Stephen James Leybourne

Contact Details

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University Education

1982-85	University of Leeds, BA Economics, Class I.
1985-86	London School of Economics, MSc Econometrics and Mathematical Economics.
1986-89	University of Leeds, PhD Econometrics.

Academic Positions

1986-89	Temporary lecturer in Econometrics, University of Leeds.
1989-95	Lecturer in Econometrics, University of Nottingham.
1993	Visiting Professor, Faculty of Commerce, University of British Columbia.
1995-99	Reader in Econometrics, University of Nottingham.
1999-	Professor of Econometrics, University of Nottingham.
2002	Visiting Professor, Department of Economics, University of Melbourne.

Publications in Refereed Journals

1. "On the distribution of some test statistics for coefficient constancy", *Biometrika*, 1989, 76, 1, 169-77. (with B. McCabe)

2. "Testing for coefficient constancy in random walk models with particular reference to the starting value problem", *Empirical Economics,* 1989, 14, 105-12. (with B.McCabe)

3. "Trends and cycles in British industrial production, 1700-1913", *Journal of the Royal Statistical Society Ser. A*, 1989, 152, 1, 43-60. (with N. Crafts and T. Mills)

4. "The climacteric in late Victorian Britain and France: A reappraisal of the evidence", *Journal of Applied Econometrics*, 1989, 4, 103-17. (with N. Crafts and T. Mills)

5. "Measurement of trend growth in European industrial output before 1914: methodological issues and new estimates", *Explorations in Economic History*, 1990, 27, 442-67. (with N. Crafts and T. Mills)

6. "A simple test for parameter constancy in a nonlinear time series regression model", *Economics Letters*, 1992, 38, 157-62. (with B. McCabe)

7. "Estimation and testing of time-varying coefficient regression models in the presence of linear restrictions", *Journal of Forecasting*, 1993, 12, 49-62.

8. "Empirical performance of the AIDS model: constant coefficient versus time-varying coefficient approaches", *Applied Economics*, 1993, 25, 453-63.

9. "Testing for parameter variation in nonlinear regression models", *Journal of the Royal Statistical Society Ser. B*, 1993, 55, 1, 133-44. (with B. McCabe)

10. "A simple test for cointegration", *Oxford Bulletin of Economics and Statistics*, 1994, 56, 1, 97-103. (with B. McCabe)

11. "A consistent test for a unit root", *Journal of Business and Economic Statistics*, 1994, 12, 2, 157-66. (with B. McCabe)

12. "Testing for unit roots: a simple alternative to Dickey-Fuller", *Applied Economics*, 1994, 26, 721-9.

13. "An optimal test for multiple coefficient variation in the linear regression model", *Pakistan Journal of Statistics*, 1994, 10, 2, 359-74. (with B. McCabe)

14. "The excess co-movement of commodity prices revisited", *World Development*, 1994, 22, 11, 1747-58. (with G. Reed and T. Lloyd)

15. "Testing for unit roots using forward and reverse Dickey-Fuller regressions", *Oxford Bulletin of Economics and Statistics*, 1995, 57, 4, 559-71.

16. "Can economic time series be differenced to stationarity ?", *Journal of Business and Economic Statistics*, 1996, 14, 4, 435-46. (with B. McCabe and A. Tremayne)

17. "Randomized unit root processes for modelling and forecasting financial time series: theory and applications", *Journal of Forecasting*, 1996, 15, 253-70. (with B. McCabe and T. Mills)

18. "A parametric approach to testing the null of cointegration", *Journal of Time Series Analysis*, 1997, 18, 4, 395-413. (with B. McCabe and Y. Shin)

19. "Testing the equality of prediction mean squared errors", *International Journal of Forecasting*, 1997, 13, 281-91. (with P. Newbold and D. Harvey)

20. "Modelling growth (and liberalization) using smooth transitions analysis", *Economic Inquiry*, 1997, 35, 4, 798-814. (with D. Greenaway and D. Sapsford)

21. "Unit roots and smooth transitions", *Journal of Time Series Analysis*, 1998, 19, 1, 83-97. (with P. Newbold and D. Vougas)

22. "Tests for forecast encompassing", *Journal of Business and Economic Statistics*, 1998, 16, 2, 254-59. (with P. Newbold and D. Harvey)

23. "On estimating an ARMA model with an MA unit root", *Econometric Theory*, 1998, 14, 326-38. (with B. McCabe)

24. "Spurious rejections by Dickey-Fuller tests in the presence of a break under the null", *Journal of Econometrics*, 1998, 87, 191-203. (with P. Newbold and T. Mills)

25. "On the size properties of Phillips-Perron tests", *Journal of Time Series Analysis*, 1999, 20, 51-61. (with P. Newbold)

26. Detecting seasonal unit roots", *The Manchester School*, 1999, 67, 3, 261-86. (with R. Taylor)

27. "Mean reversion of real exchange rates in high inflation countries", *Southern Economic Journal*, 1999, 65, 839-54. (with M. Bleaney and P. Mizen)

28. "Modified stationarity tests with data dependent model selection rules", *Journal of Business and Economic Statistics*, 1999, 17, 264-70. (with B. McCabe)

29. "Understanding the disinflations in Australia, Canada and New Zealand using evidence from smooth transition analysis", *Journal of International Money and Finance*, 1999, 18, 799-816. (with P. Mizen)

30. "The behaviour of Dickey-Fuller and Phillips-Perron tests under the alternative hypothesis", *The Econometrics Journal*, 1999, 92-106. (with P. Newbold)

31. "Forecast evaluation tests in the presence of ARCH", *Journal of Forecasting*, 1999, 18, 435-45. (with P. Newbold and D. Harvey)

32. "Unit roots and asymmetric smooth transitions", *Journal of Time Series Analysis*, 1999, 20, 671-77. (with R. Sollis and P. Newbold)

33. "Smooth transitions and GDP growth in the European Union", *The Manchester School*, 2000, 68, 145-65. (with D. Greenaway and D. Sapsford)

34. "Stochastic unit roots modelling of stock market indices", *Applied Financial Economics*, 2000, 10, 311-15. (with P. Newbold and R. Sollis)

35. "Spurious rejections by Perron tests in the presence of a misplaced or second break under the null", *Oxford Bulletin of Economics and Statistics*, 2000, 62, 433-444. (with T. Kim and P. Newbold)

36. "Behaviour of the standard and symmetric Dickey-Fuller type tests when there is a break under the null hypothesis", *The Econometrics Journal*, 2000, 3, 1-15. (with P. Newbold)

37. "Behaviour of Dickey-Fuller t-tests when there is a break under the alternative hypothesis", *Econometric Theory*, 2000, 16, 779-789. (with P. Newbold)

38. "U.S. and U.K. interest rates 1890 - 1934: new evidence on structural breaks", *Journal of Money, Credit and Banking*, 2001, 33, 235-250. (with P. Newbold, R. Sollis and M. Wohar)

39. "Trend stationarity, difference stationarity, or neither: further diagnostic tests with an application to U.S. real GNP, 1875-1993", *Journal* of *Economics and Business*, 2001, 53, 85-102. (with P. Newbold and M. Wohar)

40. "Analysis of a panel of UK Macroeconomic forecasts", *The Econometrics Journal*, 2001, 4, s37-s55 (with P. Newbold and D. Harvey)

41. "IO unit root tests with an endogenously determined break in level", *Oxford Bulletin of Economics and Statistics*, 2001, 63, 559-575. (with D. Harvey and P. Newbold)

42. "Unit root tests with a break in innovation variance", *Journal of Econometrics*, 2002, 109, 365-387. (with T. Kim and P. Newbold)

43. "Seasonal unit root tests with seasonal mean shifts", *Economics Letters*, 2002, 76, 295-302. (with D. Harvey and P. Newbold)

44. "A direct test for cointegration between a pair of time series", *Journal of Time Series Analysis*, 2002, 23, 173-191. (with T. Kim, P. Newbold and D. Vougas)

45. "Tests for symmetric and asymmetric nonlinear mean reversion in real exchange rates", *Journal* of Money*, Credit and Banking*, 2002, 34, 686-700. (with P. Newbold and R. Sollis)

46. "Stochastic cointegration: estimation and inference", *Journal of Econometrics*, 2002, 111, 363-384. (with D. Harris and B. McCabe)

47. "How great are the great ratios", *Applied Economics*, 2003, 35, 163-177. (with D. Harvey and P. Newbold)

48. "Real exchange rate dynamics: a re-examination", *The Manchester School*, 2003, 71, 156-171. (with M. Bleaney)

49. "Seasonal unit root tests based on forward and reverse estimation", *Journal of Time Series Analysis*, 2003, 24 441-460. (with R. Taylor)

50. "Spurious rejections by cointegration tests induced by structural breaks", *Applied Economics*, 2003, 35, 1117-1121. (with P. Newbold)

51. "Some limit theory for autocovariances whose order depends on sample size", *Econometric Theory*, 2003, 19, 829-864. (with D. Harris and B. McCabe)

52. "Tests for a change in persistence against the null of difference-stationarity", *The Econometrics Journal*, 2003, 6, 291-311. (with T. Kim, P. Newbold and V. Smith)

53. "Tests for a break in level when the order of integration is unknown", *Oxford Bulletin of Economics and Statistics*, 2004, 66, 133-146. (with D. Harvey and P. Newbold)

54. "More powerful panel data unit root tests with an application to mean reversion in real exchange rates", *Journal* of *Applied Econometrics*, 2004, 19, 147-170. (with T. Kim, P. Newbold and V. Smith)

55. "On tests for changes in persistence", *Economics Letters*, 2004, 84, 107-115. (with R. Taylor)

56. "Asymptotic MSFE when an autoregression with linear trend is fitted to data generated by an I(0) or I(1) process", *Journal of Time Series Analysis*, 2004, 25, 583-602. (with T. Kim and P. Newbold)

57. "Behaviour of Dickey-Fuller unit root tests under trend misspecification", *Journal of Time Series Analysis*, 2004, 25, 755-764. (with T. Kim and P. Newbold)

58. "Some new tests for a change in persistence", *Economics Bulletin*, 2004, 3, 1-10. (with R. Taylor).

59. "Examination of some more powerful modifications of the Dickey-Fuller test", *Journal of Time Series Analysis*, 2005, 26, 355-369. (with T. Kim and P. Newbold)

60. "On testing for unit roots and the initial observation", *The Econometrics Journal*, 2005, 8, 97-111. (with D. Harvey).

61. "More powerful modifications of unit root tests allowing structural change", *Journal of Statistical Computation and Simulation*, 2005, 75, 869-888. (with T. Kim and P. Newbold)

62. "Panel stationarity tests for purchasing power parity with cross-sectional dependence", *Journal of Business and Economic Statistics*, 2005, 23, 395-409. (with D. Harris and B. McCabe)

63. "On robust trend function hypothesis testing", *Studies in Nonlinear Dynamics and Econometrics*, 2006, 10, 1-25. (with D. Harvey and R. Taylor)

64. "Unit root test power and the initial condition", *Journal of Time Series Analysis*, 2006, 27, 739-752. (with D. Harvey)

65. "Modified tests for a change in persistence", *Journal of Econometrics*, 2006, 134, 441-469. (with D. Harvey and R. Taylor)

66. "Regression based tests for a change in persistence", *Oxford Bulletin of Economics and Statistics*, 2006, 68, 595-621. (with T. Kim and R. Taylor)

67. "A residual-based test for stochastic cointegration", *Econometric Theory*, 2006, 22, 429-456. (with D. Harris and B. McCabe)

68. "Persistence change tests and shifting stable autoregressions", *Economics Letters*, 2006, 91, 44-49. (with T. Kim and R. Taylor)

69. "Testing for time series linearity", *The Econometrics Journal*, 2007, 10, 149-165. (with D. Harvey).

70. "A simple, robust and powerful test of the trend hypothesis", *Journal of Econometrics*, 2007, 141, 1302-1330. (with D. Harvey and R. Taylor)

71. "Modified KPSS tests for near integration", *Econometric Theory*, 2007, 23, 355-363. (with D. Harris and B. McCabe)

72. "CUSUM of squares-based tests for a change in persistence", *Journal of Time Series Analysis*, 2007, 3, 408-433. (with T. Kim and R. Taylor)

73. "Detecting multiple changes in persistence", *Studies in Nonlinear Dynamics and Econometrics*, 2007, 11, Article 2. (with T. Kim and R. Taylor)

74. "A more powerful modification of Johansen's cointegration tests", *Applied Economics*, 2007, 40,725-729. (with T. Kim and P. Newbold)

75. "Testing for long memory", *Econometric Theory*, 2008, 01, 143-175. (with D. Harris and B. McCabe)

76. "Seasonal unit root tests and the role of initial conditions", *The Econometrics Journal*, 2008, 11, 409-442. (with D. Harvey and R. Taylor)

77. "A powerful test of linearity when the order of integration is unknown", *Studies in Nonlinear Dynamics and Econometrics*, 2008,12, Article 3. (with D. Harvey and B. Xiao)

78. "Unit root testing in practice: dealing with uncertainty over the trend and initial condition", *Econometric Theory*, 2009, 25, 587-636. (with D. Harvey and R. Taylor)

79. Rejoinder to commentaries on "Unit root testing in practice: dealing with uncertainty over the trend and initial condition", *Econometric Theory*, 2009, 25, 658-667. (with D. Harvey and R. Taylor)

80. "Simple, robust and powerful test of the breaking trend hypothesis", *Econometric Theory*, 2009, 25, 995-1029. (with D. Harvey and R. Taylor)

81. "Testing for a unit root in the presence of a possible break in trend", *Econometric Theory*, 2009, 25, 1545-1588. (with D. Harvey, D. Harris and R. Taylor)

82. “The research interests of Paul Newbold”, *Econometric Theory*, 2009, 25, 1460-1465. (with C. Granger)

83. “Local asymptotic power of the IPS panel unit root test and the impact of initial observations”, *Econometric Theory*, 2010, 26, 311-324. (with D. Harvey, D. Harris and N. Sakkis)

84. “Robust methods for detecting multiple level breaks in autocorrelated time series”, *Journal of Econometrics*, 2010, 157, 342-358. (with D. Harvey and R. Taylor)

85. “The impact of the initial condition on robust tests for a linear trend”, *Journal of Time Series Analysis*, 2010, 31, 292-302. (with D. Harvey and R. Taylor)

86. “Testing for nonlinear deterministics when the order of integration is unknown”, *Journal of Time Series Analysis*, 2010, 31, 379-391 (with D. Harvey and B. Xiao)

87. “Testing for unit roots and the impact of quadratic trends, with an application to relative primary commodity prices” *Econometric Reviews*, 2011, 30, 514-547. (with D. Harvey and R. Taylor)

88. “Testing for unit roots in the presence of a possible break in trend and non-stationary volatility”, *Econometric Theory*, 2011, 27, 957-991. (with G. Cavaliere, D. Harvey and R. Taylor)

89. “Unit root testing under a local break in trend”, *Journal of Econometrics*, 2012, 167, 140-167. (with D. Harvey and R. Taylor)

90. “Testing for a unit roots in the presence of uncertainty over both the trend and initial condition”, *Journal of Econometrics*, 2012, 162, 188-195. (with D. Harvey and R. Taylor)

91. “An infimum coefficient unit root test allowing for an unknown break in trend”, *Economics Letters*, 2012, 117, 298-302. (with D. Harvey)

92. “On the behaviour of fixed-b trend break tests under fractional integration”, *Econometric Theory*, 2013, 29, 393-418. (with F. Iacone and R. Taylor)

93. “Testing for unit roots in the possible presence of multiple trend breaks using minimum Dickey-Fuller Statistics”, *Journal of Econometrics*, 2013, 177, 265-284. (with D. Harvey and R. Taylor)

94. “Testing for a break in trend when the order of integration is unknown”, *Journal of Econometrics*, 2013, 176, 30-45. (with F. Iacone and R. Taylor)

95. “Unit root testing under a local break in trend using partial information on the break date”, *Oxford Bulletin of Economics and Statistics*, 2014, 76, 93-111. (with D. Harvey and R. Taylor)

96. “On infimum Dickey-Fuller unit root tests allowing for a trend break under the null”, *Computational Statistics and Data Analysis*, 2014, 78, 235-242. (with D. Harvey and R. Taylor)

97. “A Fixed-b test for a break in level at an unknown time under fractional integration”, *Journal of Time Series Analysis*, 2014, 35, 40-54. (with F. Iacone and R. Taylor)

98. “Asymptotic behaviour of tests for a unit root against an explosive alternative”, *Economics Letters*, 2014, 122, 64-68. (with D. Harvey)

99. “Break date estimation for models with deterministic structural change”, *Oxford Bulletin of Economics and Statistics*, 2014, 76, 623-642. (with D. Harvey)

100. “Robust tests for a linear trend with an application to equity indices”, *Journal of Empirical Finance*, 2014, 29, 168-185. (with S. Astill, D. Harvey and R. Taylor)

101. Recursive right-tailed unit root tests for an explosive asset price bubble”, *Journal of Financial Econometrics*, 2015, 13,166-187. (with D. Harvey and R. Sollis)

102. “Testing for unit roots under multiple possible trend breaks and non-stationary volatility using bootstrap minimum Dickey-Fuller statistics”, *Journal of Time Series Analysis*, 2015, 36, 603-629. (with G. Cavaliere, D. Harvey and R. Taylor)

103. “Robust and powerful tests for nonlinear deterministic components”, *Oxford Bulletin of Economics and Statistics*, 2015, 77, 780-799. (with S. Astill, D. Harvey and R. Taylor)

104. "Confidence sets for the date of a break in level and trend when the order of integration is unknown", *Journal of Econometrics*, 2015, 184, 262-279. (with D. Harvey)

105. “Tests for explosive financial bubbles in the presence of non-stationary volatility”, *Journal of Empirical Finance*, 2016, 38, 548-574. (with D. Harvey, R. Sollis and R. Taylor)

106. "Tests of the co-integration rank in VAR models in the presence of a possible break in trend at an unknown point", *Journal of Econometrics*, 2016, 192, 451-467. (with D. Harris and R. Taylor)

107. "Improving the length of confidence sets for the date of a break in level and trend when the order of integration is unknown", *Economics Letters*, 2016, 145, 239-245. (with D. Harvey)

108. "The Impact of the initial condition on covariate augmented unit toot tests", *Journal of Time Series Econometrics*, 2017, 9 (1). (with D. Harvey and C. Aristidou)

109. "Testing for a change in mean under fractional integration", *Journal of Time Series Econometrics*, 2017, 9 (1). (with F. Iacone and R. Taylor)

110. “Tests for an end-of-sample bubble in financial time series”, *Econometric Reviews*, 2017, 36, 651-666.(with S. Astill, D. Harvey and R. Taylor)

111. "Improving the accuracy of asset price bubble start and end date estimators", *Journal of Empirical Finance*, 2017, 40, 121-138. (with D. Harvey and R. Sollis)

112. "Forecast evaluation tests and negative long-run variance estimates in small samples", *International Journal of Forecasting*, 2017, 33, 833-847. (with D. Harvey and E. Whitehouse)

113. "Testing for a unit root against ESTAR stationarity", *Studies in Nonlinear Dynamics and Econometrics*, 2017, 22. (with D. Harvey and E. Whitehouse)

114. "Testing for parameter instability in predictive regression models", *Journal of Econometrics*, 2018, 204, 101-118. (with D. Harvey, I. Georgiev and R. Taylor)

115. "Real-time monitoring for explosive financial bubbles", *Journal of Time Series Analysis*, 2018, 39, 863-891. (with S. Astill, D. Harvey, R. Sollis and R. Taylor)

116. "Testing explosive bubbles with time-varying volatility", *Econometric Reviews*, 38, 2019, 1131-1151. (with D. Harvey and Y Zu)

117. "Testing the order of fractional integration of a time series in the possible presence of a trend break at an unknown point", *Econometric Theory*, 2019, 35, 1201-1223. (with F. Iacone and R. Taylor)

118. "A bootstrap stationarity test for predictive regression invalidity", *Journal of Business and Economic Statistics*, 2019, 37, 528-541. (with D. Harvey, I. Georgiev and R. Taylor)

119. "Sign-based unit root tests for explosive financial bubbles in the presence of deterministically time-varying volatility", *Econometric Theory*, 2020, 36, 122-169. (with D. Harvey and Y. Zu)

Books

1. Applied General Equilibrium Modelling: Applications, Limitations and Future Developments, HMSO, 1994. (with D. Greenaway, G. Reed and J. Whalley)

2. Recent Developments in Time Series, Edward Elgar, 2003. (with P. Newbold)

Contributions to Edited Volumes

1. "Testing for coefficient constancy in random walk models with particular reference to the starting value problem" in Econometrics of Structural Change, W. Kramer ed., Physica-Verlag, 1989. (with B.McCabe)
2. "Britain" in Patterns of European Industrialization: The Nineteenth Century, R. Sylla and G. Toniolo eds., Routledge, 1991. (with N. Crafts and T. Mills)
3. "The excess co-movement of commodity prices revisited" in The Economics of Primary Commodities: Models, Analysis and Policy, D. Sapsford and W. Morgan eds., Edward Elgar, 1994. Reprinted in The Economics of Commodity Markets, D. Greenaway and W. Morgan eds., Edward Elgar, 1996. (with G. Reed and T. Lloyd)
4. "Trade liberalization and growth" in Gobalization, Growth and Sustainability, S. Gupta and N. Choudhry eds., Kluwer, 1997. (with D. Greenaway and D. Sapsford)
5. "Evaluating trade liberalization using smooth transition models" in Evaluating Economic Liberalization, M. McGillivray and O. Morrissey eds., Macmillan, 1998. (with D. Greenaway and D. Sapsford)
6. "Ranking competing multi-step forecasts" in Cointegration, Causality and Forecasting. A Festschrift in Honour of Clive W.J. Granger, R.F. Engle and H. White eds., Oxford, 1999. (with P. Newbold and D. Harvey)
7. "Tests for forecast encompassing" in Economic Forecasting Vol II, T. Mills ed., Edward Elgar, 1999. (with P. Newbold and D. Harvey)
8. "A general method for testing for parameter variation in statistical models" in Innovations in Multivariate Statistical Analysis. A Festschrift for Hand Neudecker, R. Heijmans, D. Pollock and A. Satorra eds., Kluwer, 2000. (with B. McCabe)
9. "Modified stationarity tests with data dependent model selection rules" in Recent Developments in Time Series, Edward Elgar, 2003. (with B. McCabe)

Research Supervision

Robert Taylor (M Phil, awarded 1996)
David Harvey (PhD, awarded 1998)
Robert Sollis (PhD, awarded 1999)
Vanessa Smith (PhD, awarded 2003)
Bin Xiao (PhD, awarded 2007)
Nikos Sakkis (PhD, awarded 2010)
Oron Daihes (PhD, awarded 2012)
Chrystalleni Aristidou (PhD, awarded 2015)
Emily Whitehouse (PhD, awarded 2017)

Andria Evripidou (PhD, awarded 2019)

Journal Responsibilities

Associate Editor, Journal of Time Series Analysis, 2003-2014
Associate Editor, Journal of Time Series Econometrics, 2014-
Associate Editor, Quantitative and Qualitative Analysis in Social Sciences, 2006-

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Seminar Presentations

London School of Economics, University of Warwick, University of York, University of Oxford, University of Southampton,University of Cambridge, University of Birmingham, University of Exeter, University of Sheffield, University of Western Ontario, University of British Columbia, University of California, San Diego, University of Sydney, Australian National University, Monash University, University of Melbourne, University of Newcastle, University of Durham, University of Alicante, University of Leeds, University of Nicosia, Bank of Italy/University of Rome, University of Liverpool, Yonsei University, University of Bath

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External Examining

University of Oxford, University of York, University of Southampton, London School of Economics, University of Birmingham, University of Leicester, University of Cambridge, University of Mauritius, University of Bristol.

Refereeing Activity

Journal of Econometrics, Economic Journal, The Manchester School, Journal of The Royal Statistical Society (A), Journal of Forecasting, International Journal of Forecastin, Journal of Business and Economic Statistics, Oxford Bulletin of Economics and Statistics, Journal of Applied Econometrics, Journal of Empirical Finance, Bulletin of Economic Research, The World Economy, Applied Economics, Econometric Reviews, The Econometrics Journal, Empirical Economics, Journal of Macroeconomics, International Economic Journal, Journal of International Economics, Econometric Theory, Journal of Money, Credit and Banking, The Economic Record, Journal of Time Series Analysis, Review of Economic Studies, The American Journal of Agricultural Economics

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Research Income

£17000 from HM Treasury to review possible applications of CGE models in various areas of micro-economics, 1992. (with D. Greenaway and G. Reed)

£4600 from the Nuffield Foundation to study the modelling of economic growth using smooth transition models, 1994.

£22000 from the Leverhulme Trust to research econometric issues in the analysis of efficiency in futures and forward markets, 1997. (with P. Newbold, A. Rayner and C. Ennew)

£78000 from the ESRC to investigate unit root tests in the presence of trend breaks and non-stationary volatility, 2009. (with D. Harvey and R. Taylor) *Rated Outstanding.*