force. Women also began to choose majors at college that were investment rather than consumption based. Once women decided that their life-cycle labour force participation was going to be much longer, this obviously affected their decisions about their education. Modern birth control technology also allowed women to plan their careers. Women began to get married later and the age of first marriage has continued to increase. Women began to retain their surname after marriage, particularly among the highly educated. More and more women entered professions such as law, medicine, and management. Women now think in terms of careers rather than jobs, and also see the work place as part of their identity. Women's earnings, relative to men, began to increase after 1980.¹⁰⁹ Income and substitution effects both decrease during this era and labour supply become more inelastic. At some point, with the birth cohorts of the late 1940s and early 1950s, there was a distinct shift in women's perceptions about their working lives. The significant change in the economic and social status of women in the US was not just about their increased labour force participation, but from increasing numbers who joined the professions and actively planned lifetime careers.¹¹⁰

Towards the end of your 'Quiet Revolution' paper, you note that 'Female labour force participation rates and the fraction working full time are no longer soaring let alone rising'. A plateau of female participation seems to have been reached in the US in the early 1990s. You also note that some women are beginning to 'opt out' of the revolution, preferring the 'comforts of home and family and the identities of mother and wife'. Has the quiet revolution stalled?

To answer that question we require more longitudinal data such as is becoming available with the *College and Beyond* dataset of the Andrew Mellon Foundation. This data, together with data from *Current Population*

¹⁰⁹ See Blau and Kahn, 2007.

¹¹⁰ In 1960, 18.4 percent of US professionals were women. By 1998, this had risen to 36.4 percent. See Goldin and Katz, 2000.

Surveys do not seem to indicate that female graduates have started to opt out in any significant numbers.

The 'power of the pill'

When we think of great technological breakthroughs in the twentieth century, we often tend to think of highly visible innovations such as those in air transportation, communications technology, and the ICT revolution. However, as you note in your Journal of Political Economy paper, 'The Power of the Pill', the introduction of oral contraceptives for women in the early 1960s had profound social and economic consequences.¹¹¹ How does the introduction of oral contraception in the 1960s fit in with your story of the 'Quiet Revolution'?

It is one of the important enabling factors. I would not go so far as to argue that, had the pill not been invented, that we would not have had this 'Quiet Revolution'. I think it would have happened anyway, but later, and to a lesser degree. There is a wide-range of time series data that support the idea of a revolutionary phase in the labour force participation of women. These include expectations of future employment of teenage girls, the age of first marriage, indicators of investment in human capital, relative earnings between men and women, and labour force participation of women with young children. Each series has a distinct breakpoint, and the breakpoints occur around the same time. One of the contributing factors to this watershed is the technological change that occurred with respect to birth control. This technological breakthrough was combined with a set of important legal changes. At first the pill was only available to married women. By the mid-1960s, about forty-one percent of married women in the US under the age of thirty who were using contraceptives, were using the pill. Young single women began to use oral contraceptives

¹¹¹ Goldin and Katz, 2002. See also, Goldin and Katz, 2000. In the Millennium Issue of *The Economist* (December 23, 1999), in an article entitled, 'Oral Contraceptives: The Liberator', it was observed that 'There is, perhaps, one invention that historians a thousand years in the future will look back on and say, "That defined the 20th century". It is also one that a time-traveller from 1000 would find breathtaking—particularly if she were a woman. That invention is the contraceptive pill'. Lundberg and Pollack (2007) also note that the introduction of 'reliable and convenient contraception and the availability of safe and legal abortion has led to a separation of sex, marriage and childrearing'. This has significantly increased the complexity and heterogeneity of family structures, decreasing the 'stability of the living arrangements in which children are reared'. However, Stevenson and Wolfers (2007) show that the divorce rate actually peaked in the US back in 1981 and is currently at its lowest level since 1970. Stevenson and Wolfers survey marriage and divorce trends in the US and identify the main drivers of family formation. In their analysis, 'changes in tastes, technology, and the institutional or legal environment have altered the gains from marriage'. See also, Becker, 1981.

from the late 1960s following changes in state laws that reduced the age at which they could legally access oral contraceptives. After these changes the use of the pill rapidly increased among single females. With the introduction of the pill, women were able to think long term with respect to their labour force participation. The pill lowered the costs of making long-term educational investments. It also allowed the postponement of marriage for birth cohorts of the late 1940s.¹¹²

One important consequence of improved birth control technology, combined with a desire to have smaller families, is that many developed countries are now faced with the prospect of an ageing and declining population.¹¹³ As a response to these developments, do you envisage the emergence of a pro-natalist policy stance by many governments?

With growing concerns about demographic ageing of populations in many countries, particularly in Europe, Japan, China and the former Soviet Union, though not in the United States, there are a lot of countries that now have pro-natalist policies even though some are disguised. Fertility rates in the US are still relatively high compared to Europe. However, the US will never adopt pro-natalist policies because of issues having to do with race and ethnicity.

Women's surnames at marriage and beyond

Throughout history, the vast majority of women in the US have taken their husband's surnames after marriage. During the last twenty-five to thirty years, there has been a significant increase in the proportion of college graduating females who decided to retain their surname, although this shift reversed somewhat during the 1990s.¹¹⁴ How do you explain these trends?

¹¹² Fukuyama (1999) notes that 'the main impact of the Pill and the sexual revolution that followed was to alter dramatically calculations about risks of sex and thereby to change *male* behaviour...Since the Pill and abortion permitted women for the first time to have sex without worrying about the consequences, men felt liberated from norms requiring them to look after the women they had gotten pregnant'. See also, Akerlof, Yellen and Katz, 1996, who explain the significant increase in out-of-wedlock first births as a consequence of 'a change in attitudes towards sexual behaviour' induced by the increased availability of contraception to unmarried women and the legalisation of abortion. Legalised abortion in the US followed the Supreme Court decision, *Roe v. Wade*, in 1973.

¹¹³ See United Nations, 2007.

¹¹⁴ See Goldin and Shim, 2004.

We do not have great data on this compared with the Swedes. Among recent cohorts of Swedish women, who actually get married, about one third are keeping their names of origin, which is much higher than in the US. However, in my paper with Maria Shim we sought to estimate the percentage of women who keep their surnames as well as investigate the factors that have led to this trend. We used data from the *New York Times*, Massachusetts Birth Records, and Harvard Alumni Surveys. We found that just less than twenty percent of female college graduates retain their surnames at marriage in the most recent data, whereas the fraction was practically zero around 1970. What caused this change? Legal, social and economic institutions supporting the custom of adopting a husband's surname began to change in the 1970s. The age of first marriage began to increase considerably for female cohorts born in the early 1950s. Between the late 1960s and 1980s the proportion of women continuing their college education in professional and doctoral programmes increased. The use of the pill became widespread. Generally, women were increasingly prepared to plan an independent existence compared to their mother's generation. We believe that during the 1970s and 1980s, an increasing number of women had 'made a name for themselves' in a profession or in business and elected to keep their surnames. Why surname retention declined a bit during the 1990s is unclear.

Reversal of the college gender gap

Since the late 1940s, female college enrolments, relative to males, continuously increased in the US. By around 1980 the college gender gap in enrolments had 'evaporated'.¹¹⁵ This trend continued so that, during the last thirty years, the college gender gap has been reversed. Both female college attendance and completion have surpassed that of males. What factors are mainly responsible for this reversal?

This did not happen overnight, and we have been moving towards the current situation for some time. For much of US history, men and women in the US had been going to college at about the same rate. Then, beginning with cohorts born in the 1920s and 1930s, the proportion of men going to college began to exceed the proportion of women. Around 1947

¹¹⁵ See Goldin, Katz, and Kuziemko, 2006. On the evolution of the US 'Gender Pay Gap', see Blau and Kahn, 2007.

we reached a peak in the gender imbalance of college attendance with men outnumbering women 2.3–1. Then, during the 1950s this gap begins its long downward descent. Why did this happen? First, we should not be surprised that women's college rates are increasing when the returns to going to college are increasing. Second, as we discussed earlier, during the late 1960s and early 1970s, the expectations of young women concerning their life-cycle labour force participation changed. Enabling factors in this transition were the introduction of oral contraceptives, the rise of the feminist movement, and a reduction in gender discrimination supported by government legislation. This still leaves open the question of why females have *surpassed* males in college enrolment and completion since the early 1980s. It was only about four years ago that articles about this first appeared even though these trends did not happen over night. The way I explain the current imbalance is as follows. Over a long period of time the playing field between men and women begins to narrow. Gender barriers in the labour market and elsewhere go down. As these barriers are reduced the differences between boys and girls become more obvious. It was not long ago that Carol Gilligan's book, *In Another Voice*, was highly influential.¹¹⁶ Gilligan decried the fact that girls were treated poorly relative to boys. People began advocating the setting up of single sex schools to give girls a better chance. Overnight this has changed. Now we have a stream of books about how boys are getting left behind. What seems to be happening for teenage boys in general, and particularly for those with lower educational abilities, is that in various ways they develop more slowly than girls. They also have more behavioural problems, and they simply do not get their act together by the time they are sixteen. Having two X chromosomes is an advantage for females. If males had a back-up copy of their X chromosome they would have fewer genetic problems. There is considerable scientific evidence showing that males have a higher incidence of autism, for example. This work is taking us into the biological and psychological sciences. While the US has a pretty good second chance education system, for many boys who reach their twenties, and have not gone to college, it is very difficult for them socially and economically to change direction. Conventional wisdom now is that we should have special classes for boys, and that we should make a greater effort to encourage boys to see

¹¹⁶ See Gilligan, 1977.

the value of education. This would have been heretical even five years ago!

Women in the economics profession

You were the first female tenured Professor at the Harvard Department of Economics. Was that a source of increased pressure on you?

I was also the first female to be tenured at the University of Pennsylvania's Department of Economics. I have never felt isolated. As I said earlier, when I was a child I always wanted to be a scientist and I knew that would take me into a very male dominated field. But that never bothered me and I never considered that being a female would act as a barrier.

What is your assessment of the current standing of women in the economics profession?

The fraction of undergraduate majors in economics is pathetically low, about thirty percent. At the graduate level over the last decade, the proportion of PhDs going to women is between twenty-five to thirty percent.¹¹⁷

Why does economics as a discipline fail to attract more women?

I don't think that we are teaching theory and principles in a way that makes it clear to women, and men, that economics is not just about the stock market and various financial markets. Here at Harvard we have an equal number of men and women who are economic principles students. The exit polls indicate that the women did not like economics much, but that the men enjoyed it. The women then move on and major in something like psychology where the proportions are something like seventy percent women, and thirty percent men. Harvard is pretty much the same as other institutions around the country. Oddly enough, many females go into business majors like accounting. So I think it would be an interesting project for someone to ask why women are not going into economics in more significant numbers.

¹¹⁷ For recent data on women economists in the US, see 'Report of the Committee of the Status of Women in the Economics Profession' (CSWEP) at <http://www.cswep.org>. See also Kahn, 1995.

From 1969 to date, there have been fifty-eight Nobel Prizes in Economics awarded. All the recipients have been men.¹¹⁸ Since 1947, there have been thirty recipients of the John Bates Clark medal. All but one recipient were men.¹¹⁹ In an interview with Robert Lucas, he said that he had expected Joan Robinson to receive the first award in 1969.¹²⁰ Given Joan Robinson's well known critical views of orthodox neoclassical economics, this was a bit of a surprise. Do you think we will see women winning Nobel prizes in the future?

I think I would be a fool to say that the situation will not change if we are looking into an infinite future [*laughter*].

Current research

You are currently involved with the Harvard and Beyond Project.¹²¹ What is that research about?

This project is about getting longitudinal data on the family and career life cycles of men and women who attended and/or graduated from Harvard University. It is similar to the Mellon Foundation's College and Beyond project which uses data from thirty-four institutions of higher education. Our project is part of a broader study looking into the historical evolution of the career and family trajectories of US college men and women.

What other projects are you working on?

Lawrence Katz and I have just finished a book titled, *The Race Between Education and Technology: How America Once Led and Can Win the Race for Tomorrow*.¹²² This includes a lot of the work that we discussed earlier relating to questions such as... How can we explain long-term trends in inequality in America? How should we measure inequality? What sort of data can we use? Why is the US particularly good at turning out educated and skilled people over a long historical period?

¹¹⁸ The total is now 61. The 2007 Nobel Prize in Economics, announced on October 15, was awarded jointly to three men, namely, Leonid Hurwicz, Eric Maskin, and Roger Myerson.

¹¹⁹ See Vane and Mulhearn, 2005, and Appendices I and II.

¹²⁰ See Snowdon and Vane, 2005.

¹²¹ For details, go to: <http://kuznets.fas.harvard.edu/~goldin/harvardandbeyond.html>.

¹²² See Goldin and Katz, 2007.

Appendix 1

The Nobel Prize in Economics Sciences and John Bates Clark Medal: 1947–2007

Year	John Bates Clark Medal	Nobel Prize
1947	Paul A. Samuelson	
1949	Kenneth E. Boulding	
1951	Milton Friedman	
1953	No Award	
1955	James Tobin	
1957	Kenneth J. Arrow	
1959	Lawrence R. Klein	
1961	Robert M. Solow	
1963	Hendrik S. Houthakker	
1965	Zvi Griliches	
1967	Gary S. Becker	
1969	Marc L. Nerlove	Ragnar Frisch and Jan Tinbergen
1970		Paul A. Samuelson
1971	Dale W. Jorgenson	Simon Kuznets
1972		Kenneth J. Arrow and John R. Hicks
1973	Franklin M. Fisher	Wassily Leontief
1974		Gunnar Myrdal and Friedrich A. Von Hayek
1975	Daniel McFadden	Leonid V. Kantorovich and Tjalling Koopmans
1976		Milton Friedman
1977	Martin S. Feldstein	Bertil Ohlin and James E. Meade
1978		Herbert A. Simon
1979	Joseph E. Stiglitz	Arthur Lewis and Theodore W. Schultz
1980		Lawrence R. Klein
1981	Michael A. Spence	James Tobin
1982		George J. Stigler
1983	James J. Heckman	Gerard Debreu
1984		Richard Stone
1985	Jerry A. Hausman	Franco Modigliani
1986		James M. Buchanan
1987	Sandford J. Grossman	Robert M. Solow
1988		Maurice Allais
1989	David M. Kreps	Trygve Haavelmo
1990		Harry M. Markowitz, Merton M. Miller and W. F. Sharpe
1991	Paul R. Krugman	Ronald H. Coase
1992		Gary S. Becker
1993	Lawrence H. Summers	Robert W. Fogel and Douglass C. North
1994		John Harsanyi, John F. Nash and Reinhard Selten

(continued)

Year	John Bates Clark Medal	Nobel Prize
1995	David Card	Robert Lucas
1996		James A. Mirrlees and William Vickrey
1997	Kevin M. Murphy	Robert C. Merton and Myron S. Scholes
1998		Amartya Sen
1999	Andrei Shleifer	Robert A. Mundell
2000		James J. Heckman and Daniel McFadden
2001	Mathew Rabin	George A. Akerlof, Michael A. Spence and Joseph E. Stiglitz
2002		Daniel Kahneman and Vernon Smith
2003	Steven Levitt	Clive Granger and Robert F. Engle
2004		Finn Kydland and Edward Prescott
2005	Daron Acemoglu	Thomas Schelling and Robert J. Aumann
2006		Edmund Phelps
2007	Susan Athey	Leonid Hurwicz, Eric Maskin and Roger Myerson

Source: <http://nobelprize.org>; American Economic Association.

Appendix 2

All Nobel Laureates, 1901–2007

Category	Number of Nobel Laureates
Physics	180 persons (2 female)
Chemistry	150 persons (3 female)
Physiology/Medicine	189 persons (7 female)
Literature	104 persons (11 female)
Peace	96 persons (12 female + 20 organisations)
Economics	61 persons (0 female)
Total *	799 (34 female)

*Marie Curie and Linus Pauling were awarded a Nobel Prize in two different categories. Four other Nobel Laureates (both persons and organizations) received the Nobel Prize more than once in their respective categories. Source: <http://nobelprize.org>

References

Abramovitz, M., and P. David (2001), 'Two Centuries of American Macroeconomic Growth: From Exploitation of Resource Abundance to Knowledge Driven Development', *Stanford Institute for Economic Policy Research Discussion Paper*, No. 01–05.

Acemoglu, D., and J. Robinson (2006), *Economic Origins of Dictatorship and Democracy*, Cambridge: Cambridge University Press.

Acemoglu, D., S. Johnson, and J. Robinson (2001), 'The Colonial Origins of Comparative Development: An Empirical Investigation', *American Economic Review*, September.

Aidt, T. S. (2003), 'Economic Analysis of Corruption: A Survey', *Economic Journal*, November.

Akerlof, G. A., J. Yellen, and L. Katz (1996), 'An Analysis of Out-of-Wedlock Childbearing in the United States', *Quarterly Journal of Economics*, May.

Alesina, A., and E. L. Glaeser (2004), *Fighting Poverty in the US and Europe: A World of Difference*, Oxford: Oxford University Press.

Alesina, A., R. Di Tella, and R. McCulloch (2004), 'Inequality and Happiness: Are Europeans and Americans Different?', *Journal of Public Economics*, August.

Baumol, W. J. (2002), *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*, Princeton: Princeton University Press.

Baumol, W. J., R. E. Litan, and C. J. Schramm (2007), *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*, New Haven: Yale University Press.

Beard, C. A. and M. R. Beard (1930), *The Rise of American Civilisation*, New York: Macmillan.

Becker, G. S. (1957), *The Economics of Discrimination*, Chicago: Chicago University Press.

Becker, G. S. (1964), *Human Capital*, Chicago: Chicago University Press.

Becker, G. S. (1981), *A Treatise on the Family*, Cambridge, Mass.: Harvard University Press.

Bhagwati, J. (2004), *In Defense of Globalization*, Oxford: Oxford University Press.

Bhaskar, V., and B. Gupta (2007), 'India's Missing Girls: Biology, Customs, and Economic Development', *Oxford Review of Economic Policy*, Vol. 23, No. 7.

Black, S., and E. Brainerd (2002), 'Importing Equality? The Impact of Globalisation on Gender Discrimination', *National Bureau of Economic Research Working Paper*, No. 9110, August.

Blackaby, D., and J. Frank, (2000), 'Ethnic and Other Minority Representation in UK Academic Economics', *Economic Journal*, June.

Blackaby, D., A. Booth, and J. Frank (2005), 'Outside Offers and the Gender Pay Gap: Empirical Evidence from the UK Academic Labour Market', *Economic Journal*, February.

Blau, F. D., and L. M. Kahn (2004), 'Understanding International Differences in the Gender Pay Gap', *Journal of Labour Economics*, Vol. 21, No. 1.

Blau, F. D., and L. M. Kahn (2007), 'The Gender Pay Gap', *Economists' Voice*, June, www.bepress.com/ev

Blaug, M. (1985), *Great Economists Since Keynes*, Cambridge: Cambridge University Press.

Blaug, M. (1986), *Great Economists Before Keynes*, Cambridge: Cambridge University Press.

Bloom, D., D. Canning, G. Fink, and J. E. Finlay (2007), 'Fertility, Female Labour Force Participation, and the Demographic Dividend', *National Bureau of Economic Research Working Paper*, No. 13583, November.

Bombardieri, M. (2005), 'Harvard Women's Group Rips Summers', *Boston Globe*, January 19.

Booth, A. L., J. Burton, and K. Mumford (2000), 'The Position of Women in UK Academic Economics', *The Economic Journal*, June.

Bordo, M. D., C. Goldin, and E. N. White (1998), *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*, Chicago: University of Chicago Press.

Broadberry, S. (1998), 'How Did the United States and Germany Overtake Britain? A Sectoral Analysis of Comparative Productivity Levels', *Journal of Economic History*, June.

Broadberry, S., and D. A. Irwin (2006), 'Labour Productivity in the United States and the United Kingdom During the Nineteenth Century', *Explorations in Economic History*, April.

Buvinic, M., and E. M. King (2007), 'Smart Economics', *Finance and Development*, June.

Cain, L. P., J. S. Lyons, and S. H. Williamson (eds.) (2007), *Reflections on the Cliometric Revolution: Conversations With Economic Historians*, London: Routledge.

Caplan, B. (2000), 'What Makes People Think Like Economists? Evidence on Economic Cognition from the *Survey of Americans and Economists on the Economy*', *Journal of Law and Economics*, October.

Case, A., and A. Menendez (2007), 'Sex Differences in Obesity Rates in Poor Countries: Evidence from South Africa', *National Bureau of Economic Research Working Paper*, No. 13541, October.

Cawley, J., and F. Liu (2007), 'Maternal Employment and Childhood Obesity: A Search for Mechanisms in Time Series Data', *National Bureau of Economic Research Working Paper*, No. 13600, November.

Chattopadhyay, R., and E. Duflo (2004), 'Women as Policymakers: Evidence from a Randomised Policy Experiment in India', *Econometrica*, September.

Coclanis, P., and D. Carlton (2001), 'The Crisis in Economic History', *Challenge*, November–December.

CSWEP (2006), 'Report of the Committee on the Status of Women in the Economics Profession', <http://www.cswep.org>

DeLong, J. B., C. Goldin, and L. Katz (2003), 'Sustaining US Economic Growth', in H. Aaron, J. Lindsay and P. Nivola (eds), *Agenda for the Nation*, Washington D.C.: Brookings Institution Press.

Dimand, R., M. A. Dimand, and E. L. Forget (eds.) (2000), *A Biographical Dictionary of Women Economists*, Cheltenham: Edward Elgar.

Dimand, R. W., E. L. Forget, and C. Nyland (2004), 'Gender in Classical Economics', *Journal of Economic Perspectives*, Winter.

Drago, R. (2007), *Striking a Balance: Work, Family, Life*, Boston: Dollars and Sense.

Emani, Z. (2000), 'Joan Robinson', in R. W. Dimand *et al.* (eds) *A Biographical Dictionary of Women Economists*, Cheltenham: Edward Elgar.

Fagerberg, J., M. Srholec, and M. Knell (2007), 'The Competitiveness of Nations: Why Some Countries Prosper While Others Fall Behind', *World Development*, October.

Feiwel, G. R. (ed.) (1989), *Joan Robinson and Modern Economic Theory*, Houndsmill: Macmillan.

Ferrie, J., and J. Long (2003), 'Labour Mobility', in Joel Mokyr (ed.), *The Oxford Encyclopedia of Economic History*, New York: Oxford University Press.

Fogel, R. W. (1994), 'Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Growth Processes on the Making of Economic Policy', *American Economic Review*, June.

Fogel, R. W. (1999), 'Catching Up With the Economy', *American Economic Review*, March.

Fogel, R. W. (2004a), 'Health Nutrition and Economic Growth', *Economic Development and Cultural Change*, April.

Fogel, R. W. (2004b), *The Escape from Hunger and Premature Death, 1700–2100*, Cambridge: Cambridge University Press.

Fogel R. W., and S. L. Engerman (1971), 'The Relative Efficiency of Slavery: A Comparison of Northern and Southern Agriculture in 1860', *Explorations in Economic History*, Spring.

Fogel, R. W., and S. L. Engerman (1974), *Time on the Cross, The Economics of American Negro Slavery*. Boston: Little, Brown and Company.

Friedan, B. (1963), *The Feminine Mystique*, New York: W. W. Norton.

Fukuyama, F. (1999), *The Great Disruption: Human Nature and the Reconstruction of Social Order*, London: Profile Books.

Galor, O. (2005), 'From Stagnation to Growth: Unified Growth Theory', in P. Aghion and S. Durlauf (eds), *Handbook of Economic Growth*, Amsterdam: Elsevier.

Gentzkow, M., E. L. Glaeser, and C. Goldin (2006), 'The Rise of the Fourth Estate: How Newspapers Became Informative and Why it Mattered', in E. L. Glaeser and C. Goldin (eds) (2006), *Corruption and Reform: Lessons from America's History*, Chicago: Chicago University Press.

Georgiadis, A., and A. Manning (2007), 'Royal Economic Society Survey on the Gender and Ethnic Balance of Academic Economics', April, <http://www.res.org>

Gilligan, C. (1977), *In Another Voice*, Cambridge, Mass.: Harvard University Press.

Ginther, D. K., and S. Kahn (2004), 'Women in Economics: Moving Up or Falling Off the Ladder?', *Journal of Economic Perspectives*, Summer.

Glaeser, E. L., and C. Goldin (eds) (2006), *Corruption and Reform: Lessons from America's History*, Chicago: Chicago University Press.

Goldin, C. (1973), 'The Economics of Emancipation', *Journal of Economic History*, March.

Goldin, C. (1975a), 'A Model to Explain the Relative Decline of Urban Slavery', in S. Engerman and E. Genovese (eds), *Race and Slavery in the Western Hemisphere*, Princeton: Princeton University Press.

Goldin, C. (1975b), 'Cities and Slavery: The Issue of Compatibility', in L. Schnore (ed.), *The New Urban History*, Princeton: Princeton University Press.

Goldin, C. (1977), 'Female Labour Force Participation: The Origin of Black and White Differences, 1870 and 1880', *Journal of Economic History*, March.

Claudia Goldin interviewed by Brian Snowdon

Goldin, C. (1980), 'The Work and Wages of Single Women: 1870–1920', *Journal of Economic History*, March.

Goldin, C. (1984), 'The Historical Evolution of Female Earnings Functions and Occupations', *Explorations in Economic History*, January.

Goldin, C. (1989), 'Life Cycle Labour Force Participation of Married Women: Historical Evidence and Implications', *Journal of Labour Economics*, January.

Goldin, C. (1990), *Understanding the Gender Gap: An Economic History of American Women*, New York: Oxford University Press.

Goldin, C. (1991), 'The Role of World War II in the Rise of Women's Employment', *American Economic Review*, September.

Goldin, C. (1995a), 'Cliometrics and the Nobel', *Journal of Economic Perspectives*, Spring.

Goldin, C. (1995b), 'The U-Shaped Female Labour Force Function in Economic Development and Economic History', in T. P. Schultz (ed.), *Investment in Women's Human Capital and Economic Development*, Chicago: Chicago University Press.

Goldin, C. (1995c), 'The Changing Role of Women: A Quantitative Approach', in R. Whaples and D. C. Betts (eds), *Historical Perspectives on the American Economy*, Cambridge: Cambridge University Press.

Goldin, C. (1997), 'Exploring the "Present Through the Past": Career and Family Across the Last Century', *American Economic Review*, May.

Goldin, C. (1999), 'Egalitarianism and Returns to Education During the Great Transformation of American Education', *Journal of Political Economy*, December.

Goldin, C. (2001), 'The Human Capital Century and American Leadership: Virtues of the Past', *Journal of Economic History*, June.

Goldin, C. (2002), 'A Pollution Theory of Discrimination: Male and Female Occupations and Earnings', *National Bureau of Economic Research Working Paper*, No. 8985, June.

Goldin, C. (2004a), 'Interview with Claudia Goldin', *The Region*, September.

Goldin, C. (2004b), 'From the Valley to the Summit: The Quiet Revolution That Transformed Women's Work', *National Bureau of Economic Research Working Paper*, No. 10335, March.

Goldin, C. (2004c), 'The Gender Gap', in D. Henderson (ed.), *Fortune Encyclopedia of Economics*, New York: Scribners and Sons.

Goldin, C. (2005), 'From the Valley to the Summit: A Brief History of the Quiet Revolution that Transformed Women's Work', *Federal Reserve Bank of Boston Regional Review*, Vol. 14, No. 3.

Goldin, C. (2006), 'The Quiet Revolution That Transformed Women's Employment, Education, and Family', *American Economic Review*, May.

Goldin, C., and L. Katz (1999), 'The Returns to Skill in the United States Across the Twentieth Century', *National Bureau of Economic Research Working Paper*, No. 7126, May.

Goldin, C., and L. F. Katz (2000), 'Career and Marriage in the Age of the Pill', *American Economic Review*, May.

Goldin, C., and L. Katz (2001a), 'The Legacy of US Educational Leadership: Notes on Distribution and Economic Growth in the Twentieth Century', *American Economic Review*, May.

Goldin, C., and L. Katz (2001b), 'Decreasing (and Then Increasing) Inequality in America: A Tale of Two Half Centuries', in F. Welsh (ed.), *The Causes and Consequences of Increasing Inequality*, Chicago: Chicago University Press.

Goldin, C., and L. Katz (2002), 'The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions', *Journal of Political Economy*, August.

Goldin, C., and L. Katz (2003), 'The "Virtues" of the Past: Education in the First Hundred Years of the New Republic', *National Bureau of Economic Research Working Paper*, No. 9958, September.

Goldin, C., and L. Katz (2005), 'Summers Is Right', *Boston Globe*, January 23.

Goldin, C., and L. Katz (2007), 'The Race Between Education and Technology: The Evolution of U.S. Educational Wage Differentials, 1890–2005', *National Bureau of Economic Research Working Paper*, No. 12984, March.

Goldin, C., and F. Lewis (1975), 'The Economic Cost of the American Civil War: Estimates and Implications', *Journal of Economic History*, June.

Goldin, C., and R. Margo (1992), 'The Great Compression: The US Wage Structure at Mid-Century', *Quarterly Journal of Economics*, February.

Goldin, C., and M. Shim (2004), 'Making a Name: Women's Surnames at Marriage and Beyond', *Journal of Economic Perspectives*, Spring.

Goldin, C., and K. Sokoloff (1984), 'The Relative Productivity Hypothesis of Industrialisation: The American Case, 1820–1850', *Quarterly Journal of Economics*, August.

Goldin, C., L. Katz, and I. Kuziemko (2006), 'The Homecoming of American College Women: The Reversal of the College Gender Gap', *Journal of Economic Perspectives*, Fall.

Gratton, L. *et al.* (2007a), *Innovative Potential: Women and Men in Teams*, Lehman Brothers Centre For Women, London: London Business School.

Gratton, L., and L. Walker (2007b), 'Gender Equality: A Solid Business Case at Last', *Financial Times*, October 29.

Greer, G. (1970), *The Female Eunuch*, London: Paladin.

Hacker, L. (1940), *The Triumph of American Capitalism*, New York: Simon and Schuster.

Harcourt, G. C. (1995), 'Obituary: Joan Robinson 1903–1983', *Economic Journal*, September.

Harvard Magazine (2005a), 'Tenure and Gender', *Harvard Magazine*, January–February.

Harvard Magazine (2005b), 'Gender Gap', *Harvard Magazine*, March–April.

Hatton, T. J., and J. G. Williamson (2005), *Global Migration and the World Economy, Two Centuries of Policy Performance*, Cambridge, Mass.: MIT Press.

Hausmann, R., L. D. Tyson, and S. Zahidi (2006), *The Global Gender Gap Report 2006*, World Economic Forum, Geneva.

Hausmann, R., L. D. Tyson, and S. Zahidi (2007), *The Global Gender Gap Report 2007*, World Economic Forum, Geneva.

Hewitson, G. J. (1999), *Feminist Economics: Interrogating the Masculinity of Rational Economic Man*, Cheltenham: Edward Elgar.

Hoffman, F., and P. Oreopoulos (2007), 'A Professor Like Me: The Influence of Instructor Gender on College Achievement', *National Bureau of Economic Research Working Paper*, No. 13182, June.

Horrell, S. (2003), 'The Wonderful Usefulness of History', *Economic Journal*, February.

Hughes, J., and L. P. Cain (2003), *American Economic History*, Sixth Edition, New York: Addison Wesley.

Humphries, J. (ed.) (1995), *Gender and Economics*, Cheltenham: Edward Elgar.

- Ishada, J., and H. Nosaka (2007), 'Gender Specialisation of Skill Acquisition', *The Berkeley Electronic Journal of Economic Analysis and Policy*, Vol. 7, No. 1.
- Jain, A. K. (2001), 'Corruption: A Review', *Journal of Economic Surveys*, January.
- Kahn, S. (1995), 'Women in the Economics Profession', *Journal of Economic Perspectives*, Fall.
- Khan, Z., and K. L. Sokoloff (1993), 'Schemes of Practical Utility: Entrepreneurship and Innovation Among the Great Inventors in the United States, 1790–1865', *Journal of Economic History*, June.
- Khan, Z., and K. L. Sokoloff (2001), 'The Early Development of Intellectual Property Institutions in the United States', *Journal of Economic Perspectives*, Summer.
- Klassen, S., and C. Wink (2003), 'Missing Women: Revisiting the Debate', *Feminist Economics*, Vol. 9, No. 2/3.
- Lamoreaux, N., and J. Rosenthal (2006), 'Corporate Governance and the Plight of Minority Share Holders in the United States Before the Great Depression', in E. L. Glaeser and C. Goldin (eds) (2006), *Corruption and Reform: Lessons from America's History*, Chicago: Chicago University Press.
- Landes, D. S. (1998), *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor*, New York: W. W. Norton.
- Lewis, M. A., and M. E. Lockheed (2007), 'Getting All Girls into Schools', *Finance and Development*, June.
- Lucas, R. E., Jr. (2001), 'The Industrial Revolution: Past and Future', in R. E. Lucas Jr., *Lectures on Economic Growth*, Cambridge, Mass.: Harvard University Press.
- Lundberg, S., and R. A. Pollack (2007), 'The American Family and Family Economics', *Journal of Economic Perspectives*, Spring.
- Mavin, S., P. Bryans, and T. Waring (2004), 'Unlearning Gender Blindness: New Directions in Management Education', *Management Decision*, Vol. 42, No. 3/4.
- Morley, L. (1994), 'Glass Ceiling or Iron Cage: Women in UK Academia', *Gender, Work and Organisation*, October.
- Nelson, R. R., and G. Wright (1992), 'The Rise and Fall of American Technological Leadership: The Post-War Era in Historical Perspective', *Journal of Economic Literature*, December.
- Niederle, M., and L. Vesterlund (2007), 'Do Women Shy Away From Competition? Do Men Compete Too Much?', *Quarterly Journal of Economics*, August.

- North, D. C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.
- North, D. C. (2005), *Understanding the Process of Economic Change*, Princeton: Princeton University Press.
- Odih, P. (2007), *Gender and Work in Capitalist Economies*, Maidenhead: McGraw-Hill.
- Polkinghorn, B., and D. Thomson (1998), *Adam Smith's Daughters*, Cheltenham: Edward Elgar.
- Postrel, V. (2005), 'Some Economists Say that the President of Harvard Talks Just Like One of Them', *New York Times*, February 24.
- Prados de la Escosura, L. (2000), 'International Comparisons of Real Product, 1820–1890', *Explorations in Economic History*, January.
- Romer, C. D. (1993), 'The Nation in Depression', *Journal of Economic Perspectives*, Spring.
- Romer, P. M. (1996), 'Why, Indeed, in America? Theory, History, and the Origins of Modern Economic Growth', *American Economic Review*, May.
- Rosenberg, N. (1994), *Exploring the Black Box: Technology, Economics and History*, Cambridge: Cambridge University Press.
- Rothstein, M. G., and L. M. Davey (1995), 'Gender Differences in Network Relationships in Academia', *Women in Management Review*, Vol. 10, No. 6.
- Sen, A. K. (1992), 'Missing Women', *British Medical Journal*, Vol. 304.
- Shorto, R. (2004), *The Island at the Center of the World: The Epic Story of Dutch Manhattan and the Forgotten Colony that Shaped America*, New York: Doubleday.
- Siegried, J. J. (2007), 'Trends in Undergraduate Economics Degrees, 1991–2006', *Journal of Economics Education*, Summer.
- Skouras, T. (1981), 'The Economics of Joan Robinson', in J. R. Shackleton and G. Locksley (eds), *Twelve Contemporary Economists*, London: Macmillan.
- Snowdon, B. (2002), *Conversations on Growth Stability and Trade: An Historical Perspective*, Cheltenham: Edward Elgar.
- Snowdon, B. (2006), 'The Enduring Elixir of Economic Growth: Xavier Sala-i-Martin on the Wealth and Poverty of Nations', *World Economics*, Vol. 7, No. 1 (January–March).

- Snowdon, B. (2007a), *Globalisation, Development and Transition: Conversations With Eminent Economists*, Cheltenham: Edward Elgar.
- Snowdon, B. (2007b), 'The Power of Ideas: Joel Mokyr on the Intellectual Origins of the Industrial Revolution and Modern Economic Growth', *World Economics*, Vol. 8, No. 3 (July–September).
- Snowdon, B., and G. Stonehouse (2006), 'Competitiveness in a Globalised World: Michael Porter on the Microeconomic Foundations of the Competitiveness of Nations, Regions, and Firms', *Journal of International Business Studies*, March.
- Snowdon, B., and H. R. Vane (2005), *Modern Macroeconomics: Its Origins, Development and Current State*, Cheltenham: Edward Elgar.
- Sokoloff, K. (1988), 'Inventive Activity in Early Industrial America: Evidence from Patent Records', *Journal of Economic History*, December.
- Stearns, P. N. (1998), 'Why Study History?', *American Historical Association*, www.historians.org/pubs/Free/WhyStudyHistory.htm
- Stevenson, B., and J. Wolfers (2007), 'Marriage and Divorce: Changes and Their Driving Forces', *Journal of Economic Perspectives*, Spring.
- Summers, L. H. (1992), 'The Most Influential Investment', *Scientific American*, August.
- Summers, L. H. (2005), 'Remarks at NBER Conference on Diversifying the Science and Engineering Workforce', <http://president.harvard.edu/speeches>
- Tanzi, V. (1998), 'Corruption Around the World: Causes, Consequences, Scope and Cures', *IMF Staff Papers*, December.
- Trower, C. A., and R. P. Chait (2002), 'Faculty Diversity: Too Little for Too Long', *Harvard Magazine*, March–April.
- Turner, M. S. (1989), *Joan Robinson and the Americans*, London: M. E. Sharpe.
- United Nations (1995), *Gender and Human Development*, New York: United Nations.
- United Nations (2006), *Human Development Report*, New York: United Nations.
- United Nations (2007), *World Population Prospects: The 2006 Revision*, United Nations Population Division.
- Vane, H. R., and C. Mulhearn (2005), *The Nobel Memorial Laureates in Economics: An Introduction to Their Careers and Works*, Cheltenham: Edward Elgar.

Ward, M., and J. Devereux (2003), 'Measuring British Decline: Direct Versus Long-Span Income Measures', *Journal of Economic History*, September.

Weichselbaumer, D., and R. Winter-Eber (2005), 'A Meta-analysis on the International Gender Wage Gap', *Journal of Economic Surveys*, Vol. 19, No. 3.

Weichselbaumer, D., and R. Winter-Ebmer (2007), 'International Gender Wage Gaps', *Economic Policy*, April.

Weil, D. (2007), 'Accounting for the Effect of Health on Economic Growth', *Quarterly Journal of Economics*, August.

Whaples, R. (1995), 'Where is there Consensus among American Economic Historians? The Results of a Survey on Forty Propositions', *Journal of Economic History*, March.

Williamson, J. G. (2004), *The Political Economy of World Mass Migration: Comparing Two Global Centuries*, Washington DC: American Enterprise Institute Press.

Wolf-Wendel, L., and K. Ward (2006), 'Academic Life and Motherhood: Variations by Institutional Type', *Higher Education*, October.

World Bank (2001), *Engendering Development*, New York: Oxford University Press.

World Bank (2007), 'Promoting Gender Equality and Women's Empowerment', in *Global Monitoring Report*, New York: Oxford University Press.

Worthington, A., and H. Higgs (2004), 'Factors Explaining the Choice of An Economics Major', *International Journal of Social Economics*, Vol. 31, No. 5/6.

Wright, G. (1990), 'The Origins of American Industrial Success, 1879–1940', *American Economic Review*, September.