

Chapter 4  
 Book Prices in Early Modern Europe: An Economic Perspective  
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“Este libro costó 8 negmit en Anvers a 29 de julio de  
 1531 y el ducado de oro vale 320 negmit”.  
 Hernando Colón

Book Prices in History

One of the remarkable features of early modern print culture is that activities in book production and the book trades were overwhelmingly organised to serve and shape markets and in pursuit of profit. Historical buyers and sellers in these markets left a trail of prices. These prices carry information – about how books were produced, about distance and transport, and about desire and purchasing power. This essay lays out some questions and approaches to the evidence on the prices of early modern books.

From an economic perspective, the diffusion of printing and print media delivered a supply shock to European book markets and, more broadly, the production and circulation of ideas. European society was – in historical terms rather suddenly – exposed to what contemporaries described as “artificial writing”. This technology diffused across cities and was adopted by entrepreneurs producing a highly varied set of products. The range of books available and the set of places where one might purchase books expanded considerably. The conditions under which books came to be produced and circulated changed. Media markets and the economics of book production were transformed.

It is widely acknowledged that the diffusion of printing had a profound impact on culture, politics and religion that was shaped by the reduction in the costs of transmitting and accessing books and other print media such as pamphlets. Contemporaries suggested that the decline in book prices was considerable. In 1468, Giovanni Andrea Bussi observed that prices had declined by 80 percent, enabling “even the pauper to acquire books”.<sup>2</sup> In 1474, the Bolognese manuscript producer Lupoto began selling printed books and offered a printed breviary for 4 gold ducats, one fifth the price of hand-written breviaries he previously sold.<sup>3</sup> In 1481 Angiolo Martinuzzi similarly wrote that “forms [movable type] has wrought that the book that was worth 10 florins is today worth 2”.<sup>4</sup>

While the effects of changes in prices were arguably of first order importance for European society, the social history literature has generally focused on relatively small and local measures of book prices. As Angela Nuovo observes, “The price of books, which was paramount when it came to their diffusion and impact on various levels of society, still awaits overall investigation”.<sup>5</sup>

This essay examines a relatively large body of evidence on book prices. The evidence comprises prices from almost three thousand purchases made between the 1460s and the early seventeenth century and is drawn from both the existing book history literature and an examination

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<sup>1</sup> This research has benefited from financial support from the Centre for Economic Performance at the London School of Economics and the European Research Council, through the European Union's Horizon 2020 research and innovation programme under grant number No. 638957.

<sup>2</sup> Rudolf Hirsch, *Printing, Selling, and Reading, 1450-1550* (Wiesbaden: Harrassowitz, 1974), p. 1.

<sup>3</sup> Anna Melograni, ‘The illuminated manuscript as a commodity: production, consumption and the *cartolaio*'s role in fifteenth-century Italy’, in Michelle O'Malley and Evelyn Welch (eds.), *The Material Renaissance* (Manchester: University of Manchester Press, 2007), p. 219.

<sup>4</sup> Francesca Cenni, ‘La Penna e il Torchio: Una Questione di Soldi’, in Outi Merisalo and Caterina Tristano (eds.), *Dal Libro Manoscritto al Libro Stampato* (Spoleto: Centro Italiano di Studi Sull'Alto Medioevo Spoleto, 2010), translation mine.

<sup>5</sup> Angela Nuovo, *The Book Trade in the Italian Renaissance* (Leiden: Brill, 2013), p. 335. To be clear, this essay is one contribution to a larger body of work on book prices. For example, Angela Nuovo is investigating the European book market, including evidence on prices in the sixteenth and early seventeenth centuries. Cristina Dondi and Neil Harris also present rich evidence on book prices, discussed below.

of historical evidence that has not yet been studied systematically. In particular, this paper studies the book purchases made by Hernando Colón, who was Christopher Columbus' son, a functionary of the Spanish Crown, and the initiator and organiser of what may have been the most ambitious book-buying and library assembly programme in early modern Europe.

The data on prices are used here to consider the questions: How did book prices compare to incomes in the fifteenth and sixteenth centuries? And what factors may explain the observed variation in prices? While this research examines a relatively large set of book prices, it does not attempt to provide a comprehensive overall investigation of prices. It also explicitly defers certain questions for a more properly quantitative and economic inquiry. In particular, the question of how variations in prices at any given time and in the dynamics of prices over time were driven by changes in the mix of formats, physical features of books including binding and illustration, and subject matter changes is one I address more formally in separate but complementary research.

From the perspective of the larger history of printing, this essay restricts itself to a small piece of the big picture, by focusing on patterns in price data. This focus should be seen as a complement to research that privileges the local and case studies. A rich body of literature shows us that the way the changes associated with print media unfolded at the local level was highly varied. These variations reflected the particularities of local cultures, city-level regulation and industrial organisation, and the talents, proclivities, and connections of individual entrepreneurs. Even the technology itself was dynamic, subject to further innovation and improvement, for example in the development of type, in the diffusion of ideas concerning formats and finding aids embedded in books themselves.

### Economics and Historical Prices

Prices occupy a special place in economic thinking as carriers of information. On the one hand, prices carry information about the conditions of supply. In prices, we see the trace of technology, work organisation, the ways goods were moved across land and water, and the nature of competition among producers. Prices simultaneously carry information on the landscape of desire and demand.<sup>6</sup> The willingness to pay tells us about tastes and about the distribution of purchasing power. However, prices frequently provide limited, complicated, and cloudy signals. Many goods and experiences are hard to price, large swathes of historical activity including in the book trades have operated outside the immediate reach of markets, and untangling supply and demand is complicated. These facts are themselves central to the study of variation in prices within economics.

The research challenge has several inter-related components. The first is that price data are both rich and limited. In particular, the available evidence comes from multiple sources and reflects the heterogeneity and differences in market transactions. Books were themselves highly varied commodities, both in terms of subject matter and as physical objects. The same text could be printed in different formats, and sold with or without rubrication, bound or unbound. The same text-object might be sold at different prices in different times and places – perhaps reflecting transport costs or differences in local demand. A book-seller might sell the very same text-object at different prices to different buyers at virtually the same time, for reasons that might reflect differences in what an economist would consider buyer characteristics, or indeed for hard to assess and potentially quasi-random reasons. For example, the accounts of the Venetian bookseller Francesco da Madiis reveal that copies of the same Bible were sold for £5 s10 and for £4 s4 – a 25 percent difference – a

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<sup>6</sup> Research that examines prices and untangles or 'identifies' the impact of shifts in supply from shifts in demand is the subject of very extensive literatures within economics. That particular objective is not pursued in this paper. For a review, see for example, Josh Angrist and Alan Krueger, 'Instrumental variables and the search for identification: From supply and demand to natural experiments', *Journal of Economic Perspectives*, 15.4 (2001), pp. 69-85.

mere six days apart in June 1484.<sup>7</sup> While key features of the observed variation in prices are specific to the early modern book trade, generically many markets reflect similar dynamics. In our current moment, markets exist for labour, homes, automobiles, and indeed incunabula – all of which exhibit interesting and sometimes profound forms of heterogeneity and differentiation. Economics is concerned with, among other things, prices in markets with these features.

### Evidence on Prices

How expensive were books relative to historic incomes? This is a question about what economists would describe as the ‘real price’ of books, and one that is particularly relevant in our context given the quite dramatic price inflation of the sixteenth century. The records of book purchases made by Hernando Colón provide unusually rich evidence on prices in the 1500s and a starting point for this essay. Cristina Dondi observes that, “The great collection... which the natural son of Christopher Columbus, Hernando arranged between 1509 and 1539 probably has no equal in this time”.<sup>8</sup> Klaus Wagner records that Colón bought all types of books, “without restrictions on ideological type or language” – including, for example, books by Protestant authors.<sup>9</sup>

Colón’s collection was not only unusually large in sheer numbers, but was initiated with the express objective of constructing a universal library that would comprise *all* printed books. In a letter to the Spanish crown seeking financial support for his endeavours, Colón explained his intention to establish “a place in Your Majesty’s kingdoms where will be collected all the books in all the languages and faculties [disciplines] that can be found in Christendom and even beyond”.<sup>10</sup> The fact that Colón’s purchases were motivated by a desire to accumulate all possible books makes this collection especially interesting and invites an examination of the actual scope of the collection.

Colón’s purchases are in addition an unusually rich as a source of quantitative evidence on prices. Colón made purchases in over forty cities. For almost two thousand purchases, Colón recorded the price paid for specific volumes in the local currency as well as the prevailing exchange rate between the local currency and the gold ducat. A typical entry in the purchasing notebooks will record the price paid for a book in a local currency, the location of purchase, and the prevailing exchange rate as follows: “Este libro costó 8 negmit en Anvers a 29 de julio de 1531 y el ducado de oro vale 320 negmit”. This structure in the purchasing records enables us calculate prices in a common metric – golden ducats and their silver equivalents – and thus to compare book prices to prevailing incomes, as discussed below.<sup>11</sup>

Even more broadly, the evidence from Colón’s purchases provide a window onto the circuits of trade, wealth, power and knowledge that characterized early modern Europe. The

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<sup>7</sup> See Cristina Dondi and Neil Harris, ‘Oil and Green Ginger. The Zornale of Francesco de Madiis, 1484-1488’, in Malcolm Walsby and Natasha Constantinidou (eds.), *Documenting the Early Modern Book World: Inventories and Catalogues in Manuscript and Print* (Leiden: Brill, 2013).

<sup>8</sup> Cristina Dondi, ‘The Venetian Booktrade: a Methodological Approach to and First Results of Book-based Historical Research’, in Bettina Wagner and Marcia Reed (eds.), *Early Printed Books as Material Objects: Proceeding of the Conference Organized by the IFLA Rare Books and Manuscripts Section* (Berlin: De Gruyter, 2010), pp. 219-228: 222.

<sup>9</sup> Klaus Wagner, ‘La Biblioteca Colombina en Tiempos de Hernando Colón’, *Historia, Instituciones, Documentos*, 19 (1992), pp. 485-495: 486 (translation mine).

<sup>10</sup> Henry HARRISSE, *Excerpta Colombiana: Bibliographie de quatre cents pièces gothiques françaises italiennes et latines du commencement du XVIe siècle* (Paris: Welter, 1887), p. 284 (translation mine).

<sup>11</sup> Tomás Marín Martínez, José Manuel Ruiz Asencio and Klaus Wagner, *Catálogo concordado de la Biblioteca de Hernando Colón* (Madrid: Mapfre y Cabildo de la Catedral de Sevilla, 1993); Archer Huntington (ed.), *Catalogue of the library of Ferdinand Columbus: Reproduced in facsimile from the Unique Manuscript in the Colombine Library of Sevilla* (New York: E. Bierstadt, 1905). Tomás Marín Martínez, *Abecedarium B y Supplementum. Ed. facsímil de los manuscritos conservados en la Biblioteca Colombina de Sevilla* (Madrid: Fundación Mapfre y Cabildo de la Catedral de Sevilla, 1992). I exclude from consideration a limited number of purchases which are either illegible or incorrectly transcribed. For example, where putative exchange rates are erroneous.

financial underpinnings of Colón's book collecting efforts reflected the fact that Colón was Christopher Columbus' son. We observe Columbus himself writing from the Americas to the Spanish Crown in the 1498 to explain: "In the name of the Holy Trinity, we can send from here all the slaves and brazil wood which could be sold. If my information is correct, one could sell 4,000 slaves that would bring at least 20 millions".<sup>12</sup> On Christopher Columbus' first return from the Americas, Hernando was appointed as a page to the Crown Prince. As a teenager, Colón travelled with Columbus to the Americas on a subsequent voyage. After Columbus' death, Colón again travelled to the Americas with his elder half-brother in 1509, a voyage the latter made to assume his position as Governor of Hispaniola. Colón returned to Spain in 1509, entered government service and immediately embarked on his efforts to build an unparalleled library, financed by revenues generated by, among other things, forced labour in the Indies. By the 1530s, Colón received an annuity from Spanish crown to support his library project,

on account of Don Hernando's past and present services, and the services that Admiral don Cristóbal Colón, his father, did for us... every year, and during all his life, 500 pesos in gold...to support and sustain the library he is establishing in the city of Seville, and that these moneys be paid from the rents and profits that we may have in that land.<sup>13</sup>

Colón made purchases in over forty European cities. Figure 4.1 maps both the cities where Colón bought books and the cities where the books Colón purchased were produced. Cities with purchases are marked by darker blue markers. Production is indicated by lighter red markers. Markers are scaled to reflect the number of purchases (printed editions).

**[INSERT FIGURE 4.1 HERE]**

How much did books purchased in these cities cost in real terms? One way to answer this question is to calculate the price of books relative to prevailing incomes. Calculating the price of books relative to workers' wages is just one way to gauge the accessibility of books. Indexing prices to wages has the merit of controlling for wage inflation, but is a strategic simplification for the purposes of illustration. The ratio of prices to wages provides a transparent metric of how accessible books were even to people on relatively modest incomes. Wage data are not readily available in all cities and times in which we observe book purchases. But we do have wage series for 15 European cities from research by Robert Allen, and these provide a pan-European benchmark.<sup>14</sup> I will refer to this as the 'European worker's wage' as a heuristic.<sup>15</sup> I consider the price of book relative to the incomes of salaried university professors and bureaucrats below.

Figure 4.2 presents the distribution of purchase prices relative to wages for unskilled labour and shows that more than half the books purchased cost less than one day's worth of wages.

<sup>12</sup> Cited in Tsvetan Todorov, *The Conquest of the Americas: The Question of the Other* (Norman: University of Oklahoma Press, 1984), p. 47.

<sup>13</sup> Juan Guillén, *Hernando Colón. Humanismo y bibliofilia* (Sevilla: Fundación José Manuel Lara, 2004), p. 205. In the original: "acatando lo que don Hernando Colón nos ha servido y sirve y lo que el almirante don Cristóbal Colón, su padre, nos hizo...en cada un año, para en toda su vida, quinientos pesos de oro de a cuatrocientos y cincuenta maravedís cada peso, que suman doscientos y veinte y cinco mil maravedís para ayuda a su sustentación y de la librería que hace en la ciudad de Sevilla, y que se le paguen de las rentas y provechos que tuviésemos en esa tierra".

<sup>14</sup> Robert Allen, 'The Great Divergence in European Wages and Prices from the Middle Ages to the First World War', *Explorations in Economic History*, 38 (2001), pp. 411-447. A broadly similar qualitative picture emerges if we disaggregate wages and prices by city and retain only prices in those cities for which wage data are available. An alternate approach would be to compute an overall consumer price index and compare the evolution of book prices to 'prices in general' or to prices of a basket of goods that represents the consumption bundle of book purchasers.

<sup>15</sup> Further research may identify data on incomes across a wider range of cities. But the key magnitudes and findings reported here are unlikely to be driven by local variations in wages.

Colón's purchases were remarkable in including a large number of pamphlets, booklets, and other ephemera. In Figure 4.2, Colón's large scale purchases of pamphlets show up in the two places in lower tail of the price distribution where there are spikes in the distribution – indicating that a large share of total purchases were made at these prices.<sup>16</sup>

[INSERT FIGURE 4.2 HERE]

Workers' wages clearly provide just one benchmark for understanding the level of prices. Wage data has the advantage of providing a relatively transparent benchmark, but the typical purchaser of books was highly educated, commanded a higher income, and thus faced prices that were substantially cheaper in relative terms. If surviving records on wages are fragmentary, information on incomes and purchasing power for highly educated professionals is arguably more so and poses its own challenges. However, we have enough evidence to draw some provisional conclusions. For example, in Florence in the 1450s, skilled craftsmen typically earned 50 percent more than unskilled workers. Meanwhile an official at the Florentine chancery earned almost five times as much over a year as an unskilled labourer, and in the 1450s the most highly compensated university professors commanded salaries as much as 18 times the annual income of an unskilled labourer.<sup>17</sup> We can thus imagine scaling prices shown in Figure 4.2 down depending the relative income level we wish to consider.

A larger question concerns the representativeness of the books Colón purchased. One way to shed light on the distribution of types of books purchased by Colón is to classify these books by subject and compare the distribution of subject matter in Colón's purchases to the distribution in the Universal Short Title Catalogue (USTC). Given the potential for survival bias, and the fact that the size of print runs varied across literatures and individual publications, some caution may be in order when drawing inferences from data on the subject matter of *known* editions produced in early modern Europe. That said, the distribution of subject matter in books in the USTC provides a benchmark for considering the range of purchases made by Colón. Figure 4.3 presents a scatter plot that shows how the share of Colón's purchases in a given subject area compares to the share of titles in the USTC classified with that subject. For illustration, the 45-degree line is presented. Were the subjects of Colón's purchases to exactly match the distribution of editions in the USTC, all observations would follow this line. Instead we see that while Colón's purchase of religious books approximately matched their overall share in the USTC (top right observation), Colón purchased far more 'Philology' and far less basic 'Education' than we find in the USTC. More broadly, we see a strong correlation between Colón's purchases and overall output, but that Colón tended to invest more heavily in philosophy, dialectics, poetry, science and mathematics, and academic dissertations – and less heavily in law, classical authors, music, and books on politics and government.

[INSERT FIGURE 4.3 HERE]

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<sup>16</sup> Prices in Figure 4.2 are presented as prices in days of worker's wages on a *ratio scale* along the horizontal axis. The ratio scale has units that advance in constant multiples. In this case, the graph shows prices in multiples of 5: books that cost 1/5 of day's wages, 1 day's wages, 5 day's wage, etc. The ratio scale enables us to more easily visually inspect price variations at the lower end of the distribution. This scale shows us that prices were approximately log normally distributed, with the exception of the two concentrations of pamphlets. Equivalently, this tells us that the underlying raw prices were skewed, with a thick upper tail extending to include purchases of books that cost dozens of days' worth of wages for an unskilled labourer.

<sup>17</sup> Wages for skilled and unskilled labour are from Robert Allen, "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War, *Explorations in Economic History*, No. 38, 2001, pp. 411-447. See online 'Laborers' relative wages (Allen)', <<http://gpih.ucdavis.edu/>>, last accessed 28 May 2018. Compensation for chancery officials and university professors are from Albinia de la Mare, 'New Research on Humanistic Scribes in Florence', in Annarosa Garzelli (ed.), *Miniatura Fiorentina del Rinascimento (1440-1525). Un primo censimento* (Florence: Giunta Regionale Toscana, 1985).

## Prices Over Time: Comparisons Across Sources

While the evidence we have from Colón's purchases is extremely rich, it is also characterized by the limited temporal scope of these purchases and by the fact that they were all made by a single and an unusual buyer. It is natural to wonder how these sales compare to book prices recorded in other times and places and made by other buyers. It thus useful to compare the evidence on books purchased by Colón to other evidence on purchases and prices.<sup>18</sup>

To illustrate and to begin to consider the wider sweep of early modern printing, this paper examines several other sources stretching from the 1460s through the early 1600s. I set the Colón evidence against evidence on book prices from: the 1484 sales records of Venetian bookseller Francesco de Madiis studied and brought to our attention by Cristina Dondi and Neil Harris; purchases made in between the mid-1500s and the early 1600s by the Tuscan bibliophile Bellisario Bulgarini; and a range of book prices recorded by Uwe Neddermeyer.<sup>19</sup> These sources are each transcribed into a database. In the case of Bulgarini's purchasing records this entails identifying and coding the transcriptions in which Bulgarini lists the price paid for each volume in his records. These sources are not exhaustive and each raises interesting questions, which may be explored in future research. But they provide a large and revealing set of observations on market transactions. In total, there are over 2,500 prices observed.

Figure 4.4 plots the raw data on book prices in terms of days of labourer's wages and reveals dramatic price declines in the 1400s, with each marker representing an individual transaction.<sup>20</sup> This evidence suggests most of the decline in the prices of printed books occurred in the 1400s, when books are initially observed costing over 100 days' worth of wages, and suggests a subsequent levelling out of book prices over the 1500s. However, this pattern in the data reflects the fact that the unit of analysis is a price for a book – with as yet no accounting for differences in length or indeed other characteristics. To underscore the interesting nature of this underlying variation, Figure 4.4 labels one interesting highly priced book printed in Hebrew in the mid-1500s: a *Machzor* prayer-book used for devotional purposes on the Jewish High Holidays of Rosh Hashanah and Yom Kippur. The graphical evidence and this example immediately raise questions about the differences in book purchases recorded in different sources. Similarly, the evidence naturally invites questions about changes in the nature of books produced and purchased over time – as the mix of formats changed, as decorative and physical characteristics evolved, and as new content hit the market. It should also be noted that because our evidence includes several very expensive books, the scale of the graph leaves us effectively unable to interrogate visually the variation in prices across the vast

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<sup>18</sup> An interesting point of comparison is between the prices of Colón's purchases and the advertised prices of the same books in bookseller's catalogues. Klaus Wagner provides evidence on catalogue prices advertised by Aldo Manuzio. See Wagner, 'Aldo Manuzio e i prezzi dei suoi libri', *La Bibliofilia*, 77 (1975), pp. 77-82. A direct comparison is complicated not only by the fact that catalogue prices are not transaction prices, but also by the fact that Colón bought these books several years after the catalogue was issued (making the books subject to subsequent price changes) and at foreign locations (implying transport costs). While typically books might depreciate, stable values and even appreciation were certainly possible, and the Aldine editions were distinguished.

<sup>19</sup> Dondi and Harris, 'Oil and Green Ginger'. For Bellisario Bulgarini, see Daniele Danesi, *Cento anni di libri: la biblioteca di Bellisario Bulgarini e della sua famiglia, circa 1560-1660* (Pisa: Pacini Editore, 2014). Uwe Neddermeyer, *Von der Handschrift zum gedruckten Buch: Schriftlichkeit und Leseinteresse im Mittelalter und in der frühen Neuzeit; quantitative und qualitative Aspekte* (Wiesbaden: Otto Harrassowitz Verlag, 1998), provides evidence on book prices from a large and heterogeneous set of sources largely comprising purchases from Southern Germany, the upper Rhine, and Italy, including among many others Peter Drach's accounts, Johann Petz, *Geschichte der Bücherei des Nurnberger Rates* (Nürnberg: Mitteilungen des Vereins für Geschichte der Stadt Nürnberg, 1886), and Vera Sack, *Die Inkunabeln der Universitätsbibliothek und anderer öffentlicher Sammlungen in Freiburg im Breisgau und Umgebung* (Wiesbaden: Otto Harrassowitz Verlag, 1985).

<sup>20</sup> Data from Neddermeyer, Colón, and Bulgarini are as cited above. The 'Zornale' series is from Dondi and Harris, 'Oil and Green Ginger'.

majority of books. The vast majority of books cost in the neighbourhood of one day's worth of wages, and frequently less.

When we account for variation in book characteristics a somewhat different picture emerges. Specifically, we observe marked, persistent, and relatively stable declines in relative prices across the sixteenth century. Figure 4.5 plots the price data accounting for differences in length and *on a ratio scale*.<sup>21</sup> The underlying data here are identical to those in Figure 4.4, with each marker representing one transaction. Here, however, the prices are calculated per-sheet and presented for a hypothetical 25 sheet book.<sup>22</sup> This calculation is straight forward: for a 25 sheet book, consider the price as is; for a 50 sheet book, divide the price by two. This adjustment is designed as a simple heuristic and a first step towards a more comprehensive assessment of prices. The *ratio scale* (along the vertical axis) presents prices going up multiplicatively and serves two illustrative functions. First, it enables us to assess visually variations in prices at the bottom of the distribution, including for books sold for the equivalent of one-half or one-eighth of a day's wages. Second, when data follow a linear trend on a ratio scale this implies an underlying constant *rate* of change. Visual inspection of the data suggest some preliminary conclusions. In particular, Figure 4.5 strongly suggests an approximately stable and certainly persistent decline in the per-sheet price of books spanning the entire period from the later 1400s through the early 1600s.

**[INSERT FIGURE 4.4 AND FIGURE 4.5 HERE]**

There are several possible explanations for the persistent price declines we observe. One possibility is that the characteristics of books examined changed. Perhaps the observed price declines were driven by changes in book characteristics? For example, we might wonder whether variations in prices principally reflected variations in the mix and type of books we observe in evidence on purchases and sales. The obvious question is whether our story is one of shifts over time away from folios and towards quartos, octavos, and other smaller formats – and the rise of more popular print. We might similarly wonder about the size of pages and fonts *within* formats, the presence of illustrations, printing in multiple colours, or indeed the subject matter of books. The hypothesis that changes along these dimensions drove price declines is very plausible, but interestingly does not appear to be the key underlying determinant of either price declines over time or the variation in prices across books at a point in time. For example, we observe price declines over time *within* the Bulgarini data despite limited shifts in the physical nature and content of the books in these purchasing records. We similarly see wide variation in book prices even for identical books sold by the same seller, raising the possibility of considerable idiosyncratic variation in demand and bargaining.<sup>23</sup> In our setting, we might be interested in how book prices change unconditionally – which is what Figure 4.4 illustrates. But we may be also interested in how prices evolve after controlling progressing for the sources of variation in book characteristics. I pursue precisely this analysis and formalise these questions and findings quantitatively in related but separate research.<sup>24</sup>

A second possible explanation for price declines concerns technology and the organization of production. Consideration of these questions returns us to classic observations in the book history literature. Several decades ago, in *L'Apparition du Livre*, Febvre and Martin observed that the basic equipment of the printing press hardly changed between the sixteenth and eighteenth centuries. Yet they simultaneously observed that over the sixteenth century composition shifted from being done

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<sup>21</sup> This figure excludes pamphlets and booklets of 32 pages or fewer. Several of these pamphlets were outliers – among most expensive items purchased by Colón on a per page basis.

<sup>22</sup> This is simply illustrative. Self-evidently, books varied on multiple dimensions. This presentation of the data is merely a first-step towards a more developed and precise measure of real prices.

<sup>23</sup> See, for example in the Dondi and Harris' evidence on Venetian prices from the 1480s, discussed above.

<sup>24</sup> See, for example, Jeremiah Dittmar and Skipper Seabold, 'New Media and Competition: Printing and Europe's Transformation After Gutenberg', forthcoming (2018). See Centre for Economic Performance, working paper at [www.jeremiahdittmar.com/research](http://www.jeremiahdittmar.com/research).

seated to being done by workers standing on their feet. In addition, type with notches marking the orientation of letters was introduced so that letters could be picked from a container and type set without the compositor needing to look at his work “like a modern typist at a keyboard”.<sup>25</sup> These observations strongly suggest that the organization of the composition and larger printing work environment mattered for productivity – and that technology broadly conceived was dynamic. Similarly, Jean-François Gilmont documents both the remarkably high output of press workers in the sixteenth century and the salience of labour disputes over the length of the work day, the pace of work, and the per-worker quantity of output demanded by employers each day.<sup>26</sup> These disputes signal that behind the product prices we observe there were struggles and bargains over labour inputs and worker compensation. As Gilmont observes: “Does the identical nature of the equipment necessarily entail identical working arrangements? Not necessarily. The historical facts suggest that there were at least partial reorganizations”.<sup>27</sup>

A third and related explanation for the observed declines in book prices is competition amongst producers. In a world with more producers, and with closer substitutes in the market place, we would expect the monopoly power of individual producers to decline and for prices to fall. Indeed, given a particular compensation structure for workers, the ability of early modern capitalists in the printing industry to increase worker effort and output would be expected to show up in lower book prices – as opposed to in profits – in so far as the market for books was relatively competitive. A rich body of evidence suggests that printers developed creative and varied strategies to secure market power, but that competition was frequently fierce, quasi-monopoly positions frequently crumbled, and that the range of publications available to consumers broadly was increasing.<sup>28</sup>

Taken as a whole, the evidence on book prices presented here suggests that contemporary observers were not far off – there was great variation, but by the 1480s books had fallen in price by around 80 percent. Perhaps as remarkably, steady price declines persisted across the 1500s. By the late 1500s, books and not just pamphlets frequently cost less than a day’s worth of wages. However, market prices remained extremely variable, including for closely comparable and even identical books. Research on the nature, determinants, and dynamics of early modern book prices provides one setting where perspectives from economics may offer insights to and should be in dialogue with the cultural history and history of the book literatures.

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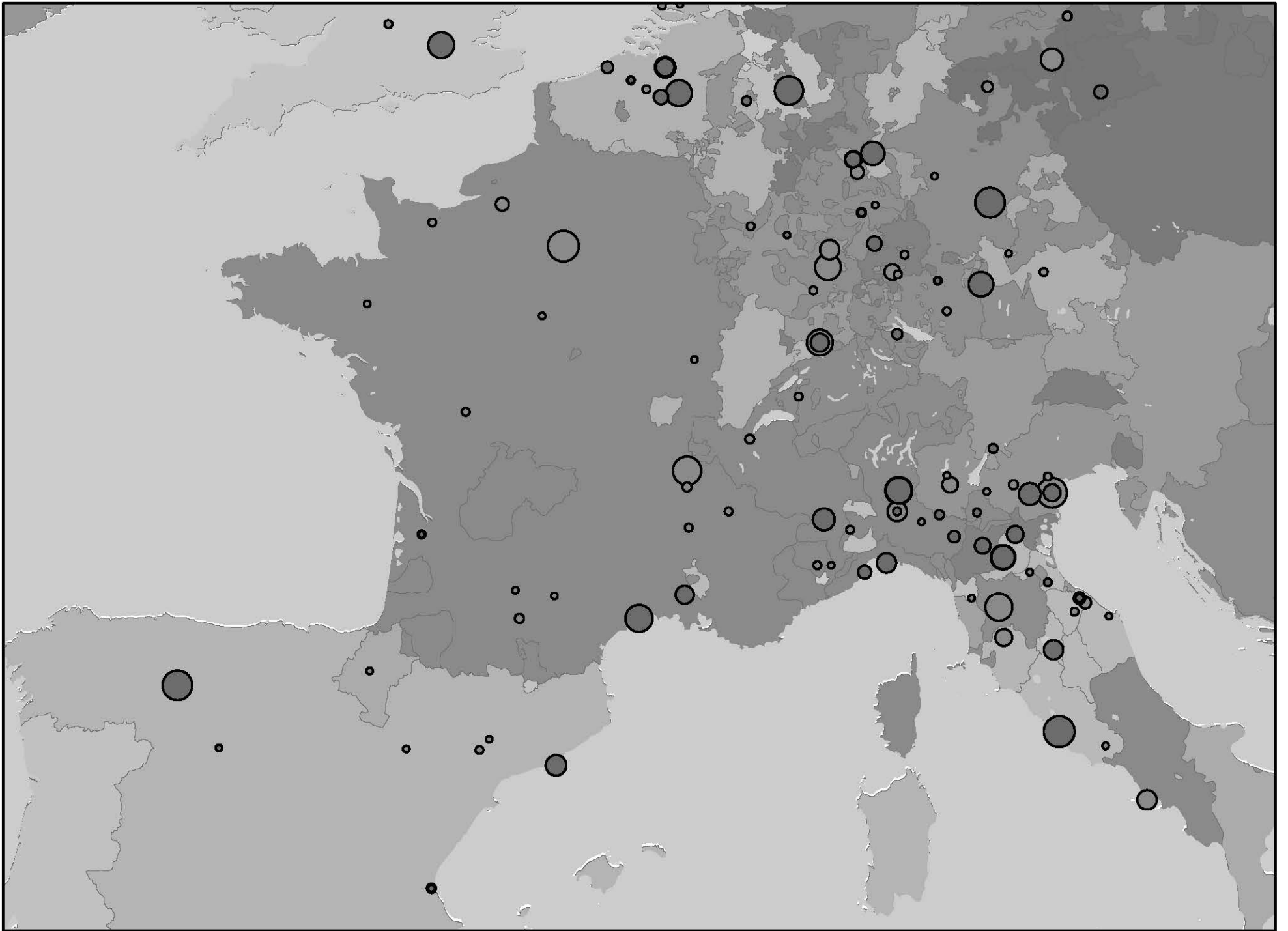
<sup>25</sup> Lucien Febvre and Henri-Jean Martin, *The Coming of the Book* (London: Verso, 1976), p. 62. Febvre and Martin also observe technological changes within the ‘basic’ printing press framework – for example, the adoption of metal in place of wooden screw threads and the displacement of original North German type presses by a Lyonnais variant.

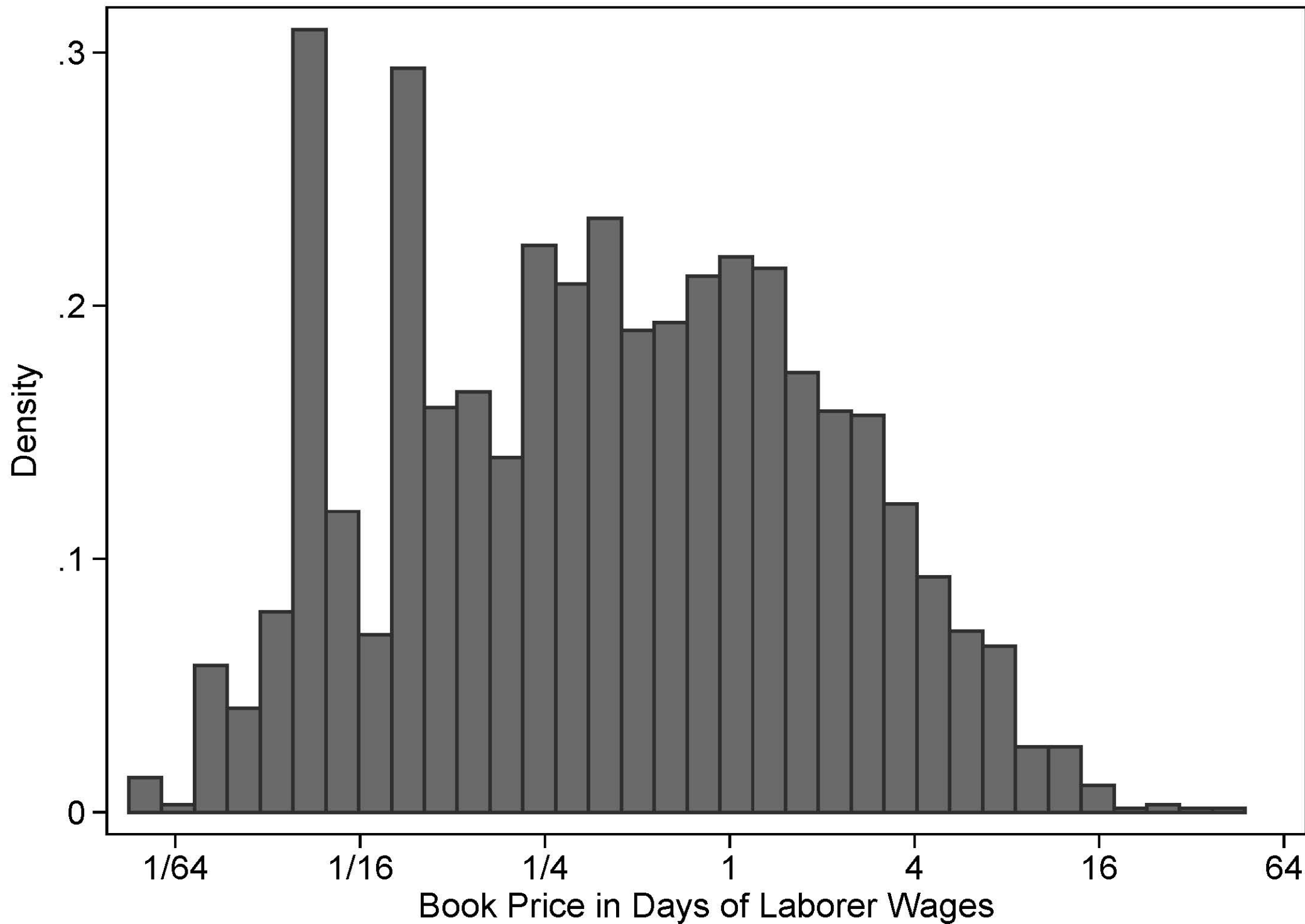
<sup>26</sup> Jean-François Gilmont, ‘Printers by the Rules’, *The Library*, s. 6, 2.2 (1980), pp. 129-155.

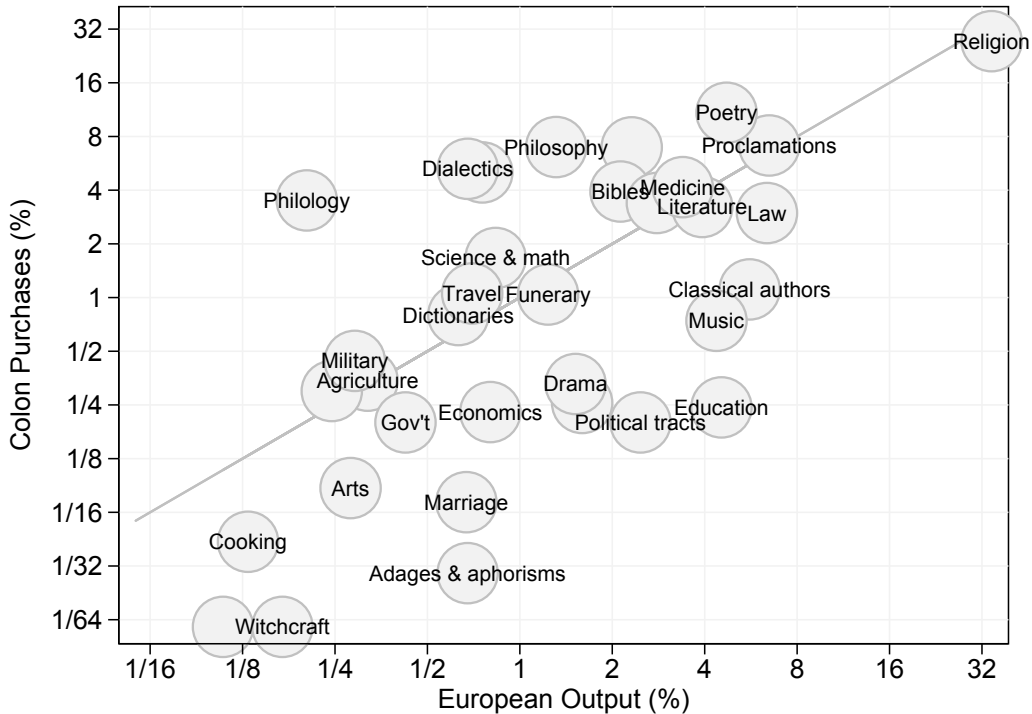
<sup>27</sup> Gilmont, ‘Printers by the Rules’, p. 130.

<sup>28</sup> For example, Ian MacLean studies the competitive conduct of Frankfurt printer André Wechel, in the textbook market in the later 1500s. When competitors printed school books, Wechel used a quantity competition response strategy and unleashed, “a massive and systematic onslaught...aiming at little short of a monopoly...by putting into practice the commercial principle: if a competitor produces an edition, do the same”. This was almost textbook game-theoretic behaviour. See Ian MacLean, *Learning and the Marketplace: Essays in the History of the Early Modern Book* (Leiden: Brill, 2009), p. 177. Examples of partnerships and syndicates that operated to secure market power are documented in Nuovo, *The Book Trade in the Italian Renaissance* and Christoph Reske, *Die Buchdrucker des 16. und 17. Jahrhunderts im deutschen Sprachgebiet: auf der Grundlage des gleichnamigen Werkes von Josef Benzing* (Wiesbaden: Harrassowitz, 2007).

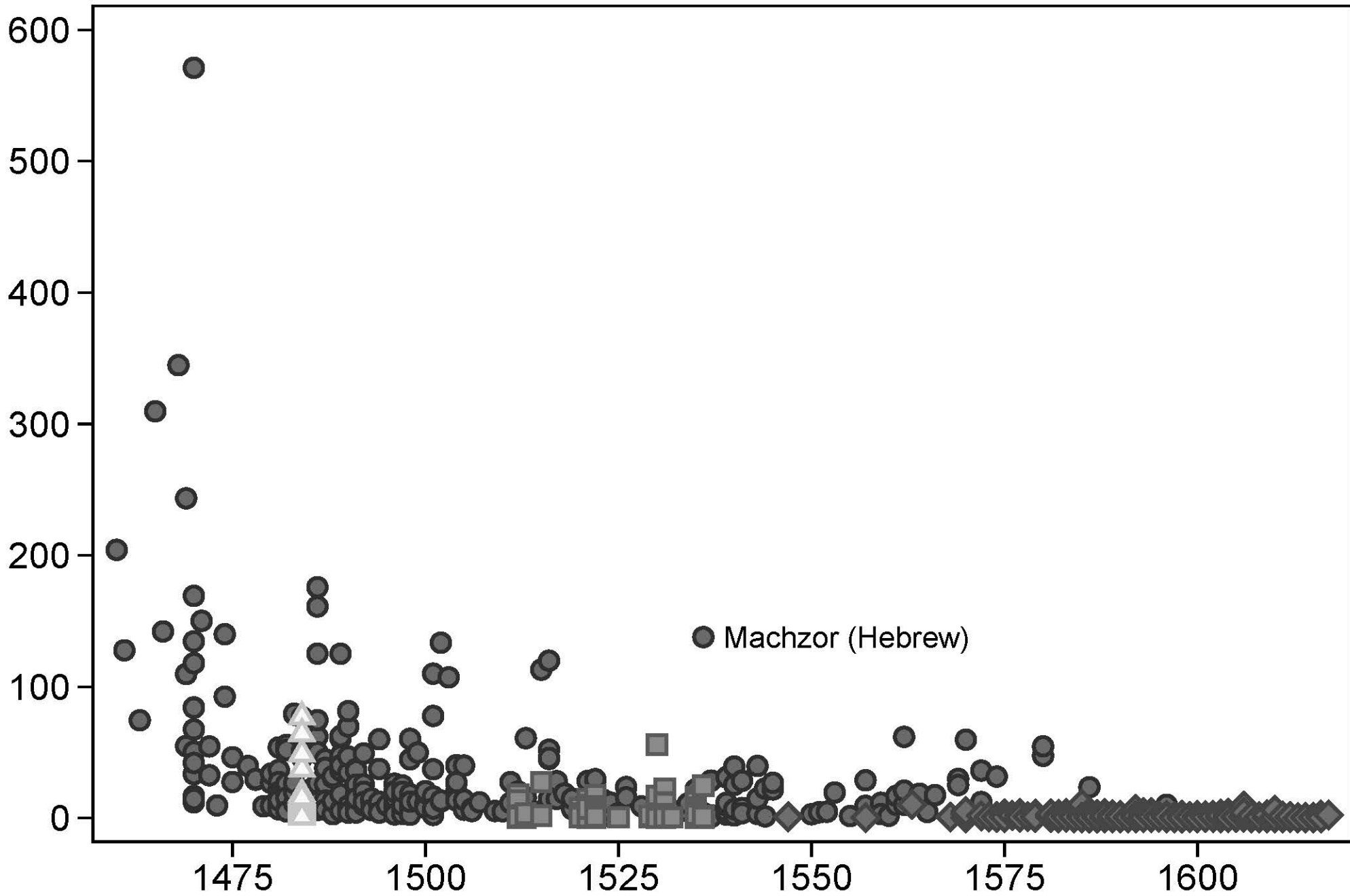




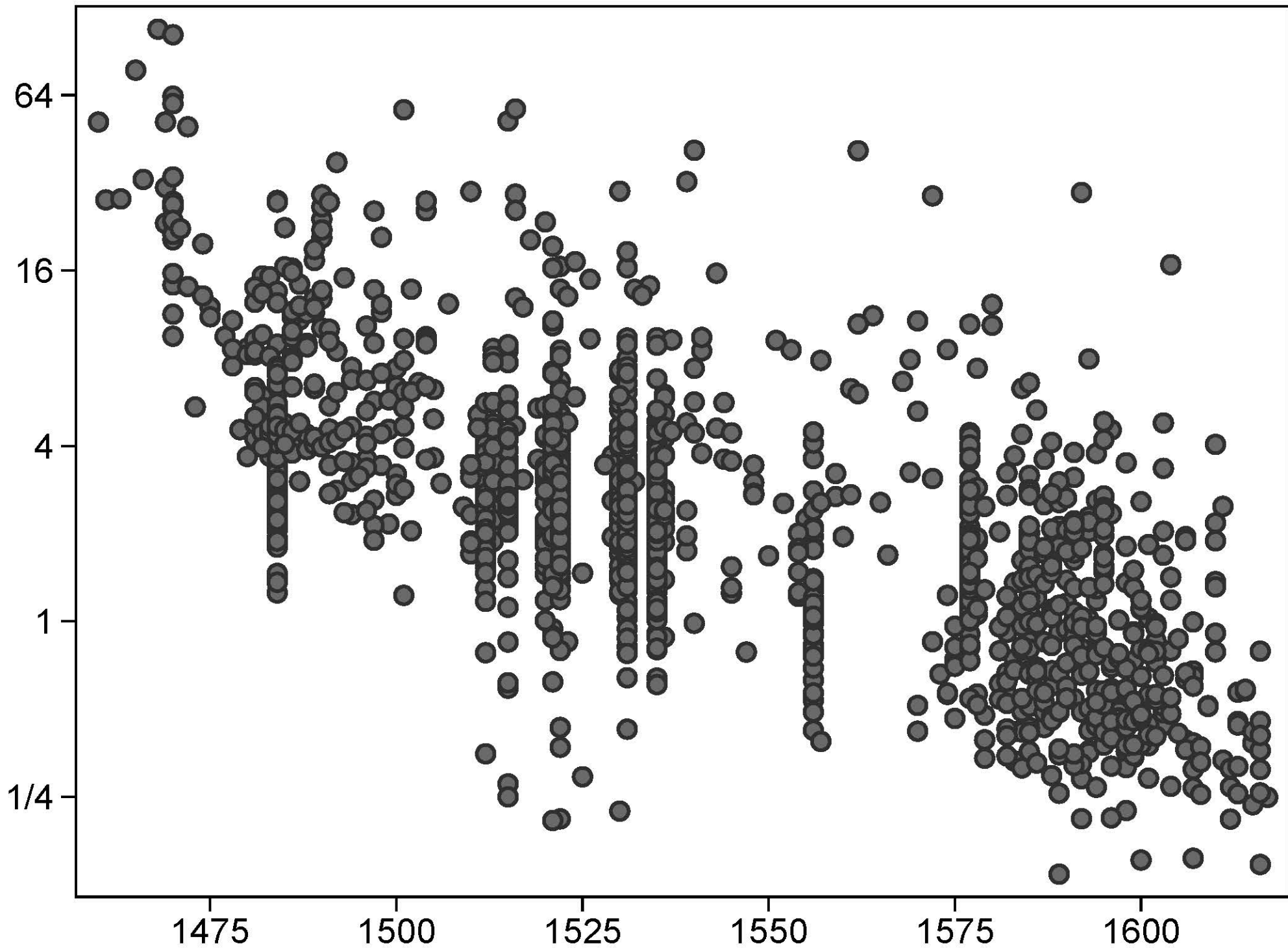




Price in Daily Wages



Price of 25 Sheets in Daily Wages



**Caption titles for figures should read as follows.**

Figure 1: Cities in Hernando Colón's Book Purchases

Figure 2: Distribution of Book Prices in Colón's Purchases

Figure 3: The Subject Matter of Colón's Purchases Compared the the USTC

Figure 4: Book Prices 1460 Through 1618

Figure 5: Prices for 25 Sheets