Table 1: Hoards used in this paper. †Date as a result of the presence of *quinarii*. *Detailed listings added to the CHRR database since the publication of *Patterns and Process* (Lockyear 2007). 'Good total' is the number of well-identified *denarii* in the hoard suitable for inclusion in the analyses.

code	name	RRCH	country	RRC	Mattingly	'good total'
ADR	Alcalá del Río	—	Spain	112	109	158
ADU	Albánchez de Úbeda	—	Spain	106	103	15
ALM*	Almadenejos	—	Spain	100	98	95
AVV	Avvocata	190	Italy	104	101	21
AZN	Aznalcóllar	—	Spain	104	101	35
AZR*	Azuara	204	Spain	100	95	1
BEV	Bevagna	171	Italy	117	115	721
BLG	Bologna	—	Italy	100	95	92
BUG	Bugiuleşti	177	Romania	112	109	2
BVG	Bevagna	—	Italy	100	97	227
CAC	Cachapets	—	Spain	101	97	262
CDL	Chao de Lamas	—	Portugal	101	94	5
CEN*	Sierra Morena (El Centenillo)	186	Spain	106	103	592
CG2	Cerignola	—	Italy	100	95	96
CHL*	Chiclana de Segura	—	Spain	115	112	20
CLG	Castillo de las Guardas	—	Spain	105	102	113
CO1	Villanueva de Córdoba	—	Spain	113	110	127
CO2	Córdoba	184	Spain	109	105	214
COG	Cogollos de Guadix	—	Spain	104	101	83
CRE	Crevillente	206	Spain	100	98	4
CRG	Crognaleto	212	Italy	97†	95	137
CRS*	Carissa	—	Spain	115	112	4
CSL	Cástulo	—	Spain	101	97	47
CVG	Carovigno	208	Italy	100	95	459
EL1	El Centenillo	181	Spain	110	105	71
ELE	Elena	199	Italy	101	94	59
ELN*	Santa Elena	—	Spain	102	100	21
GDM	Gioia dei Marsi	213	Italy	97†	94	220
GER	Gerenzago	167	Italy	118	115	49
HDM*	Herdade da Mìlia	—	Portugal	113	110	473
IAV	Idanha-a-Velha	—	Portugal	100	94	1340
IMO	Imola	210	Italy	100	94	500
JA2*	Jaén	—	Spain	105	102	128
JES	Jesi	—	Italy	118	115	67
JUA	Torre de Juan Abad	189	Spain	105	102	476
LAB	La Barroca	178	Spain	112	109	69
LAU	Lauterach	170	Austria	117	115	22
LLO	Baix Llobregat	—	Spain	109	106	112
LOB*	La Loba	—	Spain	119	118	13
LOR	San Lorenzo del Vallo	195	Italy	102	100	299
LTA	Largo di Torre Argentina, Rome	—	Italy	97†	99	15
LVS	Laives Reif	—	Italy	116	113	22
MAD	Maddaloni	172	Italy	116	113	283
MER*	Mértola		Portugal	112	109	53
MNF	Manfria	198	Sicily	103	100	32
MNP*	Naples, National Museum	—	Italy	116	113	35
MON	Montoro	182	Spain	109	106	15
NAP	Naples	—	Italy	118	118	8
OL2*	La Oliva	—	Spain	103	100	45

code	name	RRCH	country	RRC	Mattingly	‘good total’
OLI*	La Oliva	197	Spain	101	94	1247
OLM	Olmeneta	203	Italy	100	96	397
ORC	Orce	211	Spain	100	94	72
OSO*	Olival da Soalheira	—	Portugal	100	95	112
PAG*	Pagliuzza	—	Sicily	102	100	390
PAT	Paterno	207	Sicily	100	94	149
PNH	Penhagarcía	191	Portugal	104	101	103
PTA	Patrica	—	Italy	119	118	100
PUE	Puebla de los Infantes	—	Spain	103	100	131
PZ1	Pozoblanco	174	Spain	115	113	79
PZ3*	Pozoblanco	—	Spain	106	103	74
RCN	Ricina	201	Italy	101	97	271
RIO	Rio Tinto	194	Spain	102	100	44
SAL	Salvacañete	205	Spain	100	95	9
SAR	Sarrià	—	Spain	108	104	48
SEG	Segaró	180	Spain	112	109	43
SEL	Santa Elena	193	Spain	101	99	537
SJ1*	São João dos Caldeireiros	—	Portugal	97†	100	657
SMR*	Sierra Morena	196	Spain	102	99	3
STR	Strongoli	183	Italy	109	106	4
TDS	Terranova di Sicilia	168	Sicily	118	115	71
TR1	Taranto	176	Italy	114	111	96

(a) Numbers of coins.

		issue cluster			
Country	cluster	early	middle	late	totals
Italy	early	378	1	1	380
Iberia	early	367	13	5	385
Italy	middle	507	189	65	761
Iberia	middle	1744	896	138	2778
Italy	late	550	527	535	1612
Iberia	late	44	53	48	145
totals		3590	1679	792	6061

(b) Expressed as percentages of all the coins from hoards in a cluster period.

		issue cluster		
Country	cluster	early	middle	late
Italy	early	49.4	0.1	0.1
Iberia	early	48.0	1.7	0.7
Italy	middle	14.3	5.3	1.8
Iberia	middle	49.3	25.3	3.9
Italy	late	31.3	30.0	30.4
Iberia	late	2.5	3.0	2.7

(c) Numbers of coins. Excludes all hoards/issues with a poor quality on the first two axes of inertia from the CA.

		issue cluster			
Country	cluster	early	middle	late	totals
Italy	early	363	0	0	363
Iberia	early	367	13	5	385
Italy	middle	411	104	46	561
Iberia	middle	1284	587	29	1900
Italy	late	476	478	495	1449
Iberia	late	29	34	31	94
totals		2930	1216	606	4752

(d) Expressed as percentages of all the coins from hoards in a cluster period. Excludes all hoards/issues with a poor quality on the first two axes of inertia from the CA.

		issue cluster		
Country	cluster	early	middle	late
Italy	early	48.5	0.0	0.0
Iberia	early	49.1	1.7	0.7
Italy	middle	16.7	4.2	1.9
Iberia	middle	52.2	23.9	1.2
Italy	late	30.8	31.0	32.1
Iberia	late	1.9	2.2	2.0

Table 2: Numbers of coins from the early, middle and late cluster hoards divided into early, middle and late cluster issues. Hoards included in each group are listed in Table 5.

Table 3: Decomposition of inertia for the issues in the CA.

issue	quality	mass	inr	k=1	cor	ctr	k=2	cor	ctr
260	190	17	11	−331	154	7	161	36	4
261	129	14	12	−362	128	7	30	1	0
262	64	12	18	−323	61	5	75	3	1
263	174	17	17	−444	174	13	10	0	0
265	43	5	11	−121	6	0	290	36	4
266	288	15	13	−459	208	12	286	81	12
267	199	10	11	−399	136	6	271	63	7
268	25	4	10	−273	24	1	−34	0	0
269	56	3	11	−479	53	2	−110	3	0
270	376	37	12	−374	372	20	−40	4	1
271	22	3	13	−238	13	1	−188	8	1
273	519	47	34	−511	328	47	389	191	69
274	452	46	19	−448	426	35	110	26	5
275	483	48	18	−419	411	32	176	72	14
276	413	27	14	−417	295	18	264	118	18
277	254	28	12	−352	254	13	−10	0	0
278	396	22	23	−650	360	35	205	36	9
279	151	21	15	−304	112	7	179	39	6
280	343	24	12	−302	158	8	328	186	24
281	334	51	34	−436	258	37	237	76	27
282	198	33	28	−288	90	10	316	108	32
283	58	6	10	−332	58	2	−17	0	0
284	36	19	14	25	1	0	−170	35	5
285	244	31	10	14	1	0	−303	244	27
286	316	39	20	−278	135	11	−321	181	38
287	145	13	11	95	10	0	−357	135	16
289	399	45	38	−61	4	1	−611	395	161
290	179	14	12	174	31	2	−381	148	20
291	303	35	17	16	0	0	−407	302	55
292	209	10	8	−26	1	0	−431	208	18
293	37	8	9	78	5	0	−195	32	3
294	65	3	8	140	8	0	−380	58	5
295	69	3	9	487	68	3	−62	1	0
296	301	17	18	150	19	1	−578	282	55
297	269	9	8	216	49	2	−457	220	18
298	197	7	11	352	71	3	−468	126	15
299	749	28	37	1021	697	108	278	52	20
300	457	22	11	373	259	12	−325	198	22
301	250	5	6	521	191	5	−290	59	4
302	533	39	18	484	452	34	−205	81	16
303	176	3	11	786	176	8	−4	0	0
304	355	14	10	337	141	6	−414	214	22
305	248	9	10	553	228	10	−163	20	2
306	456	11	7	475	313	10	−320	142	11
307	209	6	11	323	53	2	−556	156	18
308	752	14	32	1192	560	75	698	192	65
311	253	8	14	678	253	15	−35	1	0
312	132	2	8	713	128	4	−119	4	0
313	204	5	11	669	191	9	−171	13	1
314	107	2	8	528	65	2	−421	41	4
316	633	19	31	1042	606	78	220	27	9
317	614	17	23	945	589	56	194	25	6

318	699	12	23	1116	583	57	497	115	28
319	309	10	22	838	300	28	143	9	2
320	384	6	14	834	269	16	546	115	17
321	253	2	8	807	147	5	688	106	9
322	504	5	24	1367	332	34	983	172	44
323	316	3	11	1000	275	12	387	41	5
324	84	1	22	1164	82	8	−191	2	1
325	88	2	23	1063	88	8	−37	0	0
326	125	2	14	900	118	7	225	7	1
327	371	2	7	990	251	7	687	120	9
328	210	3	17	1208	210	15	56	0	0
329	622	3	11	1431	521	25	629	101	12
330	173	1	7	1053	166	5	214	7	1

Table 4: Decomposition of inertia for the hoards in the CA.

hoard	quality	mass	inr	k=1	cor	ctr	k=2	cor	ctr
ADR	258	15	16	−529	244	16	−128	14	2
ALM	283	10	19	712	222	18	372	61	13
AZN	14	3	6	83	4	0	143	11	1
BEV	621	26	32	−731	397	53	550	224	75
BLG	387	13	21	842	387	35	−4	0	0
BVG	605	31	26	742	589	65	−122	16	4
CAC	66	21	13	138	27	2	−169	40	6
CEN	307	47	16	−326	275	19	−111	32	6
CG2	196	12	22	631	188	18	−135	9	2
CLG	117	9	11	−257	47	2	−313	70	9
CO1	195	17	23	−519	178	18	−157	16	4
CO2	217	14	11	−428	209	10	−83	8	1
COG	172	6	12	−577	140	7	275	32	4
CRG	378	17	24	768	372	38	−97	6	2
CSL	57	3	9	−422	56	2	46	1	0
CVG	264	53	38	450	253	41	95	11	5
EL1	170	7	8	−474	163	6	100	7	1
ELE	251	8	16	713	221	15	−262	30	5
GDM	126	27	29	368	112	14	−131	14	4
GER	439	3	7	−851	285	9	626	154	12
HDM	599	26	44	−834	372	68	652	227	106
IMO	798	63	65	799	543	151	548	255	180
JA2	107	10	8	−64	4	0	−311	102	9
JES	252	3	10	−756	156	7	595	97	11
JUA	515	42	14	−402	416	25	−195	98	15
LAB	213	7	9	−539	203	7	−116	9	1
LLO	257	6	13	−748	228	13	271	30	4
LOR	78	33	16	66	8	1	−198	70	12
MAD	700	19	20	−784	532	45	441	168	36
MER	180	3	5	−509	177	3	−67	3	0
MNF	124	3	14	−513	47	3	654	77	11
MNP	210	2	7	−769	129	4	614	82	6
OL2	187	6	15	729	187	12	−22	0	0
OLI	581	110	37	−168	75	12	−437	507	200
OLM	200	42	18	66	9	1	302	191	36
ORC	122	8	36	756	120	18	−112	3	1
OSO	18	7	10	164	18	1	28	1	0
PAG	397	44	29	−537	395	48	30	1	0
PAT	553	20	38	1050	535	84	193	18	7
PNH	272	10	11	−545	241	11	194	31	3
PTA	151	3	16	−805	102	7	561	49	8
PUE	364	7	14	−723	237	14	531	128	19
PZ1	261	9	30	−721	145	18	646	116	37
PZ3	174	7	14	89	4	0	−600	170	25
RCN	277	22	35	658	241	35	256	36	14
RIO	13	5	10	−173	13	1	12	0	0
SAR	41	5	13	−333	41	2	0	0	0

SEG	87	4	15	−340	31	2	−457	56	9
SEL	318	45	21	−128	31	3	−390	287	66
SJ1	77	77	32	125	34	5	−138	42	14
TDS	282	4	11	−759	174	8	599	108	13
TR1	162	7	12	−555	156	8	−106	6	1

Table 5: Members of the early, middle and late clusters from the HCPC for hoards and issues. Hoards/issues with a quality of over 150 on the first two axes of inertia from CA are included in the 'high quality' rows.

cluster	RRC issues/hoards
early (high quality)	260, 263, 266, 267, 270, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 286, 289
early (low quality)	261, 262, 265, 268, 269, 271, 283, 284
middle (high quality)	285, 290, 291, 292, 296, 297, 298, 300, 301, 302, 303, 304, 305, 306, 307, 311, 313
middle (low quality)	287, 293, 294, 295, 312, 314
late (high quality)	299, 308, 316, 317, 318, 319, 320, 321, 322, 323, 327, 328, 329, 330
late (low quality)	324, 325, 326
early (high quality)	BEV, COG, GER, HDM, JES, LLO, MAD, MNP, PNH, PTA, PUE, PZ1, TDS
early (low quality)	MNF
middle (high quality)	ADR, CEN, CO1, CO2, EL1, JUA, LAB, MER, OLI, OLM, PAG, PZ3, SEL, TR1
middle (low quality)	AZN, CAC, CLG, CSL, JA2, LOR, OSO, RIO, SAR, SEG, SJ1
late (high quality)	ALM, BLG, BVG, CG2, CRG, CVG, ELE, IMO, OL2, PAT, RCN
late (low quality)	GDM, ORC