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Shifting Price Levels of Books Produced at the Officina Plantiniana in Antwerp, 1580–1655

1 Introduction

The evaluation of the price of a book is complex and requires a good understanding of the context within which this price is fixed. Anyone who regularly walks into a local bookshop has at least an intuitive sense of what a regular novel, non-fiction book, travel guide or comic strip should cost. Customers can differentiate between "cheap" and "expensive" books, both amongst different categories of books and within a specific category. Close observers may also be able to produce reasons why a given work is more expensive than another one. This may have to do with the content of the matter, material features of the commodity, and with marketing as such, or different combinations of those factors. Design books, for example, are often beautifully made, well-executed and set in tasteful typography, with lots of colors and illustrations printed on high-gloss paper, often soundly bound. The target audience of this kind of book may be rather limited, resulting in limited print runs and therefore higher production prices per copy, which, in turn, helps to explain a substantial bill at the counter. Retail prices are factored into the bookseller's cut on top of the wholesale prices fixed by the publisher, whose first concern is where to locate a specific book in the market, production costs being only one factor in the whole story.

Just as today, in early modern society a book's price was one of the key factors in accessing printed information, knowledge, and ideas. Those who could not consult books in a library at a religious institution, a court, or a university, were basically left with the possibility either of borrowing books or of buying them. In this context, the price of books was an important impediment. How much did people have to pay for information, knowledge, opinions, or stories, helping them improve their lives and engage in societal debates? An assessment of the price of books in the early modern period is therefore crucial better to understand this important barrier.

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Generally speaking, studies dealing with book prices in the early modern period remain rare, and this observation also holds for the Southern Netherlands. The reasons for this neglect are manifold. An interdisciplinary subject by nature, the study of early modern book prices was often set aside by economic historians on the one hand (as being "too bookish") and by book historians on the other (as involving "too much economics"). In addition, the subject is a methodological minefield, involving economics, statistics, and bibliography. First-hand books have to be distinguished from second-hand books. In the trade, first-hand books often circulated unbound, but customers would often have them bound upon acquisition, either at the book shop or elsewhere. Prices entered in cashbooks kept at the shop usually do not detail the price of the actual book and additional binding costs, the potential range of which is very broad. Moreover, it makes a difference if payments are made in cash or entered in an account, in which case some customers received discounts, for instance, if they were regulars, or when placing substantial orders. In the early modern period, life cycles of books were also much longer than they are today. As a result, a first-hand book is not always a recent publication; it may have been produced several years or even decades earlier, in a completely different economic climate; it may have been published locally or else far away, involving packing, tolls, and shipping. Not only the "age" of a specific edition needs to be known, but also its format and other material features, such as paper, type, language, and illustrations, because they all may have an impact on the price. This involves an understanding of the international trade, networks, and thorough bibliographical knowledge. Last but not least, surveys of economic aspects of the book trade depend heavily on business archives, which, apart from that of the Officina Plantiniana in Antwerp, have received only scant attention[1].

The Plantin-Moretus archives are so overwhelmingly vast that they have overshadowed most others and, at the same time, demoralized many a book historian. A virtual reconstruction of the archives of the Plantin-Moretus Museum published by Christian Coppens in 1998–1999 re-groups the documents according to subject matter[2]. This re-organized inventory clearly indicates how many, and how many different documents related to economic aspects of the Officina Plantiniana have been preserved. To name just a few, the *Journals*, recording daily transactions, run from 1576 to 1865; *Livres de boutiques* (transactions at the shop) from 1556 until 1840; then there are registers recording transactions with booksellers, the trade with Spain and Portugal, a large series of *Carnets de Francfort* recording transactions at the Frankfurt Fairs. In addition, there are series documenting compositors' and printers' wages, purchases of paper, and so on. For the year 1589 alone, the *Journal* records about 7,900 titles, the Lent and September *Carnets de Francfort* for that year about 3,000, and the *Livre de boutique* some 2,300. The amount of information seems to be simply indigest-

1 Recently, a major study about another important Antwerp firm was published by S. van Rossem, *Het gevecht met de boeken. De uitgeversstrategieën van de familie Verdussen (Antwerpen, 1589–1689)*, Antwerpen 2014.

ible, in part explaining why, in 1972, the curator of the Museum Plantin-Moretus, Leon Voet wrote: "Of all aspects relating to the Plantin printing shop the problem of sales has up to now been least dealt with"[3]. Voet cites a handful of studies, most of which pertain to specific kinds of printed products, such as prints, maps, or music books. The curator himself provided several analyses for different business years, but mostly based on subtotals and totals recorded in the documents, and rarely on itemized transactions[4]. Subsequently, the number of economic analyses based on Plantin's book production, or on that of his successors, remained limited, and Voet's remarks were therefore echoed twenty-four years later by Jan Materné[5]. Though Materné himself embarked on a major economic analysis of the trade of the famous Antwerp firm, this undertaking was unfortunately discontinued after a number of contributions[6].

The present contribution resumes the thread in offering a long-term overview of prices of an important part of the book production by the Officina Plantiniana from 1580 until 1655. By doing so, it complements some of Denucé's investigations, corroborates a number of his conclusions, and also extends the period studied by him by fifteen years. I shall also focus more on methodological questions and pay attention to the question of "cheap" books within Plantin's production and that of his successors.

2 Production list M321

The starting point of the present analysis is manuscript M321 at the Museum Plantin-Moretus in Antwerp, beginning with the words "Catalogvs librorvm a Chr Plantino Annº. M.D.LXXXX. impressorvm" (Catalogue of the books printed by Christopher Plantin in 1580). It is a dynamic production list of titles with prices for the book trade starting in 1580, and was completed year by year, by several hands, down to 1655. Of a total of 165 leaves, 131 are used, listing 2,367 entries of editions and, in a number of cases, different issues of editions.

2 C. Coppens, *The Plantin-Moretus Archives: An Index to Jan Denucé's Inventory of 1926*, in "De Gulden Passer", 76–77, 1998–1999, pp. 334–360.

3 L. Voet, *The Golden Compasses. A History and Evaluation of the Printing and Publishing Activities of the Officina Plantiniana at Antwerp in Two Volumes*, 2 vols., Amsterdam 1969–1972, here vol. 2, p. 387, no. 1.

4 L. Voet, *Production and Sales Figures of the Plantin Press in 1566*, in S. van der Woude (ed.), *Studia bibliographica in honorem Herman de la Fontaine Verwey*, 1966, pp. 418–436; L. Voet, *The Golden Compasses*, vol. 2, chap. 16, and appendices 1–6.

5 J. Materné, *La librairie de la Contre-Réforme: le réseau de l'Officine plantinienne au XVIIe siècle*, in F. Barbier / S. Juratic / D. Varry (eds.), *L'Europe et le livre: réseaux et pratiques du négoce de librairie, 16e–19e siècles*, Paris 1996, pp. 43–59, here p. 44.

6 For this article, especially the following contribution is important: J. Materné, *The "Officina Plantiniana" and the Dynamics of the Counter-Reformation, 1590–1650*, in S. Cavaciocchi (ed.), *Produzione e commercio della carta e del libro secc. XIII–XVIII*, Firenze 1992, pp. 481–490.

The document's structure remains basically unchanged throughout the entire period. Entries often literally correspond with actual title pages, citing title and author (though sometimes abbreviated), and these are often followed by names of editors and translators. Bibliographical formats are almost always present, and about one in two entries mentions the presence of illustrations; in 15% of the cases, details about paper are given. Although those details sometimes appear in sixteenth-century entries too, the majority of them date from the period 1601–1655. In more than forty cases, entries mention typographical details, such as the use of very small or very large type. Furthermore, almost all entries duly note the number of sheets required for the production of one copy and its price. The former element is a technical one specific to the trade, explaining and justifying the price.

Prices are expressed in *Carolus Gulden* (Carolus guilders), the account money usually used in the Officina Plantiniana for earnings and expenses[7]. One Carolus Gulden consisted of *florijnen* (florins), each one of which was made up of twenty stuivers (stivers)[8].

From comparison with other parts of the bookkeeping, it is clear that the prices mentioned are to be understood as prices on account, to be settled by the buyer at a specific point in the future, usually within six months. Unlike cash, money on account is not susceptible to fluctuation. The prices entered here seem to be fixed in or not much later than the moment of production, and are to be considered as a *prix juste*, a correct and fair price according to what the market considers right[9]. Depending on the situation, discounts could be granted, for so-called *libri nigri* (black books) up to 40%, or, in the case of *libri rubro-nigri* (red and black books, i.e., liturgical books) up to 25%[10].

Not unimportant for this analysis, prices always pertain to first-hand, unbound books, i.e. *in albis*, thus avoiding difficulties connected with bindings and other types of finishing.

The production list is beyond any doubt a very valuable source for the study of prices of first-hand books on offer by the Officina Plantiniana over a period of 76 years. It allows for comparisons of pricing strategies of the last ten years under its founder, Christopher Plantin (c. 1520–1589), and by three successors of his: Jan Moretus I (in charge of the firm from 1589 until 1610), Balthasar Moretus I and Jan Moretus II (active

7 L. Voet, *The Golden Compasses*, vol. 2, p. 445. About Carolus Gulden as account money, see E. Aerts / H. van der Wee, *Les Pays-Bas espagnols et autrichiens*, in J. van Heesch / J.-M. Yante / H. Lowagie (eds.), *Monnaies de compte et monnaies réelles. Pays-Bas méridionaux et principauté de Liège au Moyen Âge et aux Temps modernes*, Louvain-la-Neuve 2016, pp. 163–200, here especially pp. 182–188. There is only one exception in this production list. On fol. 113r the price for a copy of Rembertus Dodoens, *Cruydtboeck* from 1644 is explicitly priced in cash (*parata pecunia*). With thanks to Diederik Lanoye.

8 L. Voet, *The Golden Compasses*, vol. 2, p. 445, no. 2. In turn, 1 stuiver makes 4 *oorden*, but the latter name never explicitly appears in M321. I will always refer to *florijnen* or *stuivers*.

9 R. de Roover, *The Concept of the Just Price: Theory and Economic Policy*, in "Journal of Economic History", 18, 1958, 4, pp. 418–434.

1611–1641), and Balthasar Moretus II (1642–1674), for whom M321 documents the first fourteen years of his career.

The sheer number of entries in the document may suggest that it is complete, but that is not the case. Comparison with Leon Voet's bibliography of the works published by Christopher Plantin, covering the period 1555–1589, and with Dirk Imhof's bibliography of his successor, Jan Moretus I, for the years 1589–1610, both show that many – but not all – editions and issues are present in the list[11]. Not listed, for instance, are the numerous *Geboden en uytroepen*, commissioned by the city of Antwerp, besides other publications, but, overall, M321 seems representative for the year 1589–1610. For the following years, comprehensive bibliographies dealing with the production of Jan Moretus I's successors are lacking. Many editions are already present in the *Short Title Catalogue Flanders* (*STCV*), but at this point, this online retrospective bibliography has not yet covered the entire production[12].

3 Assessment of book prices

There are different methods for assessing historical book prices. One can consider either nominal prices paid for copies of editions, or nominal prices per printing sheet. In both cases, price evolution in time has to be factored in, as price levels constantly vary. This can be done in different ways, for example by calculating price indexes for consecutive time-spans, or by comparing book prices with wages.

The calculation of prices per printing sheet requires some explanation. The printing sheet, or simply sheet, is a standard unit in printing shops. Since the time of Gutenberg, books printed with moveable type have been printed on large sheets of paper[13]. Compositors prepare the form with moveable type for one side first, then as

10 In the second half of the seventeenth century, the masters of the Officina Plantiniana wanted to sell off their stocks of black books, see K. Selleslach, *Het einde van het zwarte tijdperk. De uitverkoop van de "libri nigri" door de "Officina Plantiniana"*, in "De Gulden Passer", 94, 2016, 2, pp. 263–286.

11 L. Voet, *The Plantin Press. A Bibliography of the Works Printed and Published by Christopher Plantin at Antwerp and Leiden*, 6 vols., Amsterdam 1980–1983; D. Imhof, *Jan Moretus and the Continuation of the Plantin Press. A Bibliography of the Works Published and Printed by Jan Moretus I in Antwerp (1589–1610)*, 2 vols., Leiden 2014. Production list M321 contains only a handful of broadsheets, probably because most works produced in this format did not belong to the category of works for the open market, but had been ordered and paid for by a single party.

12 The *STCV* is freely available online: www.stcv.be. For a discussion of its completeness, see G. Proot, *Survival Factors of Seventeenth-Century Hand-Press Books Published in the Southern Netherlands. The Importance of Sheet Counts, Sammelbände and the Role of Institutional Collections*, in F. Bruni / A. Pettegree (eds.), *Lost Books. Reconstructing the Print World of Pre-industrial Europe*, Leiden 2016, pp. 160–201.

13 Still one of the best introductions is P. Gaskell, *A New Introduction to Bibliography*, 2nd edition, New Castle 2006.

many sheets as needed for the entire print run are printed on one side of the sheets. Then the form for the other side is composed and printed on the back of all the sheets. After drying, sheets are folded and, when needed, tucked into one another to make gatherings, which are then put in the right order to be bound as books when needed. In this process, it does not matter how many pages are printed on one side of a sheet; the number may vary from one page per side to twenty-four, thirty-two, or even more. What really matters for printers is the quantity of printing sheets required to produce one copy of a book, big or small. As a result, a book printed in large folio format consisting of ten printing sheets should cost as much as a book printed in the much smaller octavo format with an equal number of printing sheets. In this example, the first book will comprise 20 leaves or 40 pages, while the second one will have 80 leaves or 160 pages. In both cases, investments in materials (paper, type, ink, ...) and labor time are more or less the same. This explains why Plantin's production list, and other documents related to the trade, indicate numbers of sheets per copy, rather than leaves or pages[14].

The production cost for a sheet of a plain book of the most frequent bibliographical formats (folio, quarto, octavo) printed in black ink only in a normal type size remains relatively stable across editions produced at the same period of time. But some features may impact production cost, the most important of which are the use of different colors, of illustrations (in relief or in intaglio), very small formats, special paper, and specific types (very small type or «exotic» ones). To begin with the latter: "exotic" languages such as, for instance, Greek or Hebrew, require compositors and proofreaders with specific language skills, and in addition material investment in special type. Very small formats (duodecimo, and especially twenty-fourmo (24mo), thirty-twomo (32mo) or smaller) are usually set in (very) small type, increasing composition times, while printing times remain more or less equal. The use of extra large sheets can be somewhat slower and sometimes require larger printing presses, but, even when normal presses are involved, whiter, much thicker, much thinner, or other special papers mainly increase material costs, as special paper is more expensive. Sheets in different colors require different inks and complicate the printing process. Each color sheet has to go under the press twice, doubling printing times. One way or another, when printing in black, this type has to be raised, or parts to be printed in red have to be masked or temporarily taken out, and the other way around for the second color, while the final result needs to be registered correctly[15]. The insertion of illustra-

14 See for example the printed book seller's catalogue by Chrétien Wechel, *Index librorum omnium, quos suis typis excudit Christianus Wechelus*, Paris, C. Wechel, 1544, 8vo, which does not mention prices but the number of sheets. Cf. G. Guilleminot-Chrétien, *Prostant in nostra taberna: "les catalogues du libraire Chrétien Wechel"*, in S. Hindman et al. (eds.), *Le livre, la photographie, l'image & la lettre. Essays in honor of André Jammes*, Paris 2015, pp. 46–53.

15 For a discussion of different techniques, see A. Stijnman / E. Savage, *Printing Colour 1400–1700. History, Techniques, Functions and Receptions*, Leiden 2015.

tions and specific ornaments in relief is not very complicated, mainly requiring extra investments in designs and their execution by specialized woodcutters. Woodblocks can go under the press in the same forms together with moveable type and do not stretch the printing process. This is different with illustrations and embellishments executed in intaglio. Sheets combining relief and intaglio printing have to go under two different presses, and even Plantin and the Moretuses usually subcontracted the insertion of intaglios to specialized workshops who mastered the roller press[16]. This operation delayed the production and was paid for by piece. Also the design of engraving or etchings had to be paid for, as well as for the execution into copper.

4 Pricing strategy

With this information in mind, the entries in list M321 can be analyzed. A total of 338 records were excluded, because they were incomplete, unclear, or posed other problems. The remaining 2,029 records are distributed over the four generations of masters as follows: 298 entries from the period 1580–1589 were produced under Christopher Plantin, 502 under Jan Moretus I between 1589 and 1610, 961 under Jan Moretus II and Balthasar Moretus I in the period 1610–1641, and 234 under Balthasar Moretus II between 1641 and 1655; 34 entries cannot yet with certainty be attributed to any of the four generations, but could prove useful for a number of calculations[17].

4.1 Price per copy

Table 1 gives an overview of the nominal and relative numbers of editions according to price per copy in stuivers for four generations of master printers at the Officina Plantiniana according to list M321. Price ranges redouble each time. The first category consists of copies priced at less than 1 stuiver, the second category prices between 1 stuivers (inclusive) and 2 stuivers (exclusive), and so on. Figure 1 is based on the same information there presented in relative numbers (percent).

16 A. Griffiths, *The Print before Photography. An Introduction to European Printmaking 1550–1820*, London 2016, p. 44.

17 This is the case for 9 entries from 1589, 12 from 1610 and 13 from 1641.

Tab. 1: Nominal and relative number (between brackets) of editions listed in M321 grouped according to redoubling price ranges and per generation; prices in stuivers (Carolus Gulden)

	Christopher Plantin		**Jan Moretus I**		**Jan M. II & Balthasar Moretus I**		**Balthasar Moretus II**	
	n.	%	n.	%	n.	%	n.	%
< 1 st	3	(1.0)	11	(2.2)	10	(1.0)	0	–
1 ≤ 2 st	45	(15.1)	24	(4.8)	46	(4.8)	5	(2.1)
2 ≤ 4 st	72	**(24.2)**	53	(10.6)	72	(7.5)	10	(4.3)
4 ≤ 8 st	71	**(23.8)**	105	**(20.9)**	105	(10.9)	24	(10.3)
8 ≤ 16 st	47	(15.8)	116	**(23.1)**	219	**(22.8)**	29	(12.4)
16 ≤ 32 st	31	(10.4)	58	(11.6)	156	**(16.2)**	34	(14.5)
32 ≤ 64 st	14	(4.7)	48	(9.6)	104	(10.8)	24	(10.3)
64 ≤ 128 st	9	(3.0)	51	(10.2)	90	(9.4)	35	**(15)**
128 ≤ 256 st	5	(1.7)	30	(6)	127	(13.2)	40	**(17.1)**
256 ≤ 512 st	1	(0.3)	4	(0.8)	27	(2.8)	27	(11.5)
512 ≤ 1024 st	0	–	2	(0.4)	4	(0.4)	4	(1.7)
≥ 1024 st	0	–	0	–	1	(0.1)	2	(0.9)

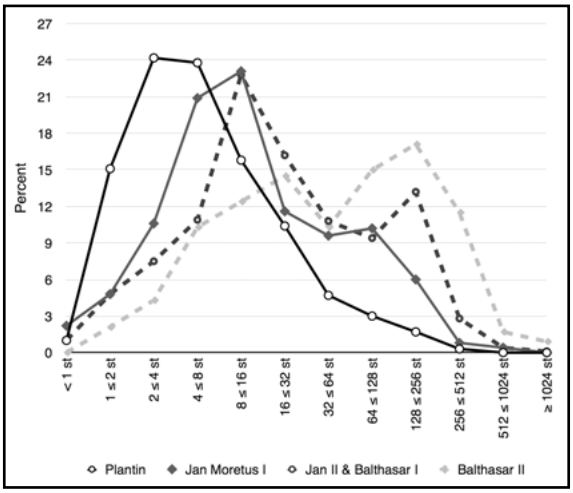

Fig. 1: Relative number of editions listed in M321 according to price per copy.

Both Table 1 and Figure 1 indicate a clear shift towards more expensive books. Between 1580 and 1589, during Plantin's time, the two categories with the highest number of books are those costing between 2 and 4 stuivers per copy (24.2%) and between 4 and 8 stuivers per copy (23.8%). One generation later, under Jan Moretus I (1589–1610), the

most populated categories are those between 4 and 8 stuivers per copy (20.9%) and between 8 and 16 stuivers (23.1%). Under Jan II and Balthasar I, this shifts up again one category, to that of books sold at between 8 and 16 stuivers per copy (22.8%) and between 16 and 32 stuivers (16.2%). Finally, under Balthasar Moretus II, the category costing between 128 and 256 stuivers is the one with most books (17.1%), followed by the category between 64 and 128 stuivers per copy (15%)[18]. This shift can also be traced by looking at how many books cost below a specific price over all four generations. For instance, under Plantin, 64.1% of all titles listed in M321 cost 8 stuivers or less, under Jan Moretus I this portion dropped to 38.5% of his editions in M321, while under his successors this diminished further to 24.2%, and under Bathasar Moretus II no more than 16.7% of his editions cost less than 8 stuivers per copy.

In part, this is the result of inflation. Figure 2a shows that wages in this period systematically rose as well, from about 12 stuivers per day to about 20 stuivers for compositors at work at the Officina Plantiniana[19]. In spite of this increase, the number of editions listed year by year in M321 which cost for one copy as much as an average daily compositor's wage, or less, decreases systematically as well (fig. 2b). In the period 1590–1595, 68% of all books listed in M321 cost the equivalent of one day's work of a compositor. Fifty years later, in the period 1641–1645, a compositor's daily wage would give access to 30% of the books published in the same period at the Officina Plantiniana. In other words, book prices went up much more rapidly than wages. In addition, trendlines on both graphs indicate that those changes are systematic and coherent.

4.2 Price per sheet

Because books basically consist of a number of sheets, prices can also be assessed per sheet, making it easier to single out specific elements influencing price levels.

18 Compare with J. Materné, *The "Officina Plantiniana"*, p. 486–487 (Table 3). Materné uses a threshold of 10 stuivers instead of average laborer's wages.

19 Average price per day based on weekly wages paid to 63 different compositors at work at the Officina Plantiniana between 1590 and 1655 as listed in C. Verlinden / E. Scholliers (eds.), *Documenten voor de geschiedenis van prijzen en lonen in Vlaanderen en Brabant, Deel II (XIVe–XIXe)*, Brugge 1965, pp. 1062–1227. In order to obtain a more nuanced idea of real wages, wages per week are here each time divided over seven days. The compositors at the Officina Plantiniana were well-remunerated, because unskilled labourers earned after the period 1600–1610 only about 8.4 stuivers per day, see E. Scholliers / C. Vandenbroeke, *Structuren en conjuncturen in de Zuidelijke Nederlanden 1480–1800*, in D.P. Blok et al. (eds.), *Algemene geschiedenis der Nederlanden*, Haarlem 1980, 5, pp. 289–290. Materné cites an increase of wages for pressmen: "Average wages paid to the pressmen per ream consumed rose from 18 stivers in the 1590s to 39 stivers in the 1540", cf. J. Materné, *The "Officina Plantiniana"*, p. 486. Those wages probably pertain to teams of a pressman and an inker, who always worked together.

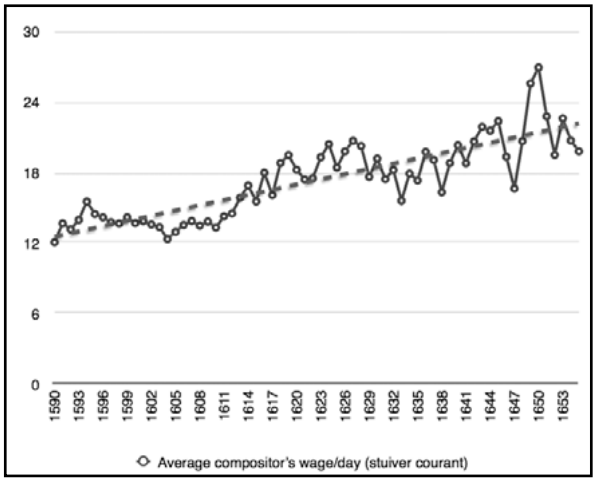

Fig. 2a: Average wage per day in stuivers courant (Carolus Gulden), based on weekly compositors wages paid by the Officina Plantiniana.

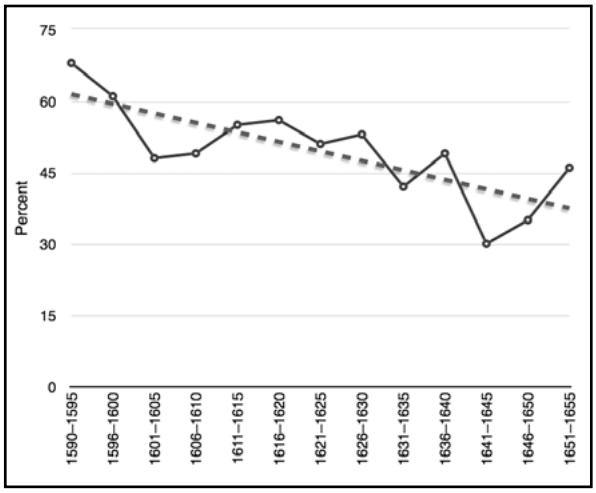

Fig. 2b: Relative number of editions priced equally or less than the average daily wage of compositors at the Officina Plantiniana, 1590–1655.

If the price per copy systematically goes up, this is not necessarily because copies become all the more voluminous. Figure 3 clearly shows that prices calculated per sheet gradually increase as well. Between 1580 and 1655, prices increase 3.5 times, from about 0.39 stuivers per sheet to about 1.40 stuivers[20]. See Figures 3 and 4.

20 This is in line with Materné's calculations, which are partly based on different documents, see J. Materné, *The "Officina Plantiniana"*, p. 486: "The average price per sheet printed increased from 0.69 stivers in the 1590s to 1.31 stivers in the 1640s".

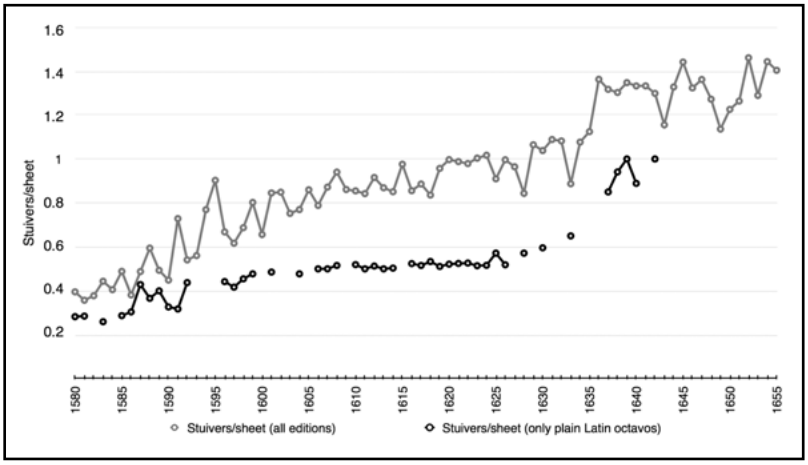

Fig. 3: Average price per sheet in stuivers for the period 1580–1655 as listed in M321 (n = 2,029) compared with the average price per sheet of plain Latin octavos (n = 80).

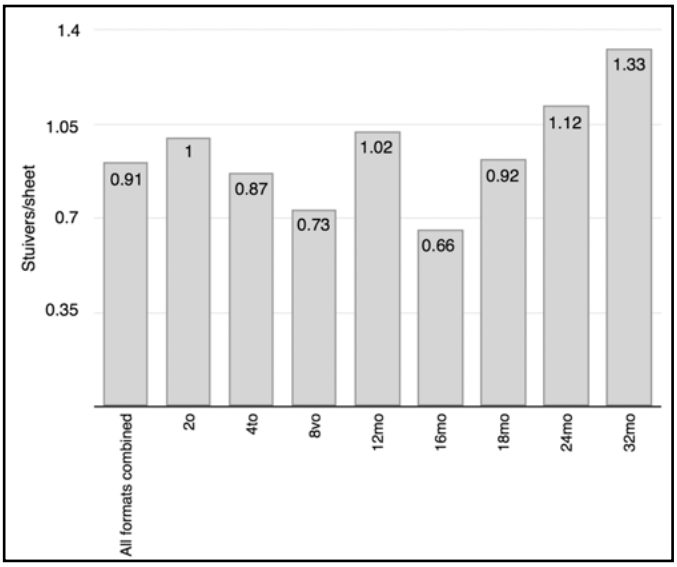

Fig. 4: Average price per sheet according to bibliographical format, 1580–1655, as listed in M321 (n = 1,844).

This price increase can in part be explained by rising wages for compositors, printers, and proof-readers, for supplies (type, paper, ink, inkballs, frisket sheets, …), and other materials (presses), infrastructure, in addition to other costs. A number of factors having to do with the actual books themselves also weigh on the price per sheet. Figure 4 indicates the impact of the bibliographical format on prices.

Books conceived as 16mo or 8vo are cheapest; quartos are also slightly cheaper than the overall average price per sheet, and 18mos, which are in the dataset very infrequent, are slightly more expensive. Folios cost about 10% more per sheet than average, which is not surprising, but duodecimos turn out to be more or less as expensive. Other small formats, such as 24mo and 32mo, are much more expensive, the latter costing twice as much as a 16mo.

In the course of time, the use of specific bibliographical formats shifts continuously. In the fifteenth century, for instance, books in the Southern Netherlands were predominantly printed as folios or quartos[21]. At the end of the incunable period, octavos became more important, surpassing quartos in quantity around 1520. Around the 1540s, the small 16mo is being used more frequently. This handy format is often used for cheap text editions of the classics and is called "Italian" after the country where it was developed. Booksellers refer to the 16mo with the term "enchiridion", meaning handbook, referring to both its indispensability and practical small size[22]. They easily fit in pockets and therefore are always within reach. Plantin recognizes its virtues and uses it regularly for text editions; under Jan Moretus I, however, this format gradually fell into disuse, disappearing almost completely from the Officina's production lists after 1610. See Table 2.

The opposite happens with books in 12mo: almost never used by the first generation, these became more frequent under Jan Moretus I and his successors. The presence of editions in 24mo remained stable, in contrast to the smallest format, 32mo, which was used for one book in ten by Jan Moretus II and Balthaser Moretus I, and still for one in every twenty-five under Balthasar II.

Remarkable is the increase in the number of folios. Time and time again, each new generation intensified production of this prestigious format, from 6.3% in Plantin's days between 1580 and 1589, to 33.5% under Balthasar Moretus II between 1642 and 1655. Though the proportion of quartos remained more or less stable throughout the entire period, this was not the case for octavos, which increasingly lost ground. Balthasar II produced less than half of them in comparison to Plantin: the latter produced about four books in ten as an octavo against about two in ten for quartos.

21 G. Proot, *Metamorfose. Typografische evolutie van het handgedrukte boek in de Zuidelijke Nederlanden, 1473–1541*, Antwerpen 2017, p. 24, graph 2.1. Needham estimates the number of folio incunables in the west at about 8,900 editions, quartos at about 15,700 editions, octavos ca. 3,200 editions, sextodecimos ca. 275. Smaller formats, such as 32mo and 64mo are preserved in some dozens only. Cf. P. Needham, *Format and Paper Size in Fifteenth-Century Printing*, in C. Reske / W. Schmitz (eds.), *Materielle Aspekte in der Inkunabelforschung*, Wiesbaden 2017, pp. 59–107, here p. 71 and p. 99.

22 In his printed booksellers' catalogues with prices, the Paris publisher Robert Estienne I refers regularly to 'enchiridii forma' to indicate 16mos. For an analysis of those catalogues, see G. Proot, *Prices in Robert Estienne's Booksellers' Catalogues (Paris 1541–1552): A Statistical Analysis*, in «JLIS.it» 9, 2018, 2, pp. 193–222, doi:10.4403/jlis.it-12459. See also G. Proot, *Prices in Robert Estienne's Booksellers' Catalogues (Paris 1541–1552): A Statistical Analysis*, in G. Granata / A. Nuovo (eds.), *Selling & Collecting: Printed Book Sale Catalogues and Private Libraries in Early Modern Europe*, Macerata 2018, pp. 177–209.

Tab. 2: Nominal and relative number (between brackets) of editions listed in M321 grouped according to bibliographical format and per generation

	Christopher Plantin		Jan Moretus I[23]		Jan M. II & Balthasar Moretus I		Balthasar Moretus II	
	n.	%	n.	%	n.	%	n.	%
2o	16	(6.3)	48	(11.5)	198	(21.9)	77	(33.5)
4to	57	(22.3)	102	(24.5)	161	(17.8)	45	(19.6)
8vo	113	(44.1)	145	(34.9)	225	(24.9)	43	(18.7)
12mo	4	(1.6)	36	(8.7)	130	(14.4)	25	(10.9)
16mo	40	(15.6)	33	(7.9)	12	(1.3)	5	(2.2)
18mo	2	(0.8)	2	(0.5)	0	(–)	2	(0.9)
24mo	23	(9)	41	(9.9)	88	(9.7)	23	(10)
32mo	1	(0.4)	9	(2.2)	91	(10.1)	10	(4.3)
Total	256		416		905		230	

The change in the course of time can already be perceived under Jan Moretus I. What is perhaps even more striking is that each one of his successors confirm and intensify the changes he made, so that it seems to be fairly evident that they carried out a well-considered business strategy. Intrinsically being the most expensive ones in terms of price per sheet, editions in folio, 12mo, and smaller formats were favored, and cheaper formats such as octavo and 16mo diminished. This transition is directly linked to the policy of subsequent generations increasingly to concentrate on the lucrative business of religious, and especially, liturgical books[24].

To some extent, changes in the distribution of different formats follow more general trends. Between 1601 and 1655, Antwerp printers and publishers decrease the production of octavos by a little more than 10%: from about 41% in the period 1601–1605 to about 28% in the period 1651–1655[25]. Also the relative number of quartos

23 The numbers correspond fairly well with those given by Imhof, who based his on the bibliography of Jan Moretus I, which is more complete than production list M321, cf. D. Imhof, *Jan Moretus*, vol. 2, p. LXIX: broadsheets 9.5%, 2o 9.8%, 4to 25.1%, 8vo 31.5%, 12mo 5.7%, 16mo 8.1%, 18mo 0.6%, 24mo 6.4% and 32mo 2.1%. The percentages in Table 2 are also different because the latter excludes broadsheets.

24 D. Imhof, *De Plantijnse uitgeverij onder Balthasar II Moretus (1641–1674). Een vergelijking met het uitgeversfonds van zijn grootvader Jan I Moretus (1589–1610)*, in "Jaarboek voor Nederlandse boekgeschiedenis", 16, 2009, pp. 113–129; D. Imhof, *Jan Moretus*, vol. 1, pp. XXXIX–LXXXV.

25 Statistics derived from the *Short Title Catalogue Flanders* (*STCV*, www.stcv.be), based on a download from December 31, 2017; with thanks to Susanna de Schepper. About the representativity of the *STCV*, see G. Proot, *Survival Factors*. The distribution of book production also depends on the printing centre. For Mechelen, which is a peripheral location, trends differ, see D. Lanoye, *De Mechelse drukpers voor 1800*, in "Jaarboek voor Nederlandse boekgeschiedenis", 16, 2009, pp. 131–150, table 1 on p. 42.

decreased, from about one in three at the beginning of the century to about one in four fifty years later. In the same period, folios gain importance, going up from ca. 8% to ca. 12%. The importance of 12mos increased greatly, from about 12% to about 25% in fifty years time. And if 24mos are still rare at the beginning of the seventeenth century, they comprise about 10% of the books fifty years later.

So it seems that the strategic trends observed at the Officina Plantiniana are in line with what happens in Antwerp at large, with this nuance that they seem to appear earlier than elsewhere and that they are also more prominent, indicating that the Moretuses did not merely follow the market, but rather drove it to new directions.

Subsequent generations of master printers at the Officina Plantiniana printed different kinds of works in some of the different bibliographic formats, too. In the period 1580–1589, Plantin reserved the 16mo format, the cheapest of all formats, for religious works on the one hand (18 titles out of 39, or 46.2% of all his 16mos) and for literary works on the other (15 out of 39; 38.5%)[26]. In addition, he also occasionally produced a work in this format dealing with philosophy, language, the arts, or with geography and history. His successor used the 16mo format for religious works or for language and literature only (resp. 19 and 13 editions), and in turn his successors almost only produced religious works in this format, but ever fewer[27].

Octavos follow a similar trend only second to 16mos amongst the cheapest format in terms of price per sheet. Under Plantin, 26.6% of the 8vos belonged to the category of religious works, the rest of the works in this format dealing with philosophy (1.8%), social sciences (6.4%), language (9.2%), natural sciences and mathematics (6.4%), technology and applied sciences (8.3%), geography and history (12.8%), but the majority of the octavos fall in the group of literature and rhetoric (28.4%). During the next generation, the number of religious books in the group of the 8vo format doubled (59.3%), causing a drop of 8vos in all other categories, amongst which that of literature and rhetoric remained the largest one (20.0%). Jan II and Balthasar I reserved 87.8% of all octavos for religious works, while Balthasar II raised this number to 100%.

This trend is also noticeable in more expensive book formats. Plantin, for instance, used folios as a format for religious works in addition to works the categories of natural sciences and mathematics, the arts, literature and rhetoric, and geography and history, while later master printers at the Officina Plantiniana focused increasingly on religious works in this format. In the smallest and most expensive formats the differences are even more pronounced, as they were reserved, after Plantin's death, for religious books only. This had to do with the fact that Plantin's successors increasingly concentrated on religious works, and within this category foremost on *libri rubro-nigri* or liturgical works. This policy was continued also after 1655, the last year recorded in

26 This and the following calculations are based upon Dewey Decimal Classification, which I attributed to the entries in M321 used in this survey. Only the main groups were used.

27 Jan Moretus II and Balthasar I have only one 16mo dealing with literature and rhetoric in the M321 list against 11 religious editions, Balthasar II produced only five 16mos, 3 of which were religious.

document M321. In the year Balthasar Moretus II died, virtually all books coming from his presses were religious, the lion's share of which were liturgical[28].

4.3 Illustrations, color, and paper

The subsequent masters of the Officina Plantiniana not only produced fewer cheap formats in favor of more expensive ones: gradually they also increased the use of illustrations, produced more works combining black and red, and provided more and more limited print runs on special paper[29]. Figure 5 reflects the portion of illustrated editions listed in M321; "illustrated" means here illustrated with at least one image.

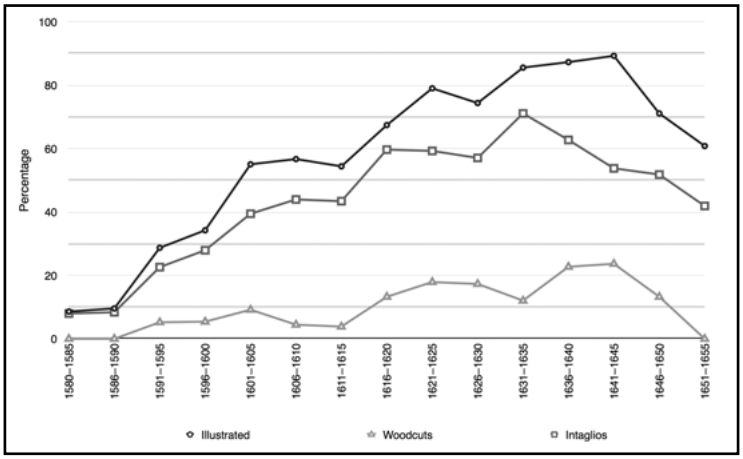

Fig. 5: Relative number of editions listed in M321 mentioning at least one illustration, woodblocks, or intaglios (n = 2,029).

Because the production list does not include the years 1555–1579, this period cannot be evaluated in the same way as the period 1580–1655. The foundations for the policy of illustrating editions increasingly with intaglios were laid by Plantin[30]. According to M321, by the time of his death, about 10% of all editions had at least one illustration – usually on the title page. Afterwards, the proportion of illustrated editions kept growing until the period 1641–1645.

In 166 cases only, the number of illustrations is explicitly stated. In 96 cases, this number varies between one and ten; in 31 cases there are between 11 and 20 illustra-

28 D. Imhof, *De Plantijnse uitgeverij*, p. 119 (graph).

29 About the development of intaglio illustrations in Plantin's editions, see L. Bowen / D. Imhof, *Christopher Plantin and Engraved Book Illustrations in Sixteenth-Century Europe*, Cambridge 2008.

tions, and in 38 cases, there are more than 20 images included. Comparisons with actual copies show that this information is in most cases accurate. The decrease of illustrated editions in the period 1646–1655 should be nuanced. In this period, Balthasar Moretus II kept focusing on the production of liturgical editions, which usually include one or more images. Therefore it is likely that the person who completed the production list in those years paid less attention to this aspect.

The commercial importance of editions with illustrations – even if this is limited to one only – should not be underestimated. When a book is illustrated, the price per sheet more or less doubles: an edition which, according to the production list, has no images, cost on average 0.61 stuivers per sheet as opposed to one with illustrations on average 1.13 stuivers; an edition with woodcuts came on average at 0.92 stuivers per sheet, against 1.15 stuivers for intaglios[31].

The difference between the average price per sheet for a so-called "plain" edition and the price per sheet for all editions combined, can be deduced from Figure 3. The black circles reflect average prices per sheet of unillustrated octavo editions in Latin printed with black ink only. Those plain editions can serve as a benchmark. As a result of increasing prices for materials and wages, the average price per sheet of this kind of book follows an upward trend, but there is a great difference with the average price per sheet for all editions combined.

As Dirk Imhof has demonstrated, Plantin's successors increasingly changed the composition of their publisher's list[32]. More than his predecessors, Balthasar Moretus II focused almost exclusively on liturgical editions. Typically, those were printed in red and black, an operation adding to material costs for ink and expanding production times. At present, it is not clear what the impact of these features was on selling prices, but it is known that Plantin maintained lower maximum discounts to whole sellers for liturgical works than for books in black ink only.

Very often, liturgical books were embellished with one or more images. At first, the Moretuses had variant editions on offer, a cheaper one illustrated with woodcuts or a more expensive one with intaglios, but gradually they favored print runs with intaglios[33].

Editions with intaglios had a much greater market value than those with woodcuts. Although production costs for the former are certainly higher, clients would be charged chiefly for their luxurious appearance. This becomes clear when comparing prices and costs of variant editions.

30 L. Bowen / D. Imhof, *Christopher Plantin*, pp. 1–16.

31 Average selling prices for the entire period 1580–1655.

32 Compare with n. 24.

33 K.L. Bowen, *Tabellen van illustraties in liturgische werken*, in D. Imhof (ed.), *De boekillustratie ten tijde van de Moretussen*, Antwerpen 1996, pp. 178–181, here table D, p. 181.

Tab. 3: Prices and costs of variant editions of Richard Stanihurst's *Hebdomada Mariana*, 1609[34]

	Woodcut edition	Intaglio edition
No. of sheets	11	11
No. of illustrations	8	8
Print run	1,000 copies	500 copies
List price per copy	7 stuivers	14 stuivers
Price per sheet	0.64 stuivers	1.27 stuivers
Cost for the production of illustrations		
Design	fl. 12 st. 10	–
Cutting/engraving	fl. 9	fl. 53
Reworking of the engravings	–	fl. 5
Printing of the engravings	–	fl. 15
Total costs for the illustrations	fl. 21 st. 10	fl. 73
per copy	0.43 stuivers	2.92 stuivers

The table indicates that copies with intaglios cost twice as much as those with woodcuts, 14 stuivers as opposed to 7 stuivers, the difference in production cost of intaglios amounting to 2.49 stuivers per copy (2.92 stuivers minus 0.43 stuivers for woodcuts). In other words, the extra production cost is generously being compensated for.

This example is not an exception to the rule. In practice, the business managers of the *Golden Compasses* usually doubled prices for editions with intaglios[35]. By doing so, they did not only increase turnover, but more importantly also their profits. Apparently, this did not pose any problem for the market; on the contrary. Luxurious editions kept selling well, especially liturgical books. In some cases, copies of woodcut variants had to be upgraded by pasting over with engravings printed on separate sheets to meet the demand.

In about 15% of all cases, the production list provides details about the paper used for an edition or a part of a print run. Under Plantin this happened fairly seldom, but in the seventeenth century remarks about paper quality become more frequent. Jan Moretus I and his successors used paper increasingly as a simple means to differentiate the books on offer. The only thing the printers needed to do is to vary paper sorts for a specific part of the total print run. Copies on smaller paper or paper of a lesser quality could be priced cheaper and were in reach of broader audiences. Copies on large, special or thicker paper went for sale at higher prices and aimed at men of substance. The number of copies was usually limited, and this exclusiveness justified higher prices.

34 Cf. D. Imhof, *Jan Moretus*, p. 44. Not all costs were counted, because Jan Moretus I probably could reutilize a number of woodcuts or engravings from previous projects.

35 Already around 1574, Plantin developed a sophisticated system for pricing editions with intaglios, see L. Bowen / D. Imhof, *Christopher Plantin*, Appendix 2, pp. 359–363. It seems that his successors applied less complicated systems.

The production list does not always specify the existence of print runs on different paper. In some cases, only a very limited number of special copies was produced, serving as presentation copies for authors, backers, or patrons. Since they seem never to have been intended for circulation on the regular market, the fixing of separate prices was redundant[36].

It is not easy to calculate the extra material cost for the production of runs on special paper, because the terminology used in list M321 does not explicitly correspond with that in documents recording deliveries of paper at the Officina Plantiniana. Neither does the inspection of actual copies always help. The paper has aged for about four centuries, wiping out, for instance, the difference between *papier blanc* and *papier commun*. At any rate, examples demonstrate that copies on special paper were very profitable. In 1599, Jan Moretus I produced three variants of a voluminous *Missaal* in folio format, comprising 167 sheets of paper per copy. The edition with intaglio illustrations was priced at 9 florijnen, and a variant of that on better paper at 10 florijnen, i.e. 1 florijn or 20 stuivers extra. From paper deliveries, we know that the difference between the cheapest and the most expensive paper could amount to 100%. In 1610, for instance, Jan Moretus I purchased the former kind at 8⅓ stuivers per ream, and the latter for twice as much[37]. Reckoning with these numbers, the production cost of a deluxe copy should add about 2¾ stuivers at most[38]. But maximizing his profit, Moretus charged 20 stuivers extra.

5 Conclusions

Plantin's successors gradually and systematically oriented the Officina Plantiniana publisher's list towards a high-end market in the realm of religious, and foremost, liturgical books. Not only Jan Moretus I focused more than his father-in-law on more expensive book formats, but the following generations would continue and reinforce this policy. From generation to generation, the Moretuses produced more and more religious editions, especially liturgical books, in various formats, amongst which large numbers of 12mos, 24mos, and 32mos. That such small volumes were relatively speaking fairly expensive seems not to have curbed sales – on the contrary. In his days, Plantin had found ways including intaglio illustrations in his editions rather than using woodcuts. In addition, and perhaps more importantly, he had created a

36 This is the case for Carolus Scribani's *Antverpia*. M39 indicates that 25 copies on large paper were produced, ten of which were reserved for the Antwerp Jesuits. Because M321 does not mention this extra run, it is not certain that they were meant for the regular market. See also D. Imhof, *Jan Moretus*, p. 30.

37 Antwerpen, Museum Plantin-Moretus, Arch 126, fol. 216 right. With thanks to Kristof Selleslach.

38 For this calculation, I used prices from 1610, not 1599, so in reality the extra cost was probably even lower.

market for those beautifully illustrated, but more expensive editions. Time and time again, the next generation increased the number of illustrated editions, sometimes in different variants, with woodcuts or intaglios, but, in the course of time, the latter variant would drive out the former one. More often than his father-in-law, Jan Moretus I had variant print runs produced on different kinds of paper, this way serving regular and high-end clients, and his successors would continue to do so.

Large formats as well as the very small ones per sheet cost more than octavos or quartos. Likewise, copies on better paper, with intaglio illustrations and printed in red and black, were more expensive than plain books. Analysis of individual cases clearly demonstrates that the extra charge for special features went much beyond the extra cost for material and labor. The prices Plantin and the Moretuses fixed were in other words not merely based on objective cost criteria, but rather on market prices, i.e., fair prices people would be prepared to pay at a certain place, at a certain time, and for a certain product[39]. The orientation towards ever more luxurious books was very profitable, because profit margins were much higher than on plain books.

The Officina Plantiniana produced ever fewer and fewer ordinary books, and plain editions in cheaper formats such as octavo. As nominal prices per copy constantly rose, fewer books were within the reach of ordinary people. By the time Balthasar Moretus II in 1641 became master printer, the Officina had long abandoned the production of books for the populace. In 1642, the price per sheet of a plain Latin octavo had risen to about 1 stuiver, while illustrated books in red and black went on sale for about 1.3 stuivers per sheet. This was two to three times more than what the Antwerp magistrate in the same year allowed to be charged for chapbooks used in schools[40]. In most cases, those schoolbooks were printed as quartos, and, if they contained any illustrations at all, they were always executed in relief with worn-out woodblocks. The average price per sheet being about 0.44 stuivers, most schoolbooks cost 2 to 4 stuivers per copy. This was a category of books, which the Moretuses by that time had long almost completely abandoned.

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39 This confirms the views described by R. de Roover, *The Concept of the Just Price*.

40 V.A. Dela Montagne, *Schoolboeken te Antwerpen in de 17e eeuw*, in "Tijdschrift voor boek- en bibliotheekwezen", 5 , 1907, pp. 1–35.