

Analysis of Panel Data, Third Edition

This book provides a comprehensive, coherent, and intuitive review of panel data methodologies that are useful for empirical analysis. Substantially revised from the second edition, it includes two new chapters on modeling cross-sectionally dependent data and dynamic systems of equations. Some of the more complicated concepts have been further streamlined. Other new material includes correlated random coefficient models, pseudo-panels, duration and count data models, quantile analysis, and alternative approaches for controlling the impact of unobserved heterogeneity in nonlinear panel data models.

Cheng Hsiao is Professor of Economics at the University of Southern California and adjunct professor at Xiamen University. He received his PhD in Economics from Stanford University. He has worked mainly in integrating economic theory with econometric analysis. Professor Hsiao has made extensive contributions in methodology and empirical analysis in the areas of panel data, time series, cross-sectional data, structural modeling, and measurement errors, among other fields. He is the author of the first two editions of *Analysis of Panel Data* and was a co-editor of the *Journal of Econometrics* from 1991 to 2013.

Econometric Society Monographs

Editors:

Professor Donald W. K. Andrews, Yale University
Professor Jeffrey C. Ely, Northwestern University

The Econometric Society is an international society for the advancement of economic theory in relation to statistics and mathematics. The Econometric Society Monograph series is designed to promote the publication of original research contribution of high quality in mathematical economics and theoretical and applied econometrics.

Other Titles in the Series:

- G. S. Maddala, *Limited dependent and qualitative variables in econometrics*, 780521241434, 9780521338257
- Gerard Debreu, *Mathematical economics: Twenty papers of Gerard Debreu*, 9780521237369, 9780521335614
- Jean-Michel Grandmont, *Money and value: A reconsideration of classical and neoclassical monetary economics*, 9780521251419, 9780521313643
- Franklin M. Fisher, *Disequilibrium foundations of equilibrium economics*, 9780521378567
- Andreu Mas-Colell, *The theory of general equilibrium: A differentiable approach*, 9780521265140, 9780521388702
- Truman F. Bewley, Editor, *Advances in econometrics – Fifth World Congress (Volume I)*, 9780521467261
- Truman F. Bewley, Editor, *Advances in econometrics – Fifth World Congress (Volume II)*, 9780521467254
- Hervé Moulin, *Axioms of cooperative decision making*, 9780521360555, 9780521424585
- L. G. Godfrey, *Misspecification tests in econometrics: The Lagrange multiplier principle and other approaches*, 9780521424592
- Tony Lancaster, *The econometric analysis of transition data*, 9780521437899
- Alvin E. Roth and Marilda A. Oliviera Sotomayor, Editors, *Two-sided matching: A study in game-theoretic modeling and analysis*, 9780521437882
- Wolfgang Härdle, *Applied nonparametric regression*, 9780521429504
- Jean-Jacques Laffont, Editor, *Advances in economic theory – Sixth World Congress (Volume I)*, 9780521484596
- Jean-Jacques Laffont, Editor, *Advances in economic theory – Sixth World Congress (Volume II)*, 9780521484602
- Halbert White, *Estimation, inference and specification*, 9780521252805, 9780521574464
- Christopher Sims, Editor, *Advances in econometrics – Sixth World Congress (Volume I)*, 9780521444590, 9780521566100
- Christopher Sims, Editor, *Advances in econometrics – Sixth World Congress (Volume II)*, 9780521444606, 9780521566094
- Roger Guesnerie, *A contribution to the pure theory of taxation*, 9780521629560
- David M. Kreps and Kenneth F. Wallis, Editors, *Advances in economics and econometrics – Seventh World Congress (Volume I)*, 9780521589833
- David M. Kreps and Kenneth F. Wallis, Editors, *Advances in economics and econometrics – Seventh World Congress (Volume II)*, 9780521589826
- David M. Kreps and Kenneth F. Wallis, Editors, *Advances in economics and econometrics – Seventh World Congress (Volume III)*, 9780521580137, 9780521589819

Continued on page following the index

Analysis of Panel Data

Third Edition

Cheng Hsiao

University of Southern California



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS

32 Avenue of the Americas, New York, NY 10013-2473, USA

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107657632

© Cheng Hsiao 1986, 2003, 2014

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First edition published 1986

Second edition 2003

Third edition 2014

Printed in the United States of America

A catalog record for this publication is available from the British Library.

Library of Congress Cataloging in Publication Data

Hsiao, Cheng, 1943–

Analysis of panel data / Cheng Hsiao. – Third edition.

pages cm. – (Econometric society monographs)

Includes bibliographical references and index.

ISBN 978-1-107-03869-1 (hardback) – ISBN 978-1-107-65763-2 (paperback)

1. Econometrics. 2. Panel analysis. 3. Analysis of variance. I. Title.

HB139.H75 2014

330.01'5195–dc23 2014006652

ISBN 978-1-107-03869-1 Hardback

ISBN 978-1-107-65763-2 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.