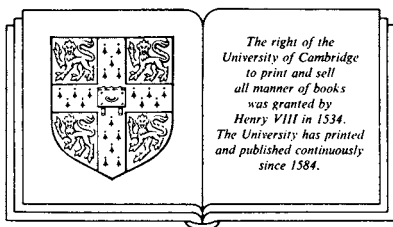


STRUCTURE AND SCALE IN THE ROMAN ECONOMY

RICHARD DUNCAN-JONES

Fellow of Gonville and Caius College, Cambridge



CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

NEW YORK PORT CHESTER

MELBOURNE SYDNEY

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK
40 West 20th Street, New York NY 10011-4211, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain
Dock House, The Waterfront, Cape Town 8001, South Africa
<http://www.cambridge.org>

© Cambridge University Press 1990

This book 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 published 1990
First paperback edition 2002

A catalogue record for this book is available from the British Library

Library of Congress Cataloguing in Publication data

Duncan-Jones, Richard.

Structure and scale in the Roman economy / Richard Duncan-Jones.

p. cm.

Bibliography.

ISBN 0 521 35477 3

1. Rome – Economic conditions. I. Title.

HC39.D886 1900

330.937-dc20 89-7345 CIP

ISBN 0 521 35477 3 hardback

ISBN 0 521 89289 9 paperback

CONTENTS

<i>List of figures</i>	<i>page</i>	ix
<i>List of tables</i>		xi
<i>Preface</i>		xiii
<i>List of abbreviations</i>		xv
Introduction		i
PART I TIME AND DISTANCE		5
1 Communication-speed and contact by sea in the Roman empire		7
2 Trade, taxes and money		30
3 Separation and cohesion in Mediterranean trade		48
4 Stability and change		59
PART II DEMOGRAPHY AND MANPOWER		77
5 Age-awareness in the Roman world		79
6 Roman life-expectancy		93
7 Pay and numbers in Diocletian's army		105
PART III AGRARIAN PATTERNS		119
8 Land and landed wealth		121
9 The price of wheat in Roman Egypt		143
PART IV THE WORLD OF CITIES		157
10 The social cost of urbanisation		159
11 Who paid for public building?		174

PART V TAX-PAYMENT AND TAX-ASSESSMENT	185
12 Taxation in money and taxation in kind	187
13 Land, taxes and labour: implications of the <i>iugum</i>	199
<i>Appendices</i>	211
1 Coin-hoard statistics	211
2 Dated building evidence	213
3 Totals of dated papyri by regnal year	214
4 Small army units and garrisons under the late Empire	214
5 Existing interpretations of the Beatty figures	220
6 The <i>iugum</i> in Epiphanius	222
<i>Bibliography</i>	223
<i>Index</i>	234

FIGURES

1	Time-lapse in days between emperor's death and first Egyptian evidence of his successor (examples showing seasonality)	page 10
2	Time-lapse in days between emperor's death and first Egyptian evidence of his successor (counter-seasonal evidence)	11
3	Time-lapse in days between death of emperor and first Egyptian evidence of his successor (plotted by year)	12
4	Time-lapse in days between sending-date and date of receipt of edicts sent to Africa, AD 313–414 (n = 17)	19
5	Time-lapse in days between sending-date and date of receipt of edicts sent to Africa, AD 313–414 (n = 17) (shown by year)	20
6	Time-lapse in days between sending-date and date of receipt of edicts sent to Italy from Illyricum, AD 319–359	23
7	Spain: emperor-dated inscriptions per reign-year (<i>CIL</i> II)	60
8	Syria: inscriptions per reign-year dated by local era (AD 14–217)	61
9	Italy: building dedications per reign-year (imperialy financed building excluded) (Jouffroy data)	62
10	Italy: imperialy financed building dedications per reign-year (Jouffroy data)	62
11	Lepcis Magna: dedications per reign-year (<i>IRT</i>)	63
12	Sabratha: dedications per reign-year (<i>IRT</i>)	64
13	Thugga: building dedications per reign-year	65
14	Volume of Egyptian documentation by ten-year periods, AD 2–281 (Bureth): citations of the emperor dated by year	68
15	Documentation in Egypt: number of documents (approximations by Julian year)	69
16	Volume of Egyptian documentation under Hadrian (approximations by Julian year)	70

17	Volume of Egyptian documentation under Antoninus Pius (approximate totals by Julian year)	70
18	Volume of Egyptian documentation under Marcus Aurelius (approximate totals by Julian year)	71
19	Annual denarius-output, AD 161–179: Marcus Aurelius (graph A) and Lucius Verus (graph B) (coin-totals from Reka-Devnia hoard)	74
20	Tombstone age-reporting: male ages of death in the Cirtan colonies	82
21	Ligures Baebiani: estate-values (N = 57)	131
22	Veleia: estate-values (private estates) (N = 46)	132
23	Overlapping sector of estate-values at Ligures Baebiani and Veleia: Ligures Baebiani	133
24	Overlapping sector of estate-values at Ligures Baebiani and Veleia: Veleia	134
25	Volcei: farm-units (N = 36)	135
26	Lamasba: units of water-entitlement (N = 78)	136
27	Magnesia: units of ownership (N = 67)	137
28	Hermopolis: estate-areas (N = 198)	139
29	Rulings by emperors in extant legal sources: average number per reign-year	169

TABLES

1	'Last appearance' and 'first appearance' in Egypt (AD 54–222)	page 9
2	'Counter-seasonal' fast timings	10
3	Arrival of news analysed by zone within Egypt	13
4	Last appearances in Egyptian documents shown by place of death of emperor	15
5	Double-dated edicts sent to governors of Africa	18
6	Edicts sent to the governors of Egypt and Africa	22
7	Transit-time (days) in the double-dated edicts: summary	23
8	Average time-lapse for news reaching Venice <i>c.</i> 1500	25
9	Emperors with known date of death (AD 54–222): latest reign-datings in Egyptian sources	27
10	Time-interval between earliest Egyptian reign-dating and death of previous emperor (AD 54–235)	28
11	Representation of Trajan <i>RIC</i> 147 in different hoards	41
12	Distribution of signed lamps	50
13	Spearman correlations between distribution of six signed lamp-marques in ten regions north of the Mediterranean	51
14	Spearman correlations between six signed lamp-marques in ten regions north of the Mediterranean	53
15	Representations of FORTIS indexed to its representation at Aquileia	55
16	Diffusion of 'southern' marques	57
17	Inter-annual variation in the volume of emperor-dated documents	71
18	Lycian funerary inscriptions by date (AD 162–171)	73
19	Denarius-totals at Reka-Devnia in 'low-output' years under Marcus (AD 161–169)	75
20	Age-reporting by Aurelius Isidorus	80
21	Other conflicting age-declarations in Egypt	80
22	Age-heaping by individual Egyptians who declare their age	81

23	Ages ending in 5 as a proportion of ages ending in 0 (range 23–82)	82
24	Male social differences	84
25	Female social differences	84
26	Age-rounding by freedmen and slaves	85
27	Sex-differences in age-rounding by region	86
28	Sex-variation in age-rounding within smaller groups	87
29	Regional variation in Roman age-rounding from funerary records	87
30	Local variation in citizen age-rounding in Africa and Numidia	89
31	African age-rounding in the largest local sample in each zone	89
32	Age-rounding in later European evidence (ages 23–62)	90
33	Age-rounding and illiteracy in twentieth-century censuses	90
34	Correlation between coefficients for age-rounding and illiteracy	91
35	Survival-rates in Ulpian	97
36	Implied survival-rates at standard age-thresholds	97
37	Median life-expectancy I	98
38	Median life-expectancy II	99
39	Ulpian's figure compared with two model life-tables: median life-expectancy at specific ages	99
40	Median life-expectancy at age twenty	102
41	Revised interpretation of payments in <i>P Beatty Panop</i> 1–2	112
42	Estate-sizes and component-valuations at Veleia	127
43	Land-registers illustrating differentiation of property-sizes	130
44	Gini coefficient related to sample-size	140
45	Overall area and the largest estates	141
46	Wheat prices by century (private transactions in lower Egypt)	146
47	Number of surviving legal citations per reign	169
48	Financing of dated town buildings in Africa	184
49	Manning-ratios in Roman agricultural writers	206
50	Some units in the <i>Notitia</i> and their fort sizes	217
51	A.H.M. Jones's interpretation of the Beatty payments	218

Introduction

This book explores central areas of the Roman economy, and ways in which they connect and interact.

In a vast and unwieldy domain like the Roman empire, the speed of communication by sea and the number of shipping movements were obviously important for the processes of government as well as for the economy. What we know of message-speeds is usually disjointed. But more systematic results can be gained from Egyptian documents, which provide thousands of precisely dated coordinates identifying the emperor in power. When the emperor changes, the coordinates can show how soon this essential fact became known in one of Rome's eastern provinces, and how long the news took to spread inside the province. The results in the period when the evidence is fullest mainly suggest dependence on commercial shipping, with news getting through faster the more closely its date happened to coincide with two main shipping movements in the year. Seasonal differences are very striking in the pattern from the Flavians onwards, and the arrival of news apparently depended on a limited number of shipping-links. The transit-times of government decrees sent to Africa under the later Empire again suggest two main shipping movements during the year (chapter 1).

This has some relevance to inter-regional trade. Can substantial trade flows be inferred by arguing that government taxation drew money out of provinces with large tax bills to an extent which only increase in trade could have corrected? Coin-finds in different parts of the empire, although cited in support of this model, do not show homogeneous characteristics when their composition is studied in any detail (chapter 2). And a re-examination of the format of Roman provincial taxation produces only limited support for the assumption that direct taxes in the provinces were generally levied in money (chapter 12). It remains uncertain whether imperial taxes can have changed the underlying character of Mediterranean trade, and whether they created a positive commercial stimulus. The find-patterns of Roman lamps identified by brand-name (drawing on the survey by Harris (1980A) show groupings within regions and separations between regions which, as far as they go, argue for a pattern of local trading zones rather than a single national market (chapter 3).

Although evidence in the first chapter suggests slower contact by sea by the Late Empire, presumably because of fewer shipping-links, systematic evidence for economic change within the period of the Principate is difficult to run to earth. Dated series of town monuments show provincial responses to change of emperor and to changes in imperial policy more readily than responses to economic change. But denser information from papyri and coins suggests responses to discrete economic events, one of them the plague under Marcus Aurelius, reflected here in ways which are not immediately demographic (chapter 4).

The second part of the book is directly concerned with demography. The large samples of ages at death provided by Roman tombstones show numerical distortions which can readily be measured. The distortions vary in systematic ways which have direct social interest. But the degree of distortion tends to be so high as to suggest that many individuals had little effective grasp of their own age (chapter 5). This largely undermines any attempt to measure Roman life-expectancy from tombstone-ages. But Roman demographic evidence is not limited to age-reporting by the individual. One of the exceptions is the complete list of the town council of Canusium in southern Italy in the early third century. The ages of town councillors on tombstones show much less numerical distortion than most of the tombstone age-evidence. Analysis of the totals for office-holders in the Canusium list provides some pointers to life-expectancy within the local aristocracy in a south Italian town (chapter 6). A further chapter, concerned in a broader sense with manpower, derives totals for army units which provide indications of the size and make-up of the Diocletianic army, and seriously modify previous conclusions (chapter 7).

The third part of the book concentrates on the agrarian economy, first examining one of the central dossiers of commodity prices, the Egyptian prices for wheat. These show recognisable seasonal and regional variation, and a slow long-term upward movement, which accelerates very sharply at the end of the third century. They thus reflect another axis of change within the economy of the Principate (chapter 8). The companion chapter considers private landownership, and examines the violent economic contrasts that are implied in lists of Roman landowners and their properties.

The focus in the fourth section is the cities where landowners often lived, and the impact which office-holding and compulsory local spending had on owners of property (chapters 10 and 11). The shape of the surviving evidence tends to suggest a mounting crisis, with increases in the friction of Roman urban institutions on the propertied class. But although some inherent difficulties can be identified, chronological skewness in the surviving juristic evidence is so great that any cumulative change or deterioration in this area during the Principate remains difficult to establish.

The tax burden represented by local offices and liturgies, though often serious enough in itself, was only part of the fiscal liabilities of the owner of property. The final part of the book is concerned with state taxes and the format of taxation. The complex of indirect taxes evidently held considerable importance as a source of government revenue in cash, as in some later pre-industrial empires. But collection of direct taxes in kind continued on a large scale (chapter 12).

The mainstay of assessment for land-taxation in many provinces under the Late Empire was the *iugum* or plough-unit. A fuller examination of the evidence implies that the *iugum* was also being used early in the Principate, and establishes its size at something close to a standardised measure (chapter 13). The results argue against seeing major discrepancies between the tax-rates of different provinces in the Late Empire. They also have important demographic implications, because the redefined *iugum* brings the ratio of manpower to land-area in tax-lists of the Late Empire close to ratios of the Principate, instead of being much lower as previous works have argued.