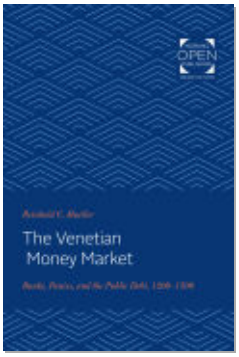
Appendix C. Foreign Exchange in Venice during the Datini Years, 1383–1410



APPENDIX C

FOREIGN EXCHANGE IN VENICE DURING THE DATINI YEARS, 1383–1410

i. INTRODUCTION

AS HAS BEEN SEEN ABOVE, exchange rates reacted to demand for specie as well as to demand for credit; and demand was largely foreseeable, according to the rhythm of the activity of the port, as the authors of merchant manuals noted and as is reflected in the commercial correspondence. A detailed year-by-year chronicle of the money market, based on the practically weekly observations of the cambisti operating in Venice, would be useful to underscore those aspects that deviated from the usual seasonal fluctuations (for examples, see above, Chap. 8). At the same time, such a chronicle would be repetitive and tedious. Deviations from the norm, that is, unusual peaks and troughs, can be identified on the graphs in this appendix as well as those in Chapter 8. This appendix is dedicated, therefore, simply to the presentation of the sources of the data and of graphs that register the pulse of the market.

The source of the data is the correspondence preserved in the archive of Francesco di Marco Datini. Out of a total of about 150,000 letters extant, some 7,000 were written in Venice by various agents and addressed to branches and agencies in the whole Datini network. The earliest series is that directed to Pisa: some 900 letters, 1383–1402 (buste 548–550); the most important series consists of letters directed to Florence (some 2,100), which begin in 1386, become rare in 1405, and stop altogether in 1407 (buste 709–

715); the correspondence with Barcelona (some 1,400 letters) begins in 1395 and continues until February 1411, that is, even after Francesco di Marco Datini's death in 1410 (buste 926–929). In gathering data, I perused the first two series completely and the third, which provides particularly complete listings of exchange rates in Venice, only beginning in July 1405. About 400 letters written by Venetians are extant, most of them to Majorca, Barcelona, and Valencia; especially concerned with purchases of raw wool (any study of the wool industry in Venice might well begin here, in identifying interested parties), these letters are surprisingly uninformative on matters of foreign exchange and even of commodity prices. In fact, Venetians preferred working through Florentine commission agents represented in Venice rather than having to deal directly with agents abroad.[1]

I culled quotations or exchanges for 1,229 observation dates, 1383–1411. The rates for Florence are continuous, those of ten other major European banking places much less so. The observations total 7,326 for the twenty-seven-year period. For the frequencies, see below, tables C.2 and C.3.

In order not to burden the apparatus further, the rates themselves will not be printed here. They will be on deposit at the Rutgers Medieval and Early Modern Data Bank, Department of History and the University Library, Rutgers University, New Brunswick, New Jersey 08903), where they will be available on diskette. Here they are presented solely in graphic form. Actual rates quoting Florence are published in Spufford, *Handbook,* 89–91, from my data base but with his criterion of selection (namely, the first business day of each month); those quoting Pisa are mentioned by the same author (xlviii). The rates have been reduced to graphs (see below, graphs C.4–C.8) depicting monthly averages; plots of raw data were too unwieldy for publication. While transactions were not made on average prices, neither should "market rates" quoted in commercial letters be fetishized: "contractual leverage" was sometimes a factor, so that in practice a client with a better credit rating than his competitor might receive a slightly more advantageous rate on a given day or time of day, for opening, midday, and closing quotations often differed in active markets like Venice.

Paired Cities

The relationship between the fluctuation of exchange rates and the availability of specie is particularly clear when one examines the banking places that were situated in geographic proximity. These paired cities, no more than one or two days' postal time apart, are identified in the merchant manual of Giovanni da Uzzano (ca. 1420): Venice-Bologna, Florence-Pisa, Avignon-Montpellier, Barcelona-Valencia, Bruges-Paris.[2] News of a sharp

[1]Exact figures will be available at the conclusion of the inventory by Bruno Dini and Elena Cecchi (see above, Chap. 7, n. 32).

[2]*Pratica della mercatura,* 154.

rise in foreign exchange rates in one city arrived quickly in the other, where the operators immediately responded by sending off specie in order to profit from the rise. Arrival of the specie had the effect of lowering rates, so that in normal equilibrium the rates of the two cities were very close and moved in parallel fashion. This situation is corroborated by the market reports and the rates actually quoted.

ii. THE MANNER IN WHICH EXCHANGE RATES WERE RECORDED

By Percentage, Above, At, or Below Par

PISA, LUCCA, BOLOGNA, ROME

The simplest fashion was the relationship of gold coin to gold coin, on the contemporary assumption that one gold ducat (of Venice, of Rome) equaled in value one gold florin (of Florence, of Pisa) wherever it circulated; thus, par was one to one; when ducats were rated above par, the quotation in Venice was given as a percentage "meglio questi"; when they were below par, they were quoted as a percentage "peggio questi." This manner of quoting rates in Venice was used for the markets of Pisa, Lucca, Bologna, and Rome.[3]

Actual bills are extant both to and from Pisa, which can serve as examples. On 1 October 1393 Zanobi Gaddi in Venice drew a bill for 20 lire di grossi, payable to Lapo di Messer Lapo in Pisa as 205 gold florins, plus 6s 8d a oro, "at the rate of 2⅔ percent, ducats higher (meglio questi)." An extant Pisan draft on Venice dated 20 March 1396 confirms that the exchange was between gold florins and gold ducats but shows that in this case ducats were lower: the Pisan branch ordered Gaddi to pay Guaspar della Vaiana e Co. in Venice 414 ducats "for 400 gold florins received here from Giovanni Canpolini e Co."; the Pisan florin, that is, was rated 3.5 percent higher than the ducat (at the same time, in Venice, the Pisan florin was rated at ⅔ of 1 percent).[4]

For Pisa, Lucca, and Bologna, all of whose gold currency was largely Florentine, the rates in Venice were generally "meglio questi"; an increase meant an increase in exchange and in interest. As regards Bologna, "paired" with Venice, the rates remained low and ranged generally between 1 and at most 4 percent above par. For Rome, the rates were generally quoted "peggio questi"; thus a rate of 2 percent would mean that for 100 ducats paid out

[3]It should be noted that Raymond de Roover discovered the manner of quoting rates by percentage of par only very late; see his "Renseignements complémentaires sur le marché monétaire à Bruges au XIV^{e} et au XV^{e} siècle," *Handelingen van het Genootschap "Société d'Emulation" te Brugge* 109 (1972): 55.

[4]ADP, 1143, two drafts on Pisa; 1142 for the draft on Venice; for the corresponding letters to Pisa, see 549; for those to Florence, see 710–11.

in Venice the remitter had 98 ducats "da camera" in Rome. In the Datini circuit, direct exchange dealings with Rome from Venice were rare; such business was probably handled by the various Alberti and Medici branches.

Pisa's role as a banking place or exchange market, an important role, as seen from the Venice correspondence, was ended when Pisa was subjugated by Florence in October 1406. It was quoted from Venice regularly until August 1405, when it was placed under siege. The last time it was quoted (at 4 percent) was 12 August; on the 22d and then on 7 December 1406, as a tacit comment on the conquest, Pisa was recorded as "H," meaning no business, or no business possible. Pisa seems, however, to return to the status of a banking place of some kind when its rates are again quoted in Venice beginning in August 1409.[5] And one or more of the remittances sent by the agents of Paolo Guinigi of Lucca for the purchase of Venetian government credits between 1412 and 1414 were sent from Pisa (see above, Chap. 14).

Lucca was quoted quite regularly, from 1399 until 1410. Its actual role as a banking place remains questionable, however, if one considers that Paolo Guinigi's agents, in the case just mentioned, never chose to remit directly from Lucca; instead, they shipped gold florins from Lucca to Florence, and sometimes from there to Pisa, from where the assets were then remitted by bill of exchange to Venice.[6]

The exchange rates in Venice on Pisa, Bologna, and Lucca are depicted in graph C.4.

MILAN AND GENOA

Much more complex were the rates quoted by percentage but between a gold-based money of account (Venice) and a silver-based one (Milan and Genoa). As long as a fixed monetary standard or a nearly stable bimetallic system was in place, the rates quoted varied *grosso modo* from 1 to 3 percent "Venice higher" [meglio questi], just like the other cities that used percentages expressing a gold-to-gold parity. When extensive debasement of silver ended the stability of the domestic exchange rate in Milan, the foreign exchange rates began to soar in somewhat parallel fashion, thus clearly showing that they were not based on a gold parity at all (see graph C.5).

Here the discussion of specific data is limited to Milan, where the major debasement and then a "monetary earthquake" took place, under the reign of Giangaleazzo Visconti. For Milan, furthermore, we can present the quotations in that market on Venice for the crucial years (1394–1402); those

[5]Ibid., 929, Paoluccio to Barcelona (12 August); 715, Paoluccio to Florence (22 August); 929, Commissaria Gaddi to Barcelona (7 December 1406). For the period 1409–10, see 930, letters from Venice to Barcelona.

[6]De Roover, *Medici Bank,* 237, makes the same point without indicating a date, although the passage seems to be in the context of 1460.

rates, as is clear from graph C.5, were generally some two points below rates in Venice. High rates denote low demand, low rates high demand.[7]

To buy a bill in Venice on Milan meant paying a ducat in Venice in order to receive a Milanese ducat at usance (about fifteen days). Although the rate was quoted as a simple percentage over par, the ducat in Venice was paid in lire di grossi a oro and generally in bank money, whereas the ducat in Milan was paid according to its quotation in silver-based lire imperiali. When the money-of-account system in Milan was still stable at 1 ducat = 32 soldi imperiali, parity with Venice in money of account was 2 soldi di grossi a oro = 32 soldi imperiali. While Milan was not quoted often in the years 1384–94, the rates moved between 1 and 3 percent. A progressive debasement was undertaken as part of war finance by Giangaleazzo beginning in 1395. Domestic exchange rates began to rise, pushing up foreign exchange rates, until the decree of 21 February 1400, as in table C.1.[8]

While it is not meaningful to index fluctuating exchange rates in Venice, the relative parallelism of the two exchanges is evident. That both series were interconnected is particularly clear from the effects of the decree of 21 February 1400, the thrust of which—the crying down of silver currency by one-third—was known and reported to Venice immediately, although it went into effect on 1 March. The peak of 52 percent in Venice (50 percent in Milan) was reached during an extremely easy market ("larghezza grande" was reported at the time); the comment "bocie" after the rate meant that there was no demand whatsoever on Milan, presumably as a result of the monetary uncertainty reflected in the high rate. The ducal decree aimed at reinstating the value—artificial as it had often been—of 32 soldi imperiali per ducat. The effect in Milan was to lower the value of silver coin and thus also the value in silver-based lire imperiali of gold coin; the immediate effect on the exchange markets of both Milan and Venice was to compensate—or overcompensate—with a sharp drop in rates expressed in percentages. That is clear proof that the exchange rate expressed formally the relationship between two comparable gold coins, of which one, however, was paid in gold-based money of account (the Venetian ducat), the other (the Milanese florin or ducat) in silver-based money of account.[9]

[7]Luciana Frangioni, *Il carteggio milanese dell'Archivio Datini di Prato,* 2 vols. (Florence, 1994). The letter of 11 October 1396, which quotes Venice at a very low 1¼ percent, notes high demand: "c'è al presente fame di danari, come pe' canbi vedete."

[8]Tommaso Zerbi, *Moneta effettiva e moneta di conto nelle fonti contabili di storia economica* (Milan, 1955), 77–84; Gigliola Soldi Rondinini, "Politica e teoria monetarie dell'età viscontea," *Nuova rivista storica* 59 (1975): 298–302; Franca Levarotti, "Scritture finanziarie dell'età sforzesca," in *Squarci d'archivio sforzesco: Mostra storica documentaria* (Como, 1981), 134, table 2. For 28 March 1400: Melis, *Documenti,* doc. 21, where the author was confused between the foreign rate (10 percent) and the domestic rate (35 soldi imperiali per ducat). For April–May 1407: ADP, b. 807. These rates supplement Spufford, *Handbook,* 99.

[9]It is thus clear why the anonymous writer of a merchant manual, when he explained the parameters of exchange in Venice, reported that Milan was quoted at 7–8 percent, when the

TABLE C.1

Domestic and Foreign Exchange in Milan Compared, 1395–1410

Date	The Milanese Ducat (in soldi imperiali)		Venice Quoting Milan (in %)
	Soldi	Index	
Before 1395	32	100	min. 2–4, max. 5–6
1395 24 Aug.	33.2	103.75	same
1396 —	33	103	4–5
1397 —	34	106	rise 5 to 10
1398 mid-Feb.	35	109	10.5
Mar.	36	112.5	11–12
Apr.–Dec.	—	—	13–17
1399 Feb.	—	—	18–21
Apr.	—	—	25.5–28.5
Oct.–Dec.	rise	—	29–40
1400 Jan.	44	137.5	—
mid-Jan.	47	147	47
Feb.	48–49	151.6	—
14 Feb.	—	—	52 "bocie"
19 Feb.	—	—	9
21 Feb.–1 Mar.	36	112.5	—
28 Mar.	35	109	10
late July	35–34	108	12
1405 —	41	128	12.5 (1 rate only)
1406 —	42	131	(no further rates)
1407 21 Apr.	48.5	151.6	Milan quoting Venice: 25–26
4–10 May	49	153	26–26.5
1410 —	48	150	—

Graph C.5 shows the curves of rates in Milan and Venice often superimposed or with only a slight lag.

Milan is no longer quoted in the Datini correspondence after 1404 in Venice, nor was Venice quoted after 1402 in Milan, for reasons that are not clear. Continued monetary instability in Milan probably hurt that market as a banking place, but Milanese merchants earlier had preferred to deal through the Venetian exchange market and would do so again later.[10]

Milanese florin had a value of 60 soldi imperiali (a level reached about 1430). BNF, cod. Palatino 601, fol. 66.

[10]See Tommaso Zerbi, *Il mastro a partita doppia di un'azienda mercantile del '300* (Como, 1936), 74–75, with eight bills on Venice, 1395–98, including an example of rechange; also the studies of Patrizia Mainoni, "Un mercante milanese" (the author mistakenly thought the exchange in Milan to be anchored to gold coin [364]), and *Mercanti lombardi tra Barcellona e Valenza nel basso medioevo* (Bologna, 1982). For scattered exchange dealings with Milan by Andrea Barbarigo, see ledger B, fols. 133 (1444) and 179 (1446).

The situation in Genoa was quite similar to that in Milan. A stable rate of exchange was maintained for much of the fourteenth century between the gold genovino and silver-based soldi di genovini piccoli, at 1 to 25. The domestic rates became unglued about 1397, judging from the foreign rates (see graph C.5), but too few domestic rates have been collected to be able to know just when and how the rise above 25 soldi developed and for what reasons, whether from depreciations or decrees.[11] From 1400 to 1404, in particular, foreign exchange rates for Genoa parallel almost perfectly the rates for Milan, which is sufficient proof that, also in this case, the rate between Venice and Genoa, quoted in percentage above par, was between a gold ducat expressed in gold-based money of account and a gold genovino expressed in silver-based money of account.

Florence

Venice usually quoted Florence certain for uncertain: one ducat, expressed in lire di grossi a oro (1 lira = 10 ducats), was worth a variable number of lire affiorino (1 florin = 1.45 lire affiorino, 10 florins = £14 10s affiorino). Parity of 10 gold ducats to 10 gold florins, therefore, was 1 lira di grossi a oro = £14 10s affiorino.

As long as the lira manca, also called lira di grossi manchi (1 lira = 239 grossi) was still in use in Venice, until about the middle of the fourteenth century, however, parity of the ducat to the florin was slightly different: 1 lira manca, worth 9 23/24 ducats, = £14 8s 9½d affiorino.[12] After midcentury the lira manca disappeared, and the monetary basis for foreign exchange from then on was the lira di grossi complida, of 240 grossi.

There were also complications on the other end. Florentines used as the basis of their lira affiorino, not the full-weight gold florin, but the fiorino di suggello, of slightly less and then of ever diminishing value; the differential between it and full-weight gold florins was called an agio. In the years 1336–40, studied by Giulio Mandich, the agio was about 2 percent, which would have shifted further "par value."[13] In practice, rates of exchange made up for the difference by rising with the agio. This explains the rising trend in rates in the years covered by the Datini correspondence, 1383–1411 (when rates ranged between about 15 lire [3,600 denari] and £15 15s [3,780 denari]; see graph C.6); in the years 1415–17, covered in de Roover's study of cambium ad Venetias (range: between £15 12s, and 16

[11]Spufford, *Handbook,* 112, and de Roover, *Bruges Money Market,* 75. For extant drafts on Genoa by Zanobi Gaddi in 1385–86 (at rates of 1¼ and ⅞ percent respectively), see ADP, b. 1144; the correspondence with Genoa is not extant, so that it cannot be known just how common it was to find a direct relationship between Florentine cambisti resident in the two maritime and rival cities.

[12]Mandich, "Per una ricostruzione," clii.

[13]See "La prassi delle assegnazioni," 43.

lire); and about 1443, when an anonymous merchant manual gives the range in Venice as £15 12s to £16 10s affiorino for 1 lira di grossi.[14] In 1455–56, rates were given in percentages and ranged 19–21 percent in Florence, 23–23½ percent in Venice.[15]

That was the system—certain for uncertain—which Datini's agents in Venice used in reporting to the head office in Florence the rates current on the Rialto. When they wrote to branches and agents in cities whose exchanges were quoted as percentages over par, however, they quoted also Florence in percentage over par. The conversion between the two systems is not difficult. Since par was considered to be 1 lira di grossi = £14 10s affiorino, or 3,480 denari affiorino, the equation is the following:

$$(3{,}480 \times \%) + 3{,}480/240 = N \text{ lire aff.}$$

For example, on 10 December 1394 Gaddi wrote contemporaneously to Pisa that Florence was quoted 6 percent, and to Florence that the rate was £15 7s 6d affiorino, which jibes [(3,480 × .06) + 3,480/240 = 15.37 lire, or £15 7s 3d].[16]

Bruges and Paris

The exchange relationship between Venice and Bruges involved three different ways of quoting rates, each way specific to a chronological stage of development.

The two bills of 1360, of which a transcription can be found in Appendix G, documents 1–2, themselves involved two approaches: Venice gave Bruges certain, in that a variable number of Venetian denari grossi a oro (of 24 to the ducat) corresponded to one Flemish gold réal, probably already a money of account, similarly subdivided into 24 groats Flemish. In fact, Pegolotti speaks of par as being "a denaro per denaro."[17] In the other direction, Bruges quoted the Venetian ducat in deniers tournois, but as a percentage over par (on 13 October 1360 the rate was 28¼ percent). Mandich (as cited in App. G, below) calculated that par in that case was 16.5 gros tournois per ducat.

The second manner was that employed at the time of the Datini firm's operation, about 1380–1410: each city gave the other certain! Bruges quoted Venice in groats Flemish per ducat, while Venice quoted Bruges in

[14]On the fiorino di suggello and the agio between it and the gold florin, see Goldthwaite and Mandich, *Studi,* 52–54 and table 2. See also de Roover, "Cambium ad Venetias," and BNF, cod. Palatino, 601, fol. 66. It will be recalled that the partnership capital of the Medici branch in Venice, expressed in fiorini affiorino di suggello, also reflected the rising agio (see above, table 7.3).

[15]ASF, MAP, 134/3, Quaderno dei cambi, tavola di Firenze.

[16]ADP, 550, Gaddi to Pisa, and 710, Gaddi to Florence, at the stated date.

[17]*Pratica,* 248; Spufford, *Handbook,* 213.

grossi a oro per Flemish gold franc (of 33 groats).[18] If we base ourselves on grossi as fractions of the ducat and on groats as fractions of the gold franc (a money of account), the calculations become simpler. A rate of 22 grossi per franc in Venice means 22/24 ducat (or 0.916 ducat) = 33 groats flemish; or, turning it into certain, 1 ducat = 0.916 × 33, that is, 30.228 groats. That figure then becomes perfectly comparable to the return rate Bruges-Venice of, say, 35 groats Flemish per Venetian ducat. And rates in Bruges were regularly higher than those in Venice. A *de*crease in the number of Venetian grossi per franc meant an *in*crease in exchange rate and thus in the interest rate, which is how the mirror-image oscillations in graph C.7 are to be interpreted. In this graph de Roover's rates for Bruges quoting Venice have been added to the Venetian series quoting Bruges.

The third manner, which must have been introduced around 1420 and which lasted as long as Bruges remained a banking place, has Bruges giving certain to Venice, so that in both markets rates were quoted as a variable number of Flemish groats per Venetian ducat. From this point on, rates in Venice were almost invariably higher than those in Bruges (see above, Chap. 8, sec. vi, and graph 8.6).[19]

Here again we have a gold-based money of account over against a silver-based one, as is clear from the rise in the rate of the ducat in Venice for exchange on Bruges, from 35 groats in 1400 to 50 in 1451 to 60 in 1474.

The system of registering exchange rates in the first two periods was sufficiently complicated as to discourage any extensive operations of re-change or dry exchange between the two cities; the third system, on the other hand, seems to have been made to order so that the Venice-Bruges axis could take over for the traditional Venice-Florence axis, where the one-month "cambium ad Venetias" had reigned supreme for nearly a century. The substitution of a four-month rechange (two months' usance in each direction) for the traditional one-month rechange clearly required streamlining and fixing anew the rules of the game; the manner of quoting rates was changed in order to facilitate making the now more popular longer-term loans — and making a profit on them.

Paris was "paired" with Bruges, that is, their rates were close together, although Paris was clearly second in importance as a banking place; they quoted each other in percentage of par. During the years of operation of the Datini firm, Venice gave Paris certain: a French gold franc was quoted as a

[18]R. de Roover recognized this anomaly in "Renseignements," 57. Of course, his *Bruges Money Market* is the standard work for the Bruges side. Two bills for 1,000 ducats each were drawn by the Hansa merchant Hildebrand Veckinchusen in Bruges on his agent Peter Karbow in October–November 1410, at 40 groats Flemish per ducat. Michail P. Lesnikov, ed., *Die Handelsbücher des Hansischen Kaufmannes Veckinchusen,* Forschungen zur Mittelalterlichen Geschichte, vol. 19 (Berlin, 1973), 352–53.

[19]De Roover, *Medici Bank,* 116–22, and above, Chap. 8, sec. vi.

variable number of Venetian grossi a oro of account. This means that rates on Paris behaved like those on Bruges in the second stage: a *de*crease in the number of Venetian grossi per franc meant an *in*crease in exchange rate and thus in the rate of interest. As is obvious from graphs C.2 and C.7, the curves for both cities move in parallel fashion; any rise in one market or the other was quickly reequilibrated by the movement of specie. In the years 1393–98 the two curves are practically superimposed.

Paris was quoted regularly in the Datini letters from 1392 to 1410. Zanobi Gaddi wrote to Pisa in 1399, "Per Parigi si canbia spesso, e sì per Bruggia."[20] After the English victory at the battle of Agincourt (1415), Paris ceased to be a banking place.[21]

Barcelona

Barcelona also "gave certain" to Venice: a variable number of soldi and denari of the lira of Barcelona for one Venetian gold ducat. The range around 1400 was between 15 soldi and 16s 8d per ducat. An example of an actual bill: on 14 June 1398 Bernardo Alberti and Company drew 100 lire di grossi (1,000 ducats) on Barcelona, at 16s 2d per ducat. After two months' usance, the beneficiary was to receive in Barcelona £808 6s 8d Barcelona currency.[22]

Graph C.8 provides two curves, one for Venice quoting Barcelona, the other, using data that de Roover published, for Barcelona quoting Venice. It should be noted that the Venice-Barcelona axis was not normally utilized for rechange operations. On the contrary, Venice remitted to Barcelona primarily to pay for raw wool, and the biggest remitters during the Datini years were the wool importers Antonio Contarini, lanaiuolo in his own right, and the partnership of Giorgio Corner and Gabriele Soranzo (the banker), who remitted funds when they gave orders for purchases at each new shearing.[23] The Medici continued over the following decades to sell drafts in Venice to importers of wool and saffron from Spain.[24] Barcelona as an exchange market, on the other hand, dealt with the West: with Montpellier, with

[20]ADP, 550, 11 October 1399.

[21]See the overview in Raymond de Roover, "Le marché monétaire a Paris du régne de Philippe le Bel au début du XVe siècle," in *Académie des inscriptions et belles-lettres: Comptes rendus* (séances of November–December 1968, published 1969, Paris), 548–58.

[22]ADP, 1145bis; in decimals: 16.167 × 1,000/20 = 808.3.

[23]Zanobi Gaddi wrote to Pisa on 11 October 1399, "Di qui a Barzalona si canbia rade volte ora, ma qua al Natale questi Viniziani vi voranno rimetere, sichè alora potrete dare le comesioni; ora non c'è se non canbiatori, siatene avisati." As regards usance, he continued: "Fàsi di qui dal dì a 2 mesi, o dì 30 vista, m'al più vogliono 2 mesi a la fata." On the 25th there were already takers. ADP, 550. That Barcelona rarely drew on or remitted to Venice can be seen from the fact that Venice is not mentioned once among the thirty-eight bills contracted by the Datini branch in Barcelona in the first four months of 1396; see the table in Enrico Bensa, *Francesco di Marco da Prato: Notizie e documenti sulla mercatura italiana del sec. XIV* (Milan, 1928), 466.

[24]De Roover, *Medici Bank*, 245.

Genoa, but especially with Bruges.[25] And there was clearly a triangular relationship, Barcelona-Bruges-Venice, which de Roover always maintained was a commonly used route for settling international balances.[26] Finally, the Venice-Barcelona axis interested cambisti involved in arbitrage and triangular relationships with Valencia, as we saw above (Chap. 8) in the example provided by Benedetto Cotrugli.

London

Venice quoted London certain for uncertain: a variable number of sterling pence per gold ducat. The range in this period was about 38 to 42 pence per ducat; around 1450 the range was 45 to 47 pence (see above, graph 8.7). Rates were almost invariably higher in Venice than in London, which made possible the longest loan on a single rechange, one of six months' duration (three months' usance in each direction). See graph C.9.

Other Cities Mentioned

Besides the eleven major cities discussed above, very occasionally rates for other cites, such as Verona, Perugia, and Viterbo, were mentioned in the Datini correspondence. These were not "banking places," and they were quoted only in extraordinary circumstances, such as when troops had to be paid in Verona in January 1389. Similarly exceptional were remittances to Ferrara (during the Chioggia war for the purchase of wheat), Palermo, and Avignon.[27]

iii. APPARATUS: TABLES AND GRAPHS

Tables

FREQUENCY TABLE: OBSERVATION DATES

As can be readily seen in table C.2, in twenty-eight years one or more rates were extracted from letters at 1,229 different dates. During Datini's

[25]ADP, 823 (1395–96) and 841 (1398–99), account books devoted exclusively to the bill trade in Barcelona.

[26]He always held that "northwest Europe" had an unfavorable balance of trade in relation to Italy; see "La balance commerciale entre les Pays-Bas e l'Italie au quinzième siècle," *Revue belge* 37 (1959): 374–86, and *Bruges Money Market*, 43–46. The thesis was criticized by W. B. Watson, "The Structure of the Florentine Galley Trade with Flanders and England in the Fifteenth Century: Some Evidence about Profits and the Balance of Trade," *Revue belge* 39 (1961) and 40 (1962), and Edmund B. Fryde, "Anglo-Italian Commerce in the Fifteenth Century: Some Evidence about Profits and the Balance of Trade," *Revue belge* 50 (1972): 345–55.

[27]ASV, PSM, Citra, b. 141, account book of Tommaso Talenti, fol. 19r: cash was paid to Giovanni Portinari in Venice, "per scrittura di Bartolomeo da Carixe" (an immigrant from Ferrara, recently established as a banker on the Rialto), to remit 600 ducats to Ludovico Avvenati in Ferrara (6 June 1380). Regarding Palermo and Avignon, see the information sent to Florence by Gaddi on 21 July and 25 October 1386 (ADP, 709); for Perugia, see Piaciti's letter of 29 April 1402 (ADP, 714).

lifetime, the low came in 1390, a bad year for business, the high in 1399, when his international banking operation was in high gear. The distribution over the months is relatively uniform, although the months of greater and lesser activity are clearly reflected. September was the month following the departure of the last galleys for the Levant, and business was slow.

Given the importance of the rhythm of supply and demand, graphs were prepared which reflect seasonal patterns. Graphs C.1, C.2, and C.3 continue the series begun with graphs 8.1 and 8.2 above. The curve that most clearly registers the pulse of the money market is, of course, that for Florence (see graph 8.1). The peak months are July and August, because of the departure of the galleys for the Levant, and December, for the Christmas fair that often coincided with the return of the galleys from the East. The low month is September, when all cambisti took time to get their accounts in order. The departure of the Flanders galleys, which was hardly foreseeable but sometime in early spring, did not affect the rates of exchange. Graphs C.1 and C.2 portray the seasonal patterns, respectively, for Genoa and Milan and for London, Paris, and Bruges.

In graph C.3, where there are two parallel curves for rates in Barcelona (from de Roover) and in Venice, the seasonal pattern highlights the peaks and troughs: the tendency is for rates to move in opposite directions, meaning that exchange was economical in early spring, dear for the rest of the year. To understand the causal factors of this phenomenon, one would have to study the rhythm of wool production and trade between the two cities. In any case, the pattern does not have anything to do with the money market in Venice, for lenders and borrowers did not use the Barcelona axis for rechange arrangements.

Graphs C.4–C.9 give the fluctuations of exchange on the basis of monthly averages of the data. In graph C.6, concerning Florence, one can clearly note a rising trend, the result largely of the increasing agio of the fiorino di suggello against the fiorino d'oro.

TABLE C.2

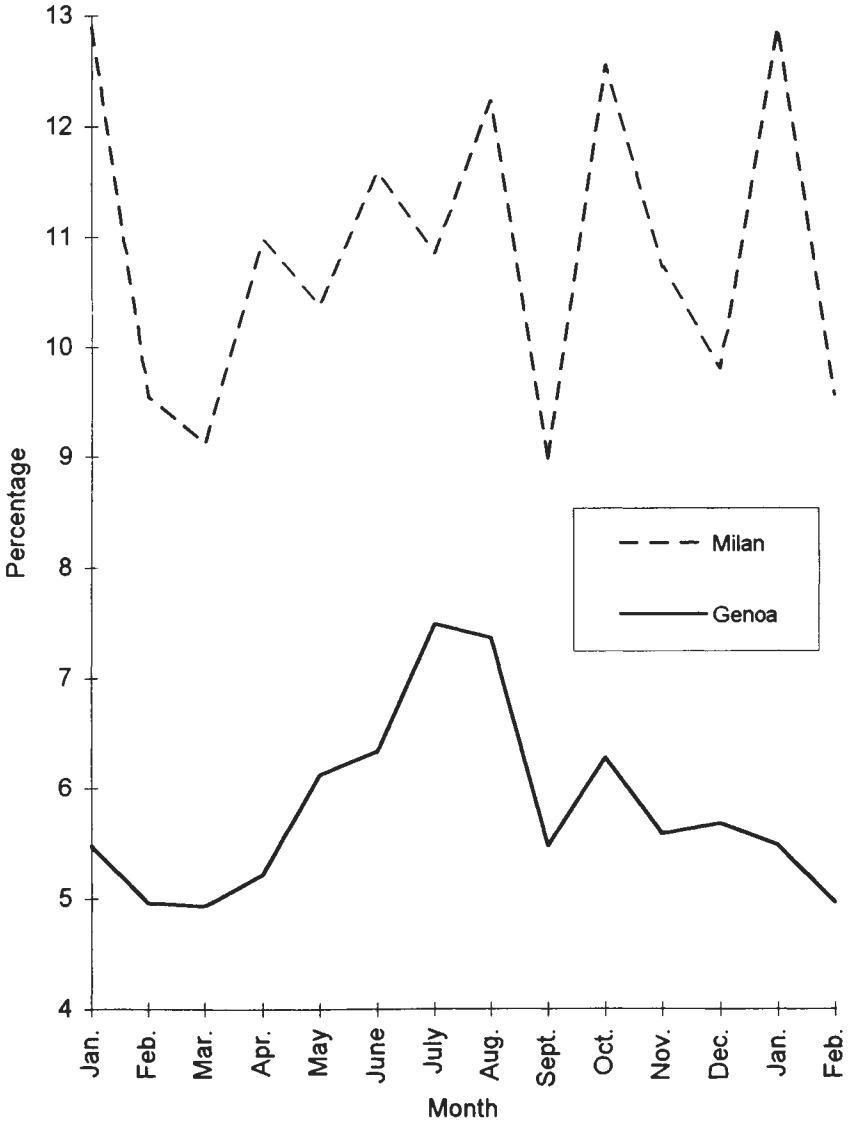
Frequency of Observation Dates between Venice and Eleven Cities, by Year and Month, 1383–1411

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Total
1383	0	0	0	0	0	0	0	0	0	0	2	0	2
1384	1	1	2	3	5	4	5	4	2	5	6	5	43
1385	5	3	3	2	4	6	5	6	2	4	5	5	50
1386	4	3	3	2	3	3	4	4	3	4	2	3	38
1387	4	3	4	4	6	6	5	6	3	7	3	6	57
1388	5	3	4	4	5	6	2	5	4	5	4	7	54
1389	6	5	5	2	3	3	4	0	2	1	1	3	35
1390	2	0	2	0	1	1	0	2	0	0	0	1	9
1391	5	5	6	3	3	3	4	3	2	2	4	5	45
1392	1	2	5	0	0	4	5	6	4	2	3	3	35
1393	2	2	5	3	3	1	4	3	1	6	6	6	42
1394	4	3	4	3	4	5	6	6	7	8	6	7	63
1395	4	4	5	5	5	5	5	6	5	5	5	6	60
1396	5	6	5	6	7	7	5	6	8	7	4	7	73
1397	5	5	4	4	5	6	4	4	5	3	4	5	54
1398	7	6	7	4	4	5	5	5	1	5	3	4	56
1399	5	6	6	7	6	3	12	7	6	7	7	6	78
1400	6	6	6	3	5	5	5	2	4	3	3	4	52
1401	7	5	3	5	4	3	5	4	5	6	4	5	56
1402	4	4	4	5	4	5	4	4	5	3	3	5	50
1403	4	3	5	3	4	5	4	4	5	4	3	5	49
1404	4	4	5	4	5	4	4	5	2	5	2	2	46
1405	3	3	2	3	3	4	5	4	2	2	2	3	36
1406	4	2	3	4	3	1	2	4	2	4	2	2	33
1407	3	3	3	4	3	3	2	3	3	3	3	3	36
1408	2	2	4	0	2	4	3	1	2	4	2	1	27
1409	2	2	3	3	3	3	1	2	3	1	2	1	26
1410	1	3	4	3	3	2	1	2	0	1	0	0	20
1411	2	2	0	0	0	0	0	0	0	0	0	0	4
Grand Total	107	96	112	89	103	107	111	108	88	107	91	110	1,229

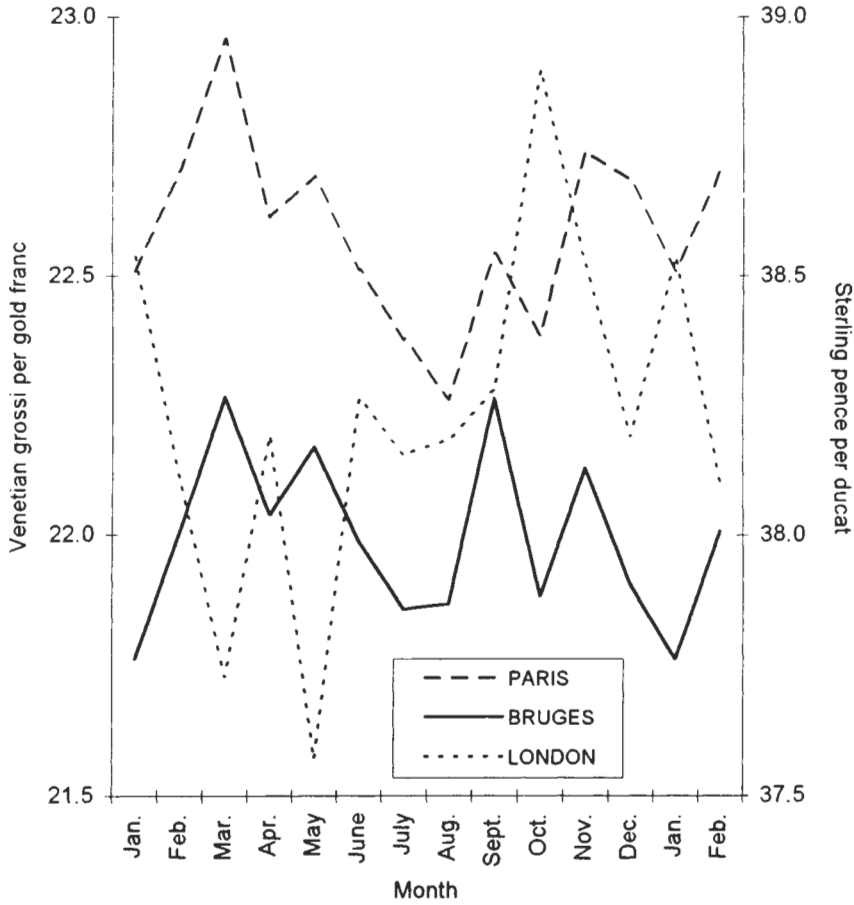
TABLE C.3

Exchange in Venice, 1383–1411: Frequency of Observations, by City

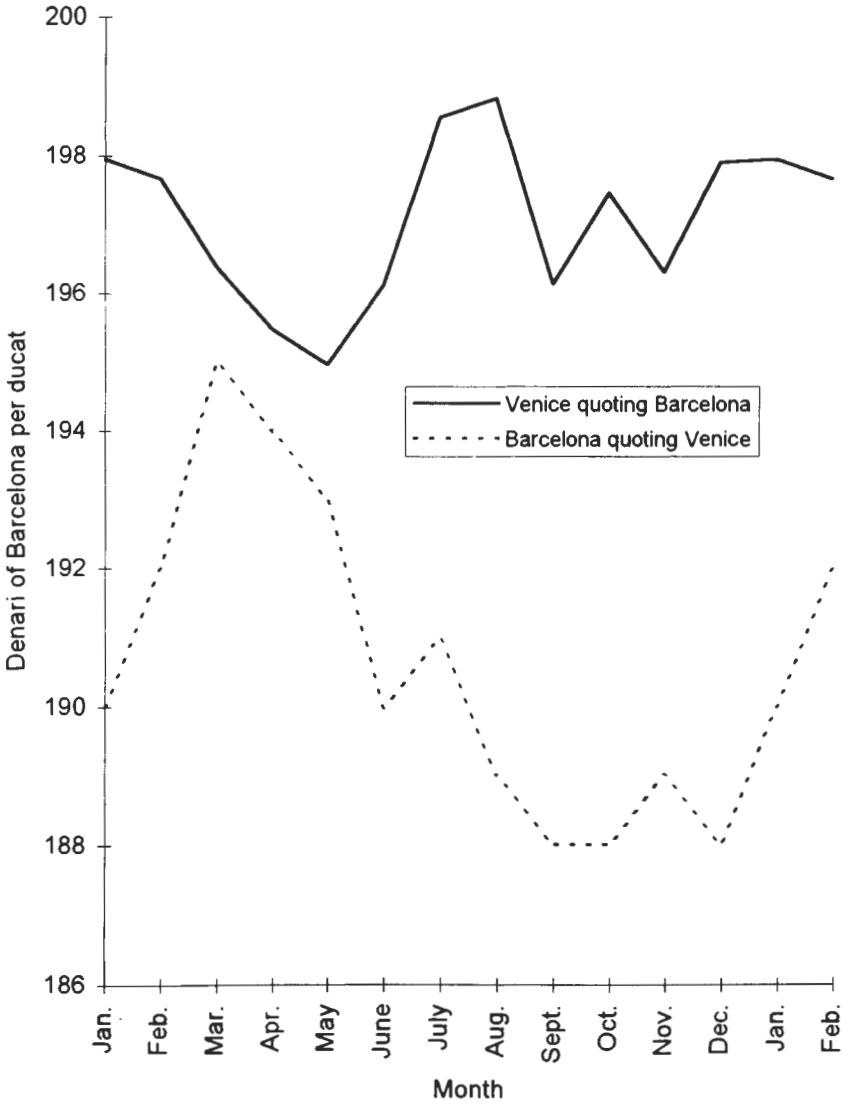
Year	Florence	Pisa	Bologna	Genoa	Bruges	Paris	Milan	Rome	Lucca	Barcelona	London	Year Total
1383	2	1	1	1								5
1384	43	42	4	37	29		7					162
1385	50	49	10	44	9		2					164
1386	38	37	12	36	35		6					164
1387	57	55	14	55	35		5					221
1388	54	52	44	52	31	4	22					259
1389	35	28	26	27	25	19	26					186
1390	9	9	6	9	4							37
1391	45	41	33	41	24							184
1392	35	25	21	28	9							118
1393	42	40	39	37	13	2	1					174
1394	63	62	60	60	45	40	40	24				394
1395	60	49	44	45	38	37	41	9				323
1396	73	57	39	50	17	17	32	5				290
1397	54	23	15	26	3	2	16	6				145
1398	56	33	29	32	8	8	28	4				198
1399	78	66	67	67	61	61	66	57	52	59	2	636
1400	52	47	45	46	40	40	41	38	18	41		408
1401	56	54	51	55	54	54	50	51	42	55		522
1402	50	49	47	48	49	48	48	47	47	48		481
1403	49	47	46	46	47	47	47	45	46	48	16	484
1404	46	35	44	44	44	44	13	43	44	43	25	425
1405	36	23	33	29	32	30	3	20	32	35	2	275
1406	33	1	33	32	33	33		19	30	33	13	260
1407	36		33	35	31	36		18	27	36	13	265
1408	27		23	26	25	24			21	27	14	187
1409	26	6	22	24	24	24			18	25	19	188
1410	20	13	14	20	19	18			12	20	18	154
1411	4		1		3	4				4	1	17
City Total	1,229	944	856	1,052	787	592	494	386	389	474	123	7,326



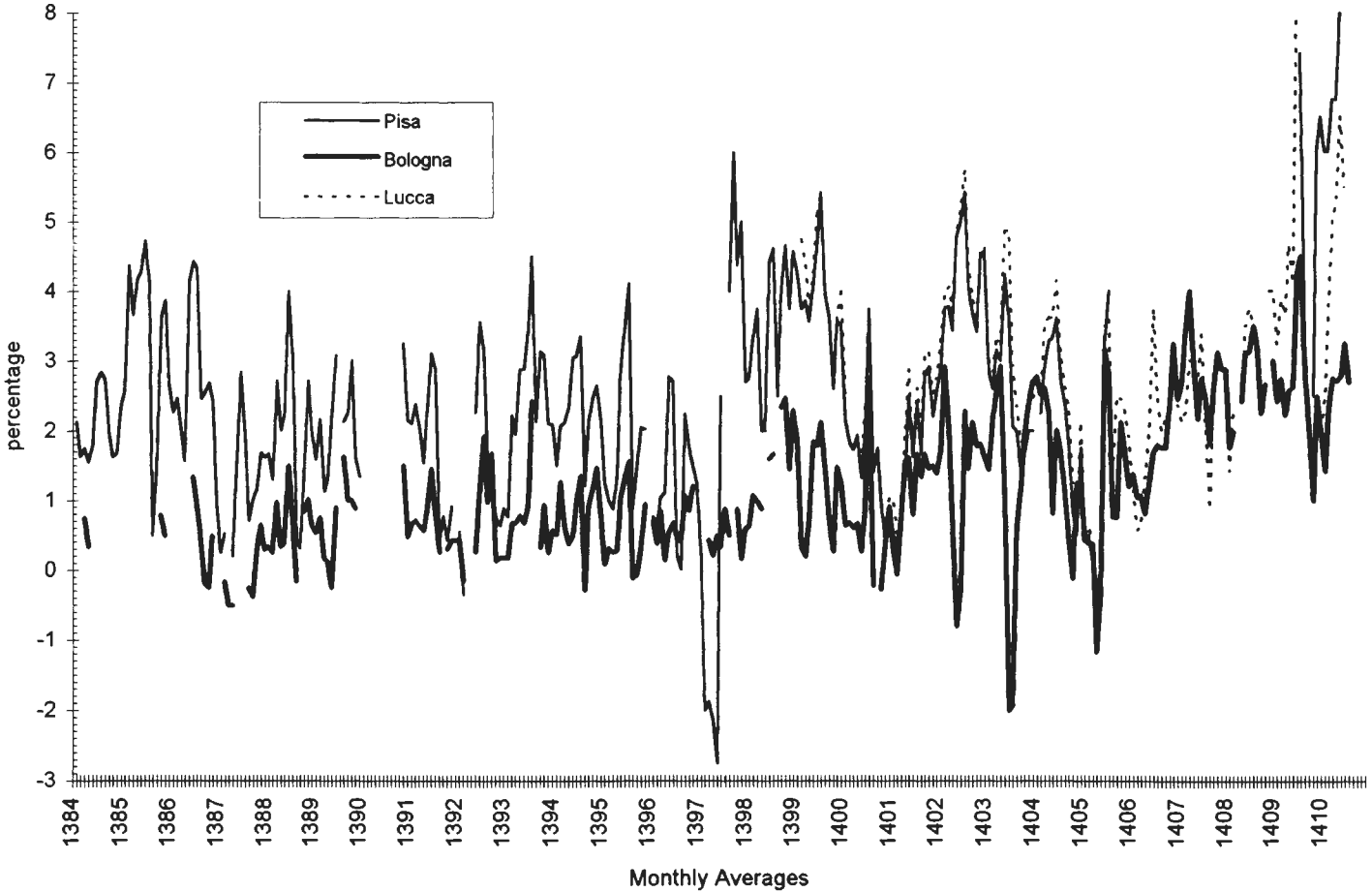
GRAPH C.1. Seasonal Pattern of Exchange Rates in Venice quoting Genoa and Milan, 1384–1410



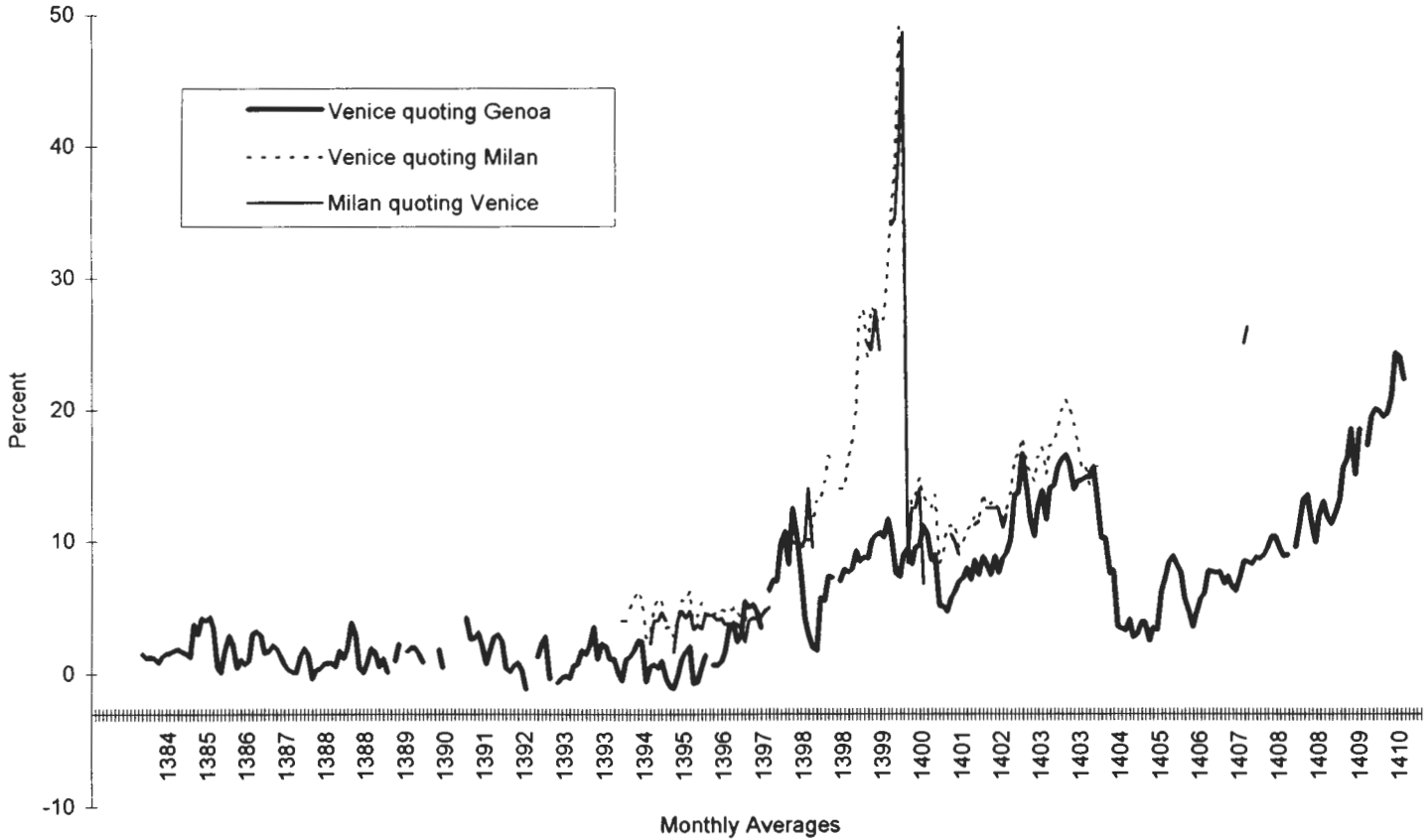
GRAPH C.2. Seasonal Pattern of Exchange Rates in Venice quoting London, Paris, and Bruges, 1399–1410



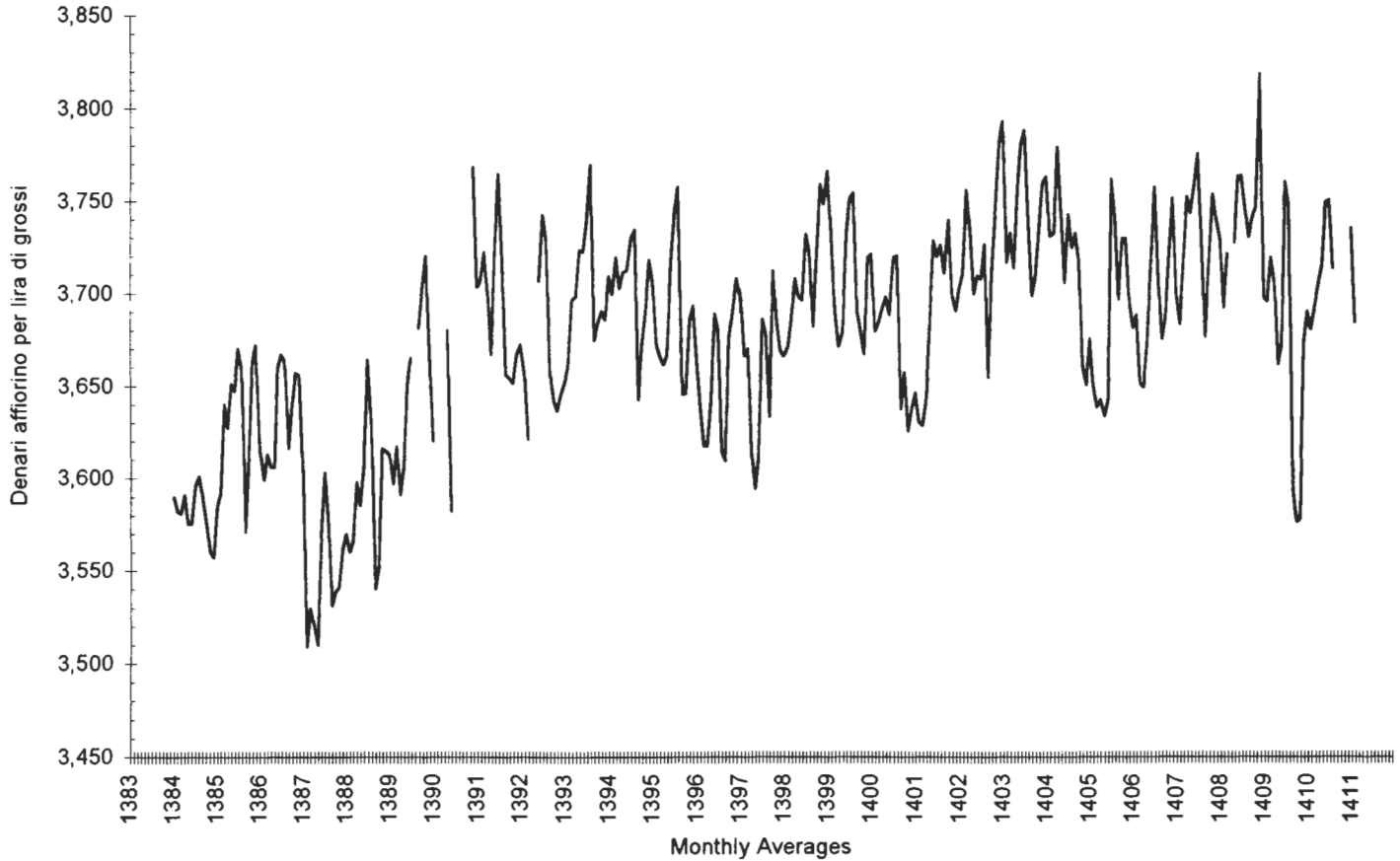
GRAPH C.3. Seasonal Pattern of Exchange Rates in Venice and Barcelona, 1399–1410



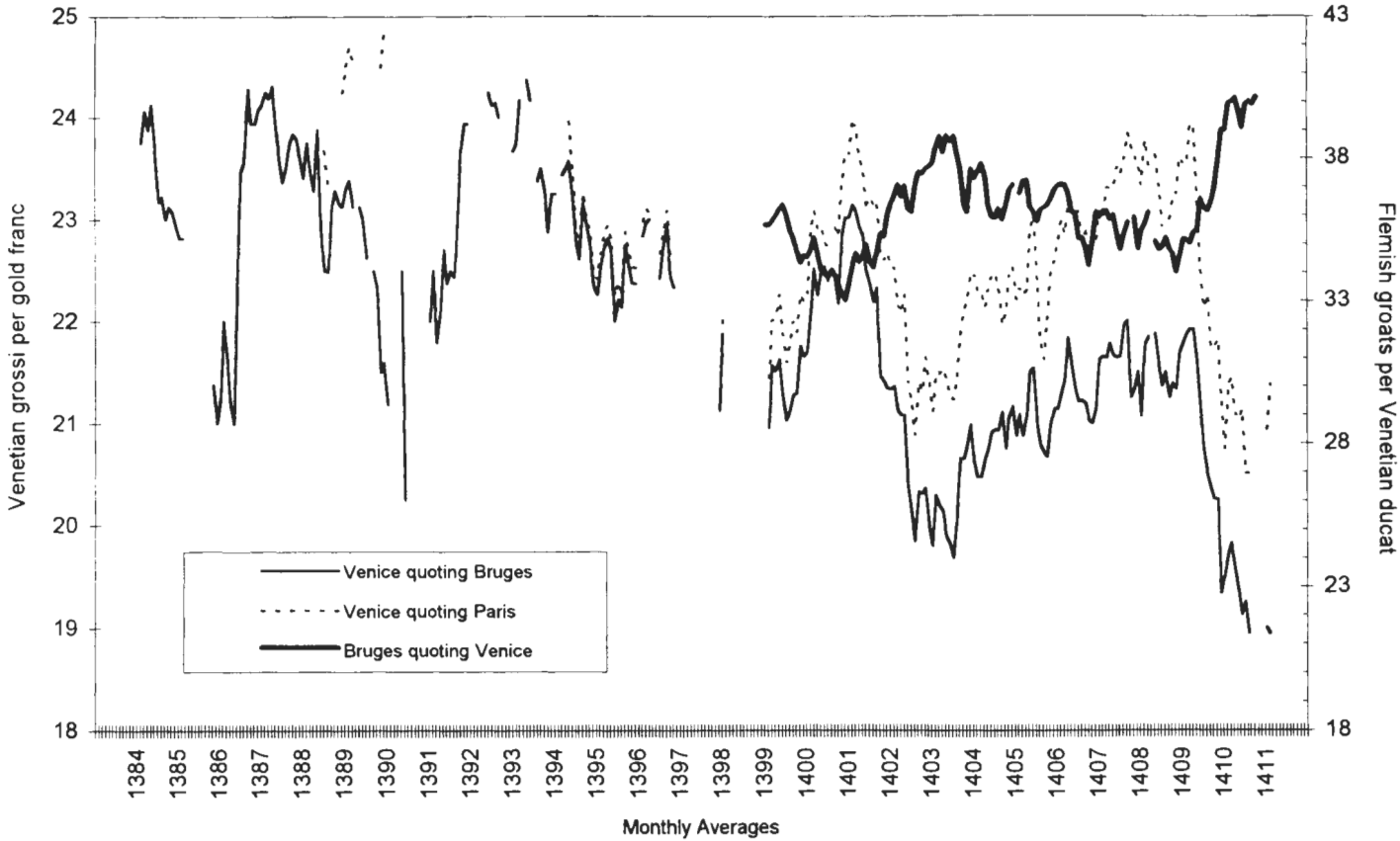
GRAPH C.4. Exchange Rates in Venice quoting Pisa, Bologna, and Lucca, 1384–1410



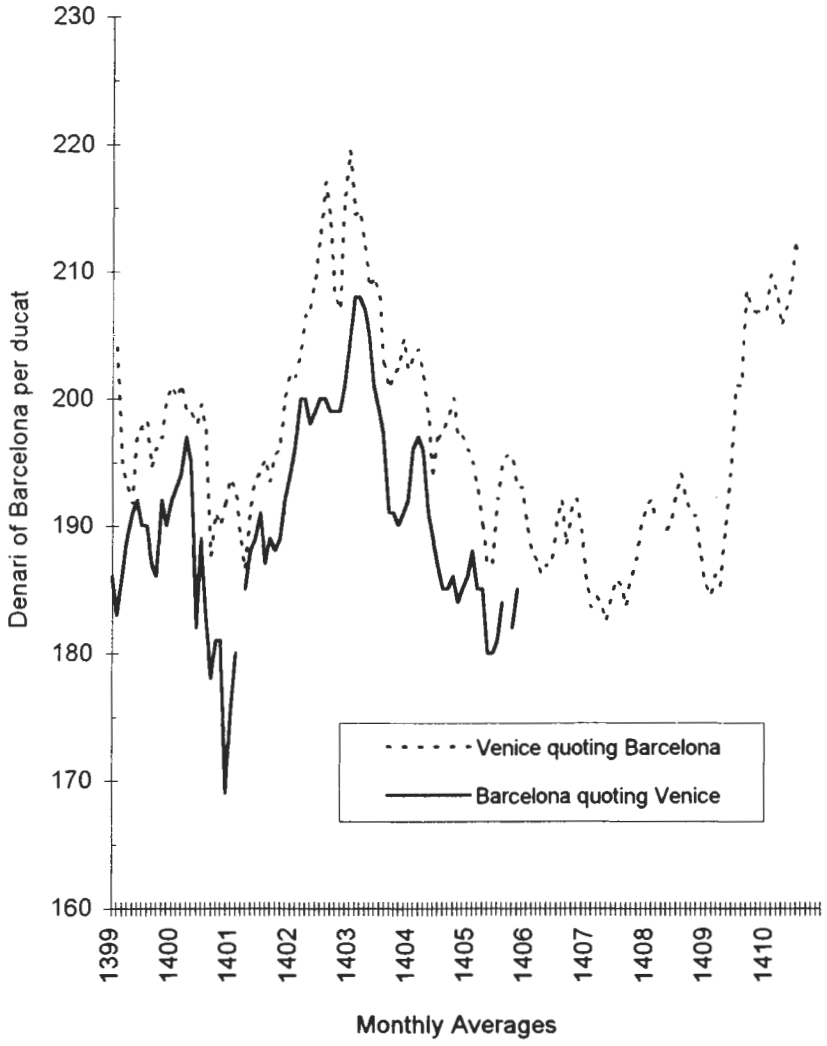
GRAPH C.5. Exchange Rates in Venice quoting Genoa and Milan, and in Milan quoting Venice, 1384–1410



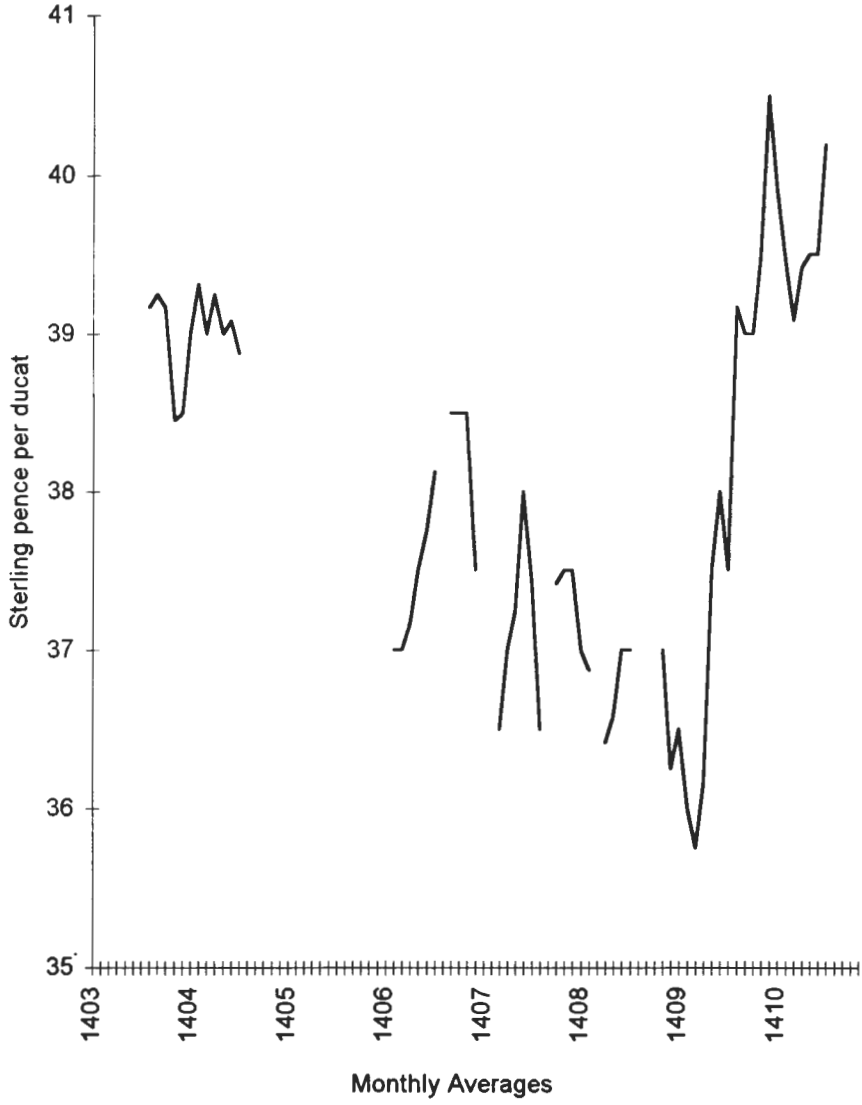
GRAPH C.6. Exchange Rates in Venice quoting Florence, 1383–1411



GRAPH C.7. Exchange Rates in Venice quoting Bruges and Paris, and in Bruges quoting Venice, 1384–1411



GRAPH C.8. Exchange Rates between Venice and Barcelona, 1399–1410



GRAPH C.9. Exchange Rates in Venice quoting London, 1403–1410