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## CONFERENCE REPORTS

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### *ESRC Quantitative Economic History Study Group 1985 Conference at University College, Cardiff*

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#### I. INTRODUCTION

The Conference was held at University College, Cardiff on September 6th and 7th 1985, with 31 participants. The papers were grouped around four themes, which provided the basis of four sessions on Interwar Britain, XIXth Century Economic Development, the Climacteric and Demographic History.

#### II. INTERWAR BRITAIN

The Conference opened with a paper by Sue Bowden on "Regional Household Income and the Market for Consumer Durables in the 1930's: Some Further Explorations". The paper fell into two parts, describing the derivation of estimates of average household income on a regional basis, and the use of these estimates to examine the link between income and consumer durables during the 1930's. Variations in average household income were shown to help explain the regional dispersion of household electric cooker ownership.

The discussion centred around both aspects of the paper. Dealing first with the regional income estimates, Nick Crafts was worried by the apparently slow growth of income between 1932 and 1937, and pointed out some marked differences between towns within regions, as well as between regions. In the construction of the estimates, Bill Kennedy was concerned about the assumptions about female participation and unemployment, while Nick Von Tunzelmann suggested the use of Census of Production data on employment. Turning to modelling the relationship between income and electric cooker ownership, Peter Andrews suggested the use of a logit specification, since the dependent variable (the proportion of households with an electric cooker) was constrained

to lie between 0 and 1. Paddy Geary suggested the inclusion of a lagged dependent variable in an attempt to capture a crude permanent income specification, while Rolf Dumke stressed the need to consider both spatial and temporal aspects of the diffusion of consumer durables.

Kent Matthews closed the first session with a paper entitled "Could Lloyd George Have Done It? The Pledge Re-examined". A New Classical econometric model of Interwar Britain was estimated, based on the assumptions of rational expectations and market clearing. Simulation results were then reported for bond financed and money financed deficits of the order of magnitude suggested by Lloyd George in 1929. Matthews suggests that although a bond financed deficit would have had little impact, a money financed deficit would have permanently reduced unemployment by about one million. However, whereas in Keynesian models, such a boost to employment comes about through a boost to aggregate demand, Matthews' model relies on a boost to aggregate supply. The money financed deficit increases unanticipated inflation, which reduces the real wage so long as unemployment benefits are not index linked. This fall in the real wage boosts employment.

In the discussion, Nick Crafts was concerned by the high natural rate of unemployment in Matthews' model, since the key determinants stressed by Matthews such as union power and unemployment benefits were not unusually high during this period compared with the 1970's, when unemployment was much lower. Steve Broadberry was worried by the effects of the simulations on aggregate demand with a rise in unanticipated inflation leading to a rise in consumption, and a rise in wealth leading to a fall in money demand. James Foreman-Peck, Nick Von Tunzelmann and Dudley Baines were all sceptical about the supply side effects in the simulations, which relied on the falling real wage to affect competitiveness and thus to boost exports. It was suggested that such a boost to exports was not feasible during the Great Depression with the growth of protection and bilateral agreements.

### III. XIXTH CENTURY ECONOMIC DEVELOPMENT

Nick Crafts gave a paper on "British Economic Growth 1700-1850: Some Difficulties of Interpretation", in which he looked at some of the issues raised by new quantitative work on the Industrial Revolution. In particular, unresolved differences between the recent books of Crafts and Williamson were aired. These included the reasons for slow growth prior to 1820, the pattern of sectoral productivity growth, the role of the terms of trade, and the state of the standard of living debate. On the first point, Crafts accuses Williamson of exaggerating the role of crowding out during the Revolutionary and Napoleonic Wars, while on the second point he argues that Williamson's conclusions on unbalanced growth between agriculture and industry are better regarded as assumptions than conclusions. Thirdly, Crafts argues that Williamson's assumption that Britain was a small country and could take the terms of trade as given, is

unwarranted at this time. Fourthly, Crafts argues that Williamson has been too optimistic in his assertions over the improvement in working class living standards; in particular, attempts to quantify the importance of changing quality of life have so far ignored leisure.

During the discussion, James Foreman-Peck felt that under-counting of non-market output during the XVIIIth century might be leading to an over-statement of growth later on. Kent Matthews supported Crafts' scepticism on the importance of crowding out by pointing out that Britain was a net importer of capital at this time. Rolf Dumke agreed with Crafts on the importance of the terms of trade, arguing further that growth elsewhere was important to prevent a deterioration in the terms of trade as Britain increased her output of manufacturers. Ian Gazeley was worried by Williamson's use of an additive utility function when making allowances for the quality of life.

The second paper on the nineteenth century, by Peter Wardley, looked at "Modelling Aspects of British Extractive Industries". This paper began by pointing out an error in the implementation of a FIML estimation procedure in a paper by Hirsch and Hausman on the coal industry. The estimation period was not shortened to allow the generation of lagged values, which were therefore set to zero by the computer programme. Correcting for this error substantially alters the results. The second part of the paper replicates the Hirsch and Hausman study for the Cleveland ironstone mining industry. Particular interest is focussed on the possibility of a backward sloping labour supply function, which Wardley confirms. Wardley then goes on to model the diffusion of power drilling and ratchet drilling technology, concluding that there was no evidence of entrepreneurial failure here.

The discussion centred mainly around Wardley's controversial finding of a backward sloping labour supply curve in the Cleveland ironstone industry. Trevor Boyns suggested that the data seemed to fall naturally into two parts, with productivity rising before 1890 and falling thereafter, so that it would be useful to test for stability; in a paper presented at an earlier ESRC QEH Study Group Conference he had found that the Hirsch and Hausman conclusions were substantially altered by such a change of sample period. Boyns was also worried by the absence of a variable for days worked, which was an important determinant of productivity in the coal industry at this time. Ian Gazeley felt that the cost of living index used by Wardley to deflate wages was very poor, being based on interpolation between a limited number of observations. Steve Broadberry felt that the dynamics were poorly specified. In particular, a negative relationship between productivity and the real wage is not possible in the long run in an economy with some degree of substitutability and competition, although a short run negative relationship is quite possible. Turning to the issue of diffusion and entrepreneurship Nick Von Tunzelman suggested experimentation with other models of diffusion besides the logistic curve.

The second session was brought to a close by Rolf Dumke, looking at "Urban Inequality in Wilhelmine Germany". Using data on 45 Prussian cities in

1901, Dumke finds evidence to support the Kuznets inverse-U path of income inequality over time, in line with recent work in the U.S. Further, Dumke finds that changes in capital's share of income were an important factor in explaining household income inequality, thus suggesting that the human capital model of personal income inequality may be inadequate for explanations of historical urban inequality.

In the discussion, Steve Broadberry suggested that the regression with the top 5% of households' share of total income as the dependent variable should be estimated in logit form, since this variable can only vary between 0 and 1. Jim Oeppen suggested that the wide range of measures used to represent inequality might be usefully combined using multidimensional scaling, as an alternative to regressing each measure on the explanatory variables in turn. Nick Von Tunzelmann was worried by the possibility of widespread simultaneity between the variables; for example, higher income can buy a better education.

#### IV. THE CLIMACTERIC

The third session produced two papers on the same topic, the climacteric in XIXth century Britain. Solomos Solomou, in "The Edwardian Climacteric: Fact or Artefact?" argues that the climacteric is a statistical artefact. The output measure of national income shows a relatively smooth growth path from the middle of the nineteenth century to the outbreak of World War I, while the income and expenditure estimates fluctuate, but in different ways. Putting the three series together to create Feinstein's compromise estimate of GDP produces a series which exhibits a slowing down of growth after 1899. Solomou interprets the growth variation in the income and expenditure series as evidence of a Kuznets swing pattern, but with disagreement between the series on the phasing, and the climacteric as a statistical artefact obtained by averaging the series.

David Greasley, in "British Economic Growths: The Paradox of the 1880's and the Timing of the Climacteric" concentrates on the income estimate of GDP, in an attempt to improve on Feinstein's estimate. When Greasley's new income series to produce a revised compromise estimate, Greasley finds no evidence of a climacteric, but his results do support the idea of a Great Depression during 1873-89.

Since the two papers were so closely related, they were discussed together. Rolf Dumke questioned the use of fixed weights in some of the Feinstein series. With different growth rates in different sectors, the assumption of constant weights could lead to misleading aggregate results. Nick Crafts also questioned the assumptions on which the Feinstein calculation of service sector output were based. James Foreman-Peck was worried by changes in classification over time, which may bias the Feinstein series. Dealing specifically with the Greasley corrections to the income series, Bill Kennedy questioned the use of Metropolitan police pay in the calculation of service sector income, suggesting that this

gave an upward bias to the series. Steve Broadberry noted the importance of the terms of trade in generating differences between the output based and income or expenditure based estimates. This suggested that simply averaging the three measures may not be appropriate.

## V. DEMOGRAPHIC HISTORY

The final session began with a paper by Jim Oeppen entitled "How Optimal are Wrigley and Schofield's Population Estimates for Early-Modern England?". In the light of recent advances in demographic theory and solution methods, Wrigley and Schofield's "back projection" can be shown to be equivalent to Lee's "inverse projection" if the latter is opened to net migration. Oeppen reformulates the Wrigley-Schofield method in the light of this "new synthesis" using optimal control methods. This approach is tentatively called "generalised inverse projection". The method is tested on Swedish and Norwegian data where the population is known. Finally, some revised Wrigley and Schofield estimates are produced for England.

In the discussion, Nick Crafts asked whether the new estimates were superior to the old Wrigley and Schofield estimates. Oeppen preferred to see his work as exploring possibilities rather than providing definitive new estimates. He was careful to stress that the Wrigley and Schofield numbers should be treated as estimates and not as data. Oeppen was particularly interested in suggestions for links between demographic and economic information. Dudley Baines was worried about the discrepancy between the amount of effort put into obtaining population estimates and the rather patchy use of doubtful economic series for pre-industrial England. Bill Kennedy suggested further investigation of the link between grain prices and marriage and fertility.

The final paper of the conference was presented by Paddy Geary. This was based on joint work with Cormac O Grada on "Immigration to the United States in the Nineteenth and Twentieth Centuries: Time Series and Structural Approaches". The first part of the paper looked at a structural approach to modelling migration, building upon the general equilibrium approach of Williamson. In particular, the relationship between migration and wage differentials was stressed. The second part of the paper looked at the relation between immigration and the real wage in the host country, using time series analysis. Granger-causality tests indicate that immigration lowered the real wage in the host country, but there was no causation running from the real wage to immigration.

Dudley Baines began the discussion with a dose of scepticism about the data and the value of aggregate studies of migration. He felt that the gross migration data, based on ship passengers without cabins, were unreliable, that net migration rates could not be ascertained since return migration was not measured, and that migration was between a region of one country to a region of another country so that aggregate national data were misleading. John Latham was also

worried by the possibility of overland immigration to the United States from Mexico and the possibility of unrecorded Chinese immigration. Turning to aspects of the modelling of migration, Steve Broadberry felt that the two studies could have been brought together to provide a dynamic structural model, since the time series analysis demonstrated the importance of lags in the migration process. Bob Milward was worried by the possibility of immigration of indentured labour, since wage differential would hardly have been a key factor here. Rolf Dumke suggested that the problem of return migration could be alleviated by the use of dummy variables, since different national groups moved predominantly at different times, and had different rates of return to their home countries.