A REVIEW OF THE E-BOOK INDUSTRY AND THE 2010 PRICE FIXING CONSPIRACY

by

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1. Introduction

On April 11th, 2012 the American Department of Justice (DOJ) along with thirty-three states and US territories officially opened a case in the Southern District of New York against Apple, Inc., and five other publishing companies ("the defendant publisher"): Hachette Book Group, Inc.; HarperCollins Publishers L.L.C.; Verlagsgruppe Georg von Holtzbrinck GmbH and Holtzbrinck Publishers, LLC (d/b/a Macmillan); The Penguin Group, a division of Pearson pic and Penguin Group (USA), Inc.; and Simon & Schuster, Inc.. The Department of Justice (DOJ) found the six defendants, Apple, Hachette, HarperCollins, Macmillan, Penguin, and Simon & Schuster, behaving in violation of Section 1 of the Sherman act by conspiring to reduce price competition in the e-book market and increase the price of e-books (DOJ "Opinion & Order", 2013).

As well, on December 1st, 2011, the European Commission (the Commission) began official proceedings against Apple and the defendant publishers in case "COMP/C-2/39.847 Ebooks". The Commission investigated Apple and the publishers actions in the UK, French, and German markets. They found that the defendants had breached EU antitrust rules prohibiting cartels and restrictive business practices under Article 101of the Treaty on the Functioning of the European Union and Article 53 of the European Economic Area (EEA) Agreement (European Commission "Memo"; March 2nd, 2011).

In these two cases, Apple and the defendant publishers created an international conspiracy that allowed them to coordinate e-book prices and eradicate price competition in both the American market and the EEA. In 2010, they implemented their conspiracy by establishing a cartel in the United States, and extended their influence into the UK, French, and German markets. The conspiracy resulted in higher e-book prices in both the US (DOJ "Complaint",

2012) and the UK (European Commission "Commitment Decision", 2012).

The goal of this paper is to give a thorough overview of the e-book industry and the price fixing conspiracies in both America and the EEA, and discuss the two price fixing cases in an economic context. The paper will be divided into three sections. An overview and analysis of the e-book industry will be presented in the first section. The second section will describe the cartel formation and resulting price increases, and present a hypothetical model of the e-book retail market. The resolution, thus far, of the two cases will be discussed in the last section. A list of events is included in the appendix.

2. Pre-Cartel E-book Market Overview

The "Opinion & Order" issued by the Department of Justice on July 10th, 2013 and the 'Commission Decision" released by the Commission give a through description of the trade book industry, which includes both paper books and e-books. Unless otherwise stated, information in this section is sourced from these two sources

2.1. E-books and the Trade Book Market

An e-book is a digital version of a book. Although there are many types of e-books, this paper will examine e-books in the trade book market. The term "trade book" describes a category of books created for the general public's consumption. In contrast to textbooks, or other special-purpose books, trade books are generally classified as fiction or non-fiction and could be found in a typical bookstore.

Trade books can further be defined as being physical books or e-books. E-books are usually purchased on the internet as a digital file and downloaded onto a dedicated device (e-

reader) on which they are read. Generally, the e-book and physical versions of a book are materially identical. The only difference between the two types of books is the format.

Currently in the market there are several different e-readers and e-book formats. Many of the prominent retailers are associated with their own e-book reader: Amazon has the Kindle, Apple has the iPad with the iBooks application, Kobo with the Kobo reader, Sony with its Reader, and Barnes & Noble with the Nook. Prior to the conspiracy in 2010 the Kindle, the Nook, and Sony's Reader where the major e-readers in the market. Immediately after the implementation of the conspiracy, Apple released the iPad, which functioned as an e-reader, and Kobo released its e-reader.

Retailers sell e-books in specific file formats. The epub format is the industry-wide standard for e-books, and is used by Sony in its Reader Store, Barnes and Noble, and other smaller retailers. It is the most widely compatible and can be read on Microsoft and Mac operating systems, as well as nearly all mobile devices.

Amazon sells e-books in its proprietary Mobipocket format, which can be read only on the Kindle and on applications designed for PC, Mac, iOS, Android, Blackberry, and other devices. Mobipocket files cannot be read on other e-book readers and the Kindle only reads files in Mobipocket and pdf formats (E Book Architects "Formats", 2011).

Apple's reader, iBooks, is an application available on any mobile Apple device (iPads and iPhones) that allows consumers to read e-books in Apple's proprietary format as well as the epub format. Customers who own Apple devices can download iBooks for free from iTunes. As well as being an e-reader, iBooks also provides consumers access to Apple's e-book store: the iBookstore (Apple INC., 2012).

2.2. E-book Creation and Distribution

The two main actors in the e-book industry are publishers and retailers. Publishers create trade books. They accept manuscripts from writers, edit them, produce the book, and invest in advertising. They make decisions regarding book release dates and the "list price", or the suggested retail price, of books. For physical books, the list price is usually printed on the back cover. Retailers then take the trade books created by the publishers and sell them to consumers.

A publisher's primary goal is to create unique products that are highly differentiated from their competitors. Publishers compete with each other over authors and agents, and publishing rights to works that they believe will be popular. Other differentiating aspects of the book, such as cover artwork, are also produced by the publisher.

E-books provide an advantage to publishers because it costs considerably less to produce and distribute e-books compared to physical books. Retailers also benefit from the cost savings associated with e-books because e-books do not need to be warehoused and undersold stock is never an issue. As well, e-books do not require a wholesaler to act as an intermediary since e-books are sold directly from publishers to retailers.

During the life of the e-book industry, there have been three major systems by which e-books have been distributed to consumers. There is the wholesale model, the fixed book price system, and the agency model.

In North America and the UK, e-books are distributed and sold under a wholesale model. Publishers sell e-books to retailers at a price generally denoted as a percentage of the suggested retail price. The wholesale price is typically 50% of the suggested retail price. Prior to 2009, for a given title, the e-book wholesale price was usually 80% of the hardcover wholesale price (implying that e-books are generally 20% less than physical books). Retailers purchase e-books

from publishers and are free to sell them at any price, regardless of the list price. Theoretically, the wholesale price will in part determine the retail price; the lower (greater) the wholesale price, the lower (greater) the retail price.

In the wholesale system, retailers generally compete quite fiercely in e-book prices. Many retailers offer the same titles implying that the products offered by retailers are highly substitutable. Take, for example, the book Harry Potter and the Philosopher's Stone by J.K. Rowling sold by Kobo and Barnes and Noble. The versions of the title sold by the two retailers are identical. Moreover, it is essentially costless for a consumer to shop for the lowest price because the e-book is sold online. Both of these factors contribute to strong price competition in the retail market. To combat this problem, retailers may differentiate their products by offering e-books in proprietary formats that are associated with a specific e-reader. This issue if explored in more detail in section 2.6 of the paper.

In many European countries, including France and Germany, the trade book market operates under a fixed book price (FBP) system. FBP systems are a form of government legislated retail price maintenance where publishers are required to set a fixed price (usually the list price) for each of their books, and retailers are required by law to sell books at the fixed prices. As a result, all retailers set identical prices for any given book, and there is no price competition in the retail market. The e-book industries in France and Germany fall under fixed book price legislation.

In 1981, France passed the Lang Law requiring publishers set fixed prices for their books. Retailers must offer an effective selling price between ninety-five and one hundred percent of the list price. This means that promotions and gifts that are greater than five percent of the list price are also illegal (Legifrance "Loi n° 81-766", 2013). On May 28th, 2011, the French government

succeeded in extending the law to include e-books (Legifrance "Loi n° 2011-590", 2013). In particular, the law stipulates that publishers that reside in in France, and publishers who are outside of France but sell e-books in France, are obligated to set a fixed price for their e-books.

In Germany, the government passed its fixed book price law (the Buchpreisbindungsgesetz) in 2002. The law is very similar to the Lang law, with a few exceptions. In Germany, publishers have the option to relinquish their price setting power to retailers 18 months after the release of a book. However, publishers typically maintain pricing control for more than 18 months. Along with fixing prices, publishers also fix consumer discounts across all retailers (Börsenverein, 2004).

FBP laws are primarily cultural policies. Nations adopt them in an attempt to encourage both product diversity and the creation and dissemination of high literature. According to the research paper "Digitally Binding" by SEO Economic Research, FBP laws protect smaller retailers that provide less popular, yet culturally significant books from being "priced out" of the market. The Börsenverein des Deutchen (Börsenverein), the German association of book publishers and retailers, argues that fixed book price laws increase the prices of popular books, allowing publishers to cross-subsidize the production of high literature (Börsenverein, 2004). Furthermore, it can be argued that by inhibiting price competition, FBP policies force retailers to compete on other factors, such as service quality (Canoy et al., 2006). In the context of e-books, retailers could, for example, compete on e-readers and e-book formats, or website quality.

A third system that exists in the e-book industry is the agency model and it was a central part of the conspiracy devised by Apple and the publishers. Specifically, the publishers and Apple strove to establish the agency model as the industry standard to prevent e-book retailers, most notably Amazon, from driving down the prices of e-books.

Similar to the FBP system, the agency model is another form of retail price maintenance. Retailers and publishers establish an agency contract where the retailer agrees to sell the publisher's books according to a pricing system outlined in the contract. In this way, the retailer acts as an agent for the publishers and is guaranteed compensation as a percentage of the final sale price.

Unlike the FBP scheme, under the agency model pricing agreements are not mandated by law. Furthermore, publishers are free to establish different retail pricing systems for different retailers. Pricing terms can also be easily adjusted to prevailing market conditions because they are defined by finite contracts, allowing for publishers and retailers to renegotiate pricing terms on a regular basis (SEO, 2012).

2.3. US and European E-book Markets

The United States has led the world in the adoption of e-books. In 2010, E-books made up 9% of all trade books purchased in the United States (in terms of sales) (SEO, 2012). According to research done by Apple prior to its collusion with the publishers in 2009, the book market in North America was larger than the music market and approximately $35 to $43 billion dollars in size. Trade e-books accounted for $100 million dollars of the book market (DOJ "Opinion & Order", 2013). Although trade e-books only made up a small proportion of all books sold in 2009, the market has grown about 400% annually since then (Ashenfelter, 2013) to make up 22.55% of total book sales in 2012 (Hoffelder, April 2013).

In the US Market, there are six major publishers ("the big six") made up of HarperCollins, Macmillan, Simon & Schuster, Penguin, Random House, and Hachette. Many of these publishers operate publishing subsidiaries ("imprints") and some of them, such as

Macmillan[1] and HarperCollins, are subsidiaries of larger organizations involved in the publishing and media industries. The following chart from Dr. Gilbert's expert testimony gives the market shares of each of the publishers just prior to the conspiracy implementation.

Table 1: Publishers' revenue shares of US e-book sales, First Quarter, 2010[2]

Publisher	**Revenue share, 1st Quarter, 2010**
Penguin	19.5%
Random House	18.2%
HarperCollins	9.3%
Hachette	8.1%
Simon & Schuster	7.3%
Macmillan	4.7%
All others ("non-majors")	33.0%

The American e-book retail market is highly concentrated around a few large firms with a competitive fridge of many small and specialized e-book retailers (for example, All Romance E-Books). Prior to 2010, Amazon, Barnes & Noble, and Sony were the three major retailers. In 2010, Apple, Kobo, and Google entered the market. From 2009 to present, Amazon has held 60% to 90% of the e-book retail market. The following chart from the expert testimony of Dr. Gilbert shows the market shares of all the major retailers immediately prior to the conspiracy's implementation.

[1] The parent company of Macmillan, Georg von Holtzbrink GmbH & Co. KG, is a group comprising of several holding companies and imprints that distribute titles in Germany, the UK, and the US. For simplicity, "Macmillan" will refer to the Georg Von Holtzbrink GmbH & Co. KG, and all other members of the group.

[2] Source: Gilbert, 2013. P.9

Table 2: Retailers' revenue shares of US e-book sales, First Quarter, 2010[3]

Retailer	Revenue Share, 1st Quarter, 2010
Amazon	80%
Barnes & Noble	9.9%
Sony	9.9%
Kobo	0.25%

In contrast to the US, 2010 sales numbers show that e-books made up only 1.5% of all trade book sales in the UK (SEO, 2012). Prior to 2010, UK consumers purchased e-books through international retailers such as eBooks.com (Which?, 2013) and Amazon's ".com" website (European Commission "Commitment Decision", 2012). The e-book market in the UK has since developed and e-books now make up 12% of book sales (Publishers' Association, 2012).

France and Germany's e-book markets are the least developed of the four markets affected by the cartel. In 2009, e-books made up only 0.5% of France's total trade book sales (measured in terms of revenue), which grew to 1.5% in 2010 and 3% in 2012 (Syndicat national de l'édition, 2013). In Germany, e-books accounted for 0.5% of the total amount of trade books sold in 2010 (SEO, 2012) and 2.4% in 2012 (in terms of output) (Hoffelder, June 2013).

Prior to the cartel formation, French consumers purchased e-books mainly through the French retailer Fnac. However, German consumers had a choice of five different e-book retailers. Through its ".com" website, Amazon offered books in the French and German markets. However, the selection offered by Amazon was very limited (SEO, 2013)

[3] Source: Gilbert, 2013. P.10

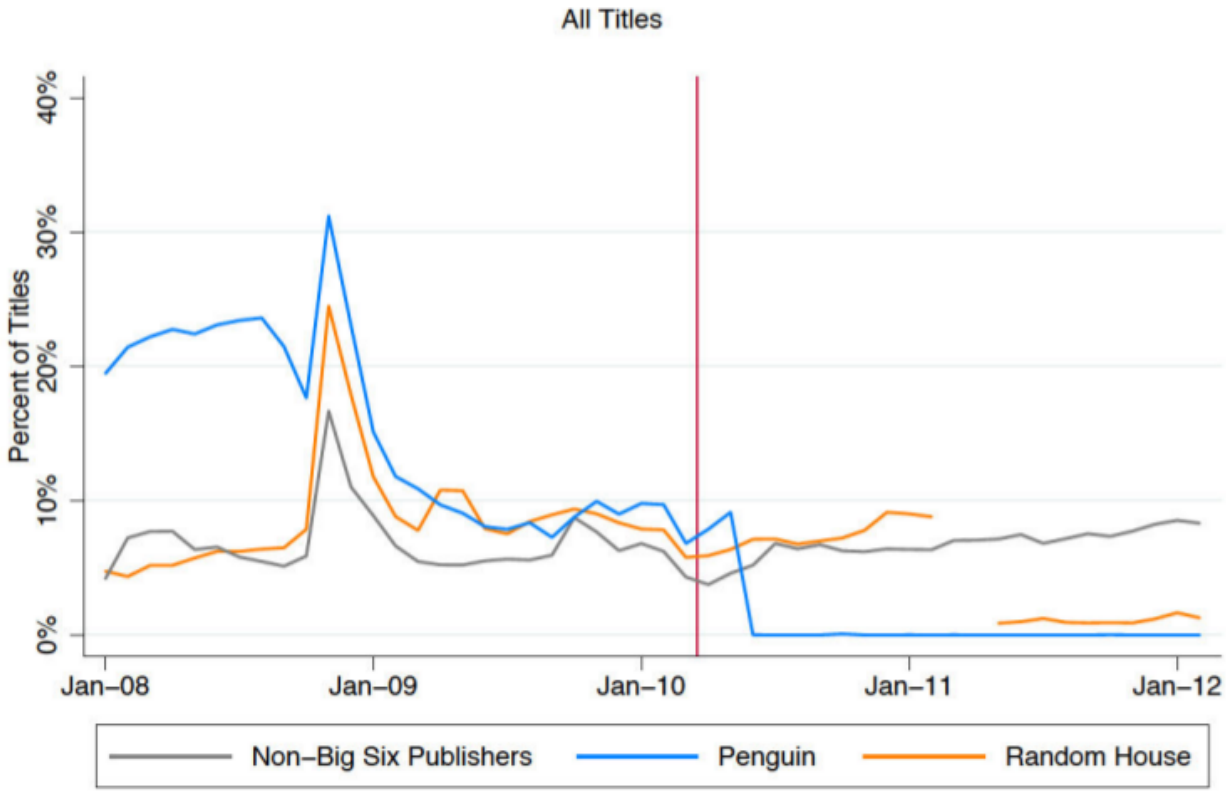
2.4. Cartel Motivation and Amazon's $9.99 Strategy

In both the US, and on a global scale, Amazon is known as the biggest e-book retailer (E-Book Architects "Retailers and Distributors", 2011). In the US, one of Amazon's most successful strategies was to offer best-selling and newly released books for $9.99. The "$9.99 strategy" drove down the price of popular e-books in the market as other e-book retailers attempted to match Amazon's prices.

The six major publishers feared that Amazon's $9.99 strategy may permanently reduce e-book prices and, sequentially, put downward pressure on wholesale prices for e-books. Low prices for e-books may alter consumer's price expectations for paper books, and thus force downward the retail and wholesale prices for paper books, threatening the viability of brick and mortar retail outlets. The publishers felt that lower prices and new consumer price expectations would bleed into Europe and pose a similar threat to the publishers in their European markets. They thought that an increase in Amazon's prices by one or two dollars would correct for the problems associated with the $9.99 price point.

In response to the $9.99 strategy, in 2009 the publishers collectively increased the wholesale prices for some of their titles to match the wholesale prices of their paper copy counterparts. Wholesale prices ranged from $13 to $15, and for some e-books were as high as $17.50. However, these higher wholesale prices did not persuade Amazon to increase its retail prices and only served to demonstrate Amazon's commitment to its $9.99 strategy. Amazon adopted a loss leader strategy and sold many of its $9.99 e-books at a loss. The following chart from Dr. Ashenfelter's expert testimony shows the percentage of titles Amazon sold at a loss

Chart 1: Amazon Titles Priced Below Wholesale Cost[4]



To the publishers, the $9.99 strategy was known as the "[w]retched $9.99 price point" (DOJ "Complaint", 2012, par.32). The publishers were very vocal in their disapproval of Amazon's $9.99 pricing and on several occasions the American executives of the big six met with Amazon to communicate their displeasure. In the following months, the publishers would continue to collectively develop and implement strategies to punish Amazon and dissuade it from driving down prices in the retail market.

Apple also disliked Amazon's $9.99 price point. Apple was interested in launching the iBookstore in conjunction with the launch of the iPad. It planned to launch the iPad on January 27th, 2010 and release the iPad in the US and Canada in April, 2010 and in the European

[4] Chart reproduced from Ashenfelter, 2013. P.44

Economic Area (EEA) in May, 2010. This move would make Apple a direct competitor with Amazon and its Kindle reader.

However, the prevailing prices for e-books established by Amazon's $9.99 strategy did not provide a profit margin large enough justify Apple's entry into the market. Apple needed to find a way to reduce the price competition it would face if it entered the market. By lessening price competition, Apple could set higher prices, and focus on competing on aspects it had an advantage in, such as e-reader technology.

Beyond prices, Amazon posed another threat to the publishers. Prior to the conspiracy, Amazon possessed the majority of the e-book retail market and the publishers heavily depended on Amazon to sell their titles. The publishers feared that Amazon may use its monopsony power to negotiate lower wholesale prices.

Amazon was also making moves to publish its own e-books, making it a direct competitor with the publishers. It had begun to contract directly with authors and offered them a higher royalty rate than the publishers currently offered. The threat posed by this disintermediation further motivated the publishers to undermine Amazon and take away its dominant position in the retail market.

2.5. Pre-Cartel Coordination

From September 2008 to 2010, the American executives of the six most prominent publishing companies held several meetings to discuss industry issues, and in particular, Amazon's $9.99 strategy. They would meet quite regularly, approximately once a quarter in New York and during that time devised several possible solutions to the $9.99 problem.

Through their discussions, the publishers' came to realize that in order to successfully

implement any of their possible solutions, they had to act collectively. Due to Amazon's monopsony power, no individual publisher could approach Amazon and demand it to set higher prices. Amazon could easily retaliate against a publisher by refusing to sell a publisher's e-books. However, if the publishers coordinated and acted as a unit, they would have enough clout to demand higher prices and credibly threaten Amazon.

The publishers considered many options including establishing a joint e-book retail platform. Their idea was that by introducing a new e-book retailer, the publishers could lessen Amazon's monopsony power. They also discussed the establishment of joint e-book formats and lobbying for the creation of retail price maintenance laws in the American and UK e-book industries. None of these ideas were attempted.

The publishers also began to discuss the viability of the agency model as a solution to the $9.99 problem. Hachette had approached Barnes & Noble with the idea. As a competitor to Amazon, Barnes & Noble welcomed the idea of less price competition as it was struggling to gain a substantial foothold in the market due to Amazon's pricing strategy and dominant market position.

In 2009, the publishers collectively attempted two of their plans. Their first plan was to increase e-book wholesale prices for titles sold for $9.99. If Amazon were to maintain the $9.99 price point at the higher wholesale prices, Amazon would be selling e-books at a loss. Since price competition between the publishers was relatively weak, it would not have been difficult to ensure individual commitment to the strategy.

In early 2009, the publishers implemented their plan and increased the wholesale prices of select e-book titles to match the wholesale prices of their physical counterparts. This change would have corresponded to a 25% increase in e-book wholesale prices. However, this strategy

did not persuade Amazon to increase its prices, and it continued its $9.99 strategy at a substantial loss.

The second strategy the publishers attempted in 2009 was to "window" e-books. Windowing is a common practice and is usually done with paperback books. A publisher will release the hardcover version of a title, and several months later, it will release the paperback version. This strategy is a form of price discrimination, allowing publishers to segregate the market into high demand (hardcover) consumers and low demand (paperback) consumers. However, price discrimination was not the core motivation in the case of e-book windowing. The publishers were attempting to punish Amazon for its $9.99 strategy by reducing sales.

Simon and Schuster, HarperCollins, and Hachette were the first publishers to implement the e-book windowing strategy. They simultaneously announced their commitment to window some or all of their new releases. On December 9th, 2009, the policies made the news in the Wall Street Journal and the New York Times. In both of these articles, it was made clear that the widowing policies adopted by the publishers were a protest against Amazon's $9.99 strategy.

The three committed publishers went on to try and persuade the remaining three publishers to participate in the windowing movement. On December 15th, 2009, MacMillan announced that it would also begin windowing e-books, starting in January of 2010. Penguin and Random House never did participate in the collective windowing scheme, even though Penguin knew that if it did not participate, Amazon's $9.99 strategy would surely continue.

Other than the inability of all of the publishers to commit, the major problem with the windowing strategy was it seriously hurt the publishers' sales. In fact, this was the core reason why Penguin did not participate in the windowing attack. According to a Penguin study, the immediate sales lost by windowing e-books are never recovered. When consumers cannot

purchase the e-book version of a title, they generally will not purchase the hardcopy version, nor will they likely purchase the e-book at a later date. Penguin and the other publishers understood that many of these lost sales were due to piracy of the e-book.

Overall, the publishers recognized that windowing was a "terrible, self-destructive idea," (DOJ "Opinion & Order", 2013, p.34) and only a short-term solution to the $9.99 problem. They needed to develop a solution that would be profitable in the long run and would garner enough commitment from the six publishers to be effective. In the following months, the publishers, with the help of Apple, came to realize that their best strategy would involve transforming the entire industry from a wholesale model to an agency model, and instating industry wide pricing tiers which would prevent price competition.

2.6. Analysis

Both Apple and the publishers were motivated to increase the prices of e-books. Apple required higher prices in order to justify entry. The publishers desired higher prices in order to avert pressure to reduce wholesale prices for both e-books and physical books. The best way to satisfy both Apple's and the Publishers' goal was to explicitly collaborate to force upward the retail prices for e-books.

In the Complaint, the DOJ defines the relevant antitrust market as only e-books. They assert that e-books have no reasonable substitutes. The technology of e-books and their readers, and the added benefits the technology provides, are clearly different than physical books. So long as there is an internet connection, E-books can be found and purchased anywhere. One can carry thousands of books on one e-book reader. As well, the DOJ argues that since Apple and the Publishers were able to impose higher prices on only e-books, e-books should be viewed as their

own market.

However, according the DOJ "Complaint", the publishers believed that low e-book prices would force downward the prices for physical books. This belief implies that physical books and e-books are substitutable. Consumers compare the prices of e-books and physical books because they view the two types of products as being sufficiently similar. Therefore, it may be more appropriate to identify the relevant market as the market for trade books (including both physical books and e-books) rather than just the market for e-books.

Moreover, the fact that e-books fall under fixed book price laws in many European nations suggests that e-books and physical books may belong in the same relevant market. The Börsenverein, in the document "Stellungnahme zur Preisbindung von E-Books", argues that e-books belong to the trade book market and their prices should fall under Germany's fixed book price law; e-books serve the same function as, and share a similar form to, physical books. This implies that e-books and physical books are substitutable.

The association then compares e-books to audiobooks, which do not fall under the fixed book price law, and argue that e-books are more similar to physical books than they are to audiobooks in their form and function. Therefore, e-books belong to the trade book market and not the audio book market. This argument clearly delineates the relevant antitrust market (in Germany, of course) by demonstrating that the next best substitute, audiobooks, do not belong in the market for e-books, while physical books do belong in the market.

However, empirical evidence of the substitutability of e-books and physical books demonstrates that, in fact, e-books are not highly substitutable with physical books. In Dr. Gilbert's expert testimony in the *United States of America vs. Apple* trial, he implements the hypothetical monopolist test to conclude that physical books are not part of the relevant antitrust

market for e-books. Using Amazon sales data from before and after the implementation of the conspirators' price fixing scheme, Gilbert further illustrates that e-books and physical books are not substitutes. Amazon observed that for titles where the e-book was more expensive than the physical book after the price increases, sales fell for e-books while sales for physical books stayed the same. This result is corroborated by the publisher's experiences with windowing in 2009.

There may be a few reasons why e-book consumers do not view e-books and physical books as substitutes. It may be, as the DOJ argues, that the two forms of book are innately different. It may also be that some consumers are imperfectly rational when they are faced with the choice to substitute to physical books. Consumers may not view the purchase of their e-reader as a sunk cost, and thus may be reluctant to purchase physical books given their previous expenditure. They may think "I bought this $150 e-reader and, gosh darn it, I'm going to use it!".

Overall, consumers recognize that the nature of each format makes paper books and e-books distinct products. However, the publishers' argument that sufficiently low e-book prices influence physical book prices could still be valid, even if e-books and paper books are not substitutes. E-books and paper books are materially identical, so it makes sense that consumers perceive a relationship between physical book and e-book prices. Consumers may view extremely low e-book prices as a signal of the quality or worth of the literature itself, which could change consumers' price expectations for physical books and e-books, alike.

3. Cartel Creation and the Agency Model

Similar to the previous section, Apple and the publishers' conspiracy will be fully outlined using the information provided in the DOJ's "Opinion & Order" from July 10th, 2013 and the

Commission's "Commission Decision". The outline will be followed by an analysis of the wholesale and agency models. A timeline of the events described in this section is in the appendix, section A.

3.1. Overview

Both Apple and the defendants shared the same desire to stop both the spread of Amazon's pricing trend, and the growth of Amazon in both the US and globally. The publishers understood that individually, none of them had enough clout to take on Amazon. In order to enact the change they desired, they had to collectively commit to develop and implement a scheme that removed price competition in the retail market. Such a scheme would strip Amazon of its monopsony power and hinder it from maintaining its dominance in the retail market.

The publishers and Apple accomplished their goal of removing price competition in the retail market by establishing a cartel. Apple orchestrated the creation of the cartel. For each publisher, Apple negotiated "Apple Agency Agreement" that acted as a commitment device for the publisher. By signing the Apple Agency Agreements, the publishers were incentivized to initiate their conspiracy on an international scale. They began the implementation of the conspiracy in the US in January, 2010 and completed the implementation in France in October, 2011.

The publishers plan was to enter into agency agreements with all their retailers, requiring the retailers to relinquish their ability to set retail prices. The publishers would then set prices using a pricing system developed jointly by the publishers and Apple. By using identical pricing systems, the publishers would be charging the same prices for their products, and price competition in the retail market would no longer exist.

3.2. Cartel Formation and American Implementation

The formation of the cartel began December 8th, 2009, when Apple contacted each of the six publishers to set up individual meetings for December 15th and 16th in New York. Apple intended to share its plan of opening the iBookstore. In particular, Apple needed content for the iBookstore, and felt that in order for the iBookstore to be a success, it needed the titles of all the major publishers. Furthermore, in light of Amazon's $9.99 strategy, Apple needed the publishers help to develop a plan for it to profitably enter the e-book retail market.

Apple knew that the publishers loathed Amazon's $9.99 pricing strategy. In its negotiations with the publishers, Apple planned to entice them to help with the iBookstore by leveraging their animosity towards Amazon. Apple was willing to charge e-book retail prices of up to $14.99, provided that it could profitably do so given Amazon's pricing. However, Apple would only consider a deal if the publishers decreased their wholesale prices in light of the wholesale price increases the publishers implemented earlier in 2009.

Going into these meetings, Apple assumed that it would be entering into wholesale arrangements with the publishers. Through its meetings with Hachette and HarperCollins, Apple learned of the publishers' previous talks regarding the agency model as a possible solution to the $9.99 problem.

Apple took the information it gathered from the meetings and developed official proposals for the publishers. Apple considered the publishers' agency model idea and saw its potential as a means to both remove all price competition in the e-book retail market and to quash Amazon. Apple was comfortable with the agency model since it already used it in its App Store, where it acted as an agent to app developers.

However, Apple needed to find a way to implement the agency model while controlling

the publishers' inclinations to set retail prices too high. Apple believed that consumers would be willing to spend more for e-books, but felt that the e-book prices proposed by the publishers in the meetings on December 15th and 16th were "unreasonable" and may alienate consumers and incite ridicule against Apple. Indeed, throughout the entire cartel formation process, the publishers' desire for high prices would be a point of contention between Apple and the publishers.

In order to solve this problem, Apple devised pricing tiers based on the list prices of the hardcover versions of the publishers' e-book titles. Given the publishers' desire to raise prices as high as possible, and their inclination to coordinate, Apple expected that the publishers would set prices at the top of each pricing tier. Apple then realized that if the publishers entered into agency agreements with all their other retailers, including Amazon, and used the same pricing tiers, price competition would be totally removed in the retail market. If Apple succeeded in its plan, it would become the "gatekeeper" of global e-book prices.

Apple's official proposal to the publishers included an agency agreement with pricing tiers, where part of the agreement would require that the publishers have all their other retailers operate under a similar agency arrangement with identical pricing tiers. Apple proposed a 30% commission, which was the same commission it earned through its App Store. On December 19th, Apple set up individual meetings with Simon & Schuster, Macmillan, and Random House and presented their proposal.

The three publishers had two major concerns with Apple's proposal. Firstly, they were apprehensive of the prospect of having to propose the agency model to Amazon. Secondly, the publishers felt that Apple's 30% margin was too large. Although the publishers would be earning a higher percentage of the final retail price, given Apple's pricing tiers the publishers would be

earning considerably less per e-book compared to the current wholesale system. The 30% commission was not very good for Apple because with this revenue, Apple would only be earning a single digit profit margin. As negotiations progressed, Apple stood by its original 30% commission offer, and the colluding publishers eventually accepted it.

Apple took the feedback it got from the three publishers and created term sheet outlining the proposed terms of the contracts and a detailed breakdown of the pricing tiers. It then sent the term sheet Simon & Schuster, Macmillan, and Random House on January 4th and 5th, 2010. The publishers liked Apple's version of the agency model, and they agreed that it should become the new standard for the industry. However, the publishers still wanted higher retail prices.

Apple took the feedback it received from the three publishers and began to draft the Apple Agency Agreements. It was at this time that Apple conceived of the Most Favored Nation (MFN) clause as a more "elegant" means of incentivizing the publishers to implement pricing tiers throughout the entire market. The combination of a MFN clause and the pricing tiers guaranteed that the publishers would set e-book retail prices in the iBookstore to match the lowest price offered by any other retailer, even if the publisher did not control the prices of that retailer. Since the publishers received a fixed percentage of the retail price of their e-books sold through the iBookstore, they would carry some of the burden of a price reduction. In this way, the MFN clause provided an incentive for the publishers to gain control of e-book retail prices both in the US and in the publishers' European markets. The combination of the MFN clause and the pricing tiers was the main mechanism driving the implementation of the conspiracy on an international level.

Apple also added a "day to date" commitment to the Apple Agency Agreements. This clause forced the publishers to release the e-book and physical versions of titles on the same

date, thus preventing the publishers from windowing e-books.

On January11th, Apple distributed the draft Apple Agency Agreements to the Publishers. It was Apple's goal to have all the final contracts between Apple and the publishers be materially identical, and throughout the negotiation process Apple assured the publishers that this was, in fact, the case. The publishers could "negotiate around the edges" (DOJ "Opinion & Order", p.51) but all the contracts had all the same core elements: the "day and date" commitment, the pricing tiers, the 30% commission, and the MFN clause. Apple and the publishers negotiated for nine days following the distribution of the draft Apple Agency Agreements. The publishers generally did not have a problem with the MFN clause and some of them even felt it was unnecessary. They were committed to demand an agency arrangement from Amazon, provided that they could coordinate to approach Amazon collectively. As usual, the publishers took issue with Apple's 30% commission and the suggested retail pricing tiers.

The final draft of the pricing tiers was completed on January 16th and it would become the pricing scheme present in all the Apple Agency Agreements. There were three categories of books specified in the Apple pricing scheme: new releases, New York Times (NYT) bestsellers, and backlist tiles (ie. not new releases). Apple defined new releases as titles that have been on the market for less than 7 months. The prices for backlist tiles were not specified in Apple's pricing scheme, so publishers were free to set whatever price they wished. The pricing tiers for NYT best-sellers and new releases are outlined in the chart below.

Table 3: Apple Price Tiers for New York Times Best-sellers and New Releases[5]

List Price	Prices for New Releases	Publisher Revenue (70%)	Prices for New York Times Best-sellers	Publisher Revenue (70%)
$20.01-22.00	$9.99	$7.00	$9.99	$7.00
$22.01-24.00	$10.99	$7.70	$10.99	$7.70
$24.01-25.00	$11.99	$8.40	$11.99	$8.40
$25.01-27.50	$12.99	$9.10	$12.99	$9.10
$27.51-30.00	$14.99	$10.50	$12.99	$9.10
$30.01-35.00	$16.99	$11.90	$14.99	$10.50
$35.01-40.00	$19.99	$14.00	$19.99	$14.00

The prices outlined in the Apple Agency Agreements were consistently higher than those charged by Amazon and Barnes & Noble and in some cases, were higher than the hardcover book prices set by Amazon.

As previously mentioned, the pricing terms in the Apple Agency Agreements presented a major problem to the publishers. By adopting the pricing terms in the Apple Agency Agreements, the publishers voluntarily incurred a substantial cut to their profits. Some publishers predicted that the loss in per unit revenue would add up to a total of 17% loss in total revenue. This point is illustrated in the following chart from the "Opinion and Order" provided by the DOJ.

[5] Adapted from Gilbert, 2013. P.29

Table 4: Publisher Per Unit Earnings for New Releases and NYT Bestseller Titles Wholesale vs. Agency Models[6]

	Amazon on wholesale prior to Apple's entry	Apple on agency with MFN: Amazon on wholesale	Apple and Amazon on agency with MFN and Apple pricing tiers
Hardcover list price	$26.00	$26.00	$26.00
E-book/hardcover wholesale price (assuming 50%)	$13.00	$13.00	--
Amazon retail price	$9.99	$9.99	$12.99
Apple iBookstore retail price	--	$9.99	$9.99
Publisher revenue received from Amazon	$13.00	$13.00	$9.10
Publisher revenue received from Apple (70% of retail price)	--	$7.00	$9.10

The chart shows the per unit revenues a publishers would earn from a title with a hardcover list price of $26.00. Given the wholesale prices the publishers charged Amazon prior to the formation of their cartel, and the retail prices stipulated by the Apple Agency Agreements, the publishers would have earned approximately $3.90 more per unit sold under the wholesale model than under Apple's agency model. The chart also demonstrates the losses the publishers could incur if, after signing their Apple Agency Agreements, they could not persuade Amazon to adopt Apple's pricing scheme.

In general, although the publishers would be earning a higher proportion of the retail price, the low prices dictated in the Apple Agency Agreements caused an overall decrease in publisher revenue. This example also demonstrates why the publishers pushed for higher e-book prices and a lower commission for Apple.

[6] Source: DOJ "Opinion and Order, 2013. P.54

Indeed, it is surprising that the publishers accepted a contract that would force them to incur such a loss. However, adopting Apple's agency model in order to control Amazon's pricing behavior and remove its monopsony power would be more profitable for the publishers in the long run. The industry-wide implementation of Apple's pricing tiers took away the potential for Amazon to demand wholesale prices far below the prices the publishers were currently charging. It would not be unreasonable to predict that Amazon my demand wholesale prices of 50% for its $9.99 titles (or $5.00), which would be far less than the lowest revenue the publishers could make under the agency model (of $7.00). As well, by removing price competition in the e-book retail market, the publishers were protecting prices in the paper book market and the brick and mortar establishments that they depended on for the distribution of their paper books.

On January 18th and 19th, two press releases reported the publishers' negations with Apple. By this point, Amazon was aware of the price setting scheme, and understood that soon the publishers would collectively demand that it move to an agency model.

Amazon announced its retaliation strategy against the publishers on January 20th. Amazon threatened disintermediation by announcing a new program for authors and publishers of Kindle e-books. Under the program, authors and publishers who release e-books between $2.99 and $9.99 could receive 70% royalty, which was double the standard royalty of 35%. With this new program, Amazon intended to draw new authors away from the standard publishers while simultaneously encouraging lower e-book prices.

On January 20th through to the 22nd, four of the five participating publishers communicated with Amazon that they planned to join Apple's iBookstore and would be switching to an agency model with all their retailers. They presented their first round of threats as well as the terms they were willing to set with Amazon for their new agency agreements.

HarperCollins offered Amazon a commission of 5% and threatened that it would delay the release of any e-book sold on a wholesale basis for six months if Amazon did not accept.

On January 21st, Random House communicated that it would not sign an Apple Agency Agreement and would not participate in the conspiracy. Apple informed the publishers of Random House's decision and told them that it was still committed to the iBookstore, so long as four of the remaining five publishers committed to participate prior to the launch of the iPad and the iBookstore on January 27th.

From January 24th to 26th, the five remaining publishers signed their Apple Agency Agreements. Collectively, the five defendant publishers produced over half of the New York Times bestseller's list for both fiction and non-fiction at any given time (DOJ "Complaint", 2012). In the first quarter of 2010, the defendant publishers' titles made up 48% of all e-books sold in the US. If they were to collectively threaten to withhold their e-books from Amazon, Amazon would surely suffer.

On January 27th and onward, the defendant publishers approached Amazon to officially issue their ultimatums. Macmillan was the first publisher to confront Amazon with an ultimatum. Amazon could either move to an agency arrangement or Macmillan would window the e-book versions of all its new releases for seven months (where it was no coincidence that Macmillan's e-books would be subject to Apple pricing rules for seven months after their release). In retaliation, Amazon removed the "buy buttons" from both the physical and e-book versions of Macmillan titles on the Amazon website. Customers could view the books, but could not purchase them.

The general reaction to Amazon's retaliation was mixed and was intensely criticized by both consumers and publishers. In response to Amazon's retaliation, on January 30th, Macmillan

took out an advertisement in an industry publication and wrote a letter to "Macmillan authors/illustrators and the literary agent community". In the letter, Macmillan outlined the terms it presented to Amazon during their January 27th meeting. Following Macmillan, the other defendant publishers presented similar ultimatums. In each threat, Amazon was asked to enter into agency arrangements with the publishers by April 3rd, 2010, the release date of the iPad, or else e-books would be windowed.

On January 28th, Amazon succumbed to the defendant publishers' collective request and accepted Macmillan's agency proposal. Amazon then proceeded to file a complaint to the Federal Trade Commission. It signed an agency agreement with Macmillan on February 5th and then went forward to sign agency agreements with the other defendant publishers.

Amazon designed each of the agency contracts to have different termination dates to ensure that Amazon would not be faced, yet again, with collective pressure from the publishers. Amazon also included "model parity" clauses in its agency agreements stipulating that if a publisher were to return to a wholesale model with another retailer, the publisher would also be required to switch back to a wholesale arrangement with Amazon.

The Apple iBookstore opened in April in North America and May in Europe. By the end of March, 2010, Amazon had signed agency agreements with MacMillan, HarperCollins, Hachette, and Simon & Schuster. Penguin established its agency relationship with Amazon on June 2nd, 2010. Prior to that date, Penguin had windowed the e-book versions of its Amazon new releases because it was selling its books in the iBookstore and was subject the MFN clause of its Apple Agency Agreement.

Within four months after the Apple Agency Agreements were signed, all the major e-book retailers had signed an agency agreement with each publisher, including Barnes & Noble,

Sony, and Google. At this point, the defendant publishers had succeeded in officially establishing a cartel and removing price competition in the American market.

3.3. Global Implementation

The defendant publisher's next step was to extend their conspiracy to their European markets. Amazon sold e-books to UK, French and German consumers through its American website. The defendant publishers were compelled to establish agency agreements with their European retailers so as not to be punished by the MFN clause in their American Apple Agency Agreements. As well, the defendant publishers believed that as Amazon began to establish a presence in Europe, it would continue to implement is pricing strategy. Thus, the defendant publishers wished to sign Apple Agency Agreements for their European titles and prevent Amazon's international.

In the case of the UK, the defendant publishers' ultimate goal was to transform the industry to an agency model, just like they had done in the US. In France and Germany, it is unclear why the publishers viewed Amazon as a severe threat to retail prices. Given the lack of price completion in France and Germany due to their FBP laws, Amazon would have been no threat with its $9.99 strategy. The reasons for the publishers' concerns were not made explicit in the Commission's available documentation. Thus, it is not clear why the defendant publishers were compelled to sign Apple Agency Agreements other than their desire help Apple become a formidable competitor in the e-book markets in France and Germany.

Between May 2010 and August 2010, UK executives of the defendant publishers were directed by their American superiors/counterparts to sign Apple Agency Agreements with Apple for their UK titles. Hachette and Macmillan were the only two publishers in the cartel to produce

French and German books, respectively, and Apple entered into Apple Agency Agreements with Hachette in May, 2010 and Macmillan in December, 2010. Apple launched the iBookstore in the UK, France, and Germany May 28th, 2010.

Like in the US, the Apple Agency Agreements used in the Europe contained a MFN clause, retail pricing tiers, and a commission of thirty percent. The pricing tiers outlined in the European Apple Agency Agreements were substantially similar, if not identical, across nations.

The defendant publishers then went on to sign agency agreements with other retailers, including Amazon, in their respective markets, using their American contracts as a template. In the case of UK titles, Amazon accepted the defendant publishers' agency agreements with minimal resistance. Amazon expected that they would collectively offer similar threats as they did in the United States. Likewise, Macmillan and Hachette signed agency agreements with Amazon for German and French titles, and encouraged other French and German publishers to also sign on with Apple.

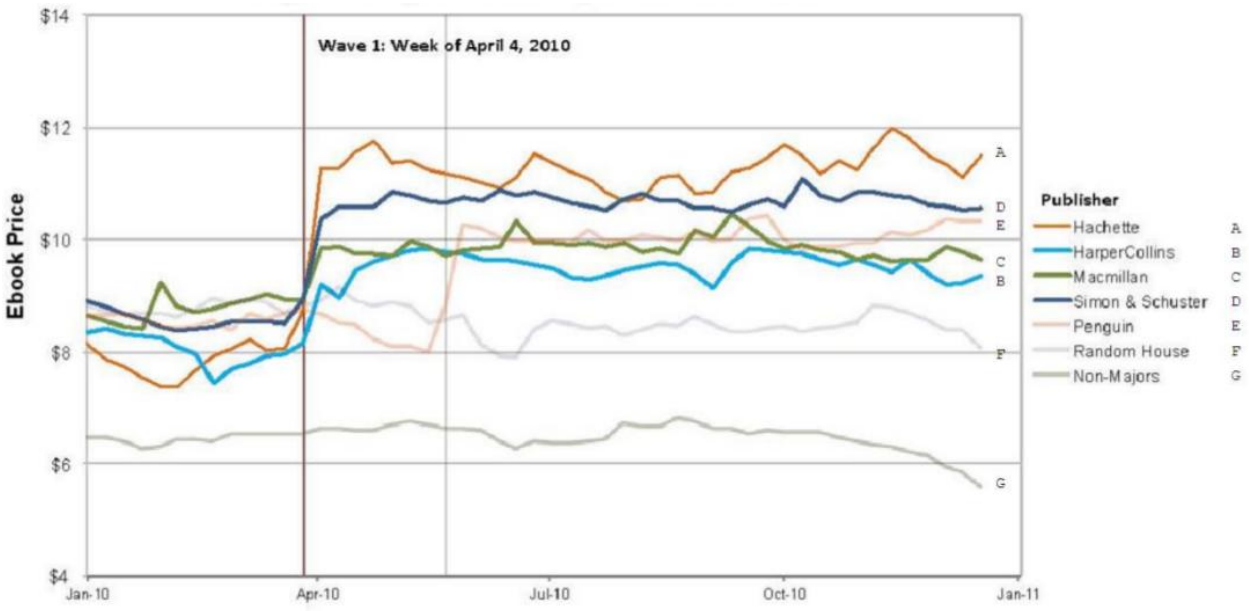
In August of the same year, Amazon launched a UK version of its website and in 2011 it launched its German (April) and French (October) versions. Although the Commission Decision does not provide specific dates for the establishment of agency agreements between Amazon and the publishers, it is implied that the publishers signed agency agreements in the UK after the launch of Amazon's UK website and prior to the launch of its French and German websites.

3.4. Resulting Price Increases

After Amazon's transition to the agency model, the average US retail price of e-books increased by 14.2% for new releases, 42.7% for New York Times bestsellers, and 18.6% across all of the defendant publishers' e-books. E-book prices increased by approximately 9% across the entire

market (DOJ "Summation", 2013). The average price for Random House's e-books remained unchanged at approximately $8.00. The following information is presented in the following chart from Dr. Gilbert's expert testimony.

Chart 2: Weighted Average E-book Price by Publisher at Amazon[7]



Penguin's prices did not increase until June 2nd due to its windowing. All the price increases correspond with the opening of the iBookstore.

Prices for e-book versions of backlist titles also increased, even though this category of e-books did not fall under Apple's pricing scheme. Publishers increased the prices for backlisted titles as a way to recoup some of the losses incurred by their new releases and New York Times bestsellers. The following two charts present data from both the plaintiff and Apple showing the price increases of e-books.

[7] Reproduced from Gilbert, 2013. P. 51

Table 5: E-book Weighted Average Price increases at Amazon by Publisher Defendants Following the Move to Agency[8]

Publisher	All E-books	New Releases	NYT Bestsellers	Backlist
Hachette	33.0%	14.1%	37.9%	37.5%
HarperCollins	13.6%	12.5%	44.0%	15.2%
Macmillan	11.6%	14.0%	-	11.2%
Penguin	18.3%	19.5%	43.6%	17.6%
Simon & Schuster	18.0%	15.1%	28.7%	19.8%
Defendant Publishers	18.6%	14.2%	42.7%	19.6%
Random House	0.01%	1.9%	0.2%	0.3%
Non-Majors	0.2%	-0.9%	1.1%	0.1%

Table 6: Average E-Book Prices of Backlist and New Release Titles in Periods Before and After Agency[9]

	Amazon	Barnes & Noble	Sony
Backlist			
Before Agency	$7.16	$6.84	$8.07
After Agency	$8.78	$8.20	$8.43
Percent Change	23%	20%	4%
Hardcover New Release and NYT Bestsellers			
Before Agency	$10.37	$9.99	$11.31
After Agency	$12.28	$11.60	$11.97
Percent Change	18%	16%	6%

Prices of new release physical books also increased after the agency model was completely implemented. Since the price of an e-book is based on the list price of its physical counterpart, the publishers thus had an incentive to increase physical book list prices in order to increase e-book prices.

The increase in e-book prices resulted in a decrease in the quantity of e-books sold. Dr.

[8] Source: DOJ "Opinion and Order", 2013. P.96

[9] Source: DOJ "Opinion and Order", 2013. P.97

Ashenfelter proposed that the defendant publishers' unit sales decreased by 14.5% relative to Random House. Dr. Gilbert suggests that in the two week period following the implementation of higher prices, the participating publishers experienced a reduction of units sold of 12.9%, for those books that were available in both periods. Meanwhile, the publishers who were not part of the conspiracy experienced an increase of sales of 5.4%, by the same measure. The decrease in sales experienced by the publishers can be attributed to many factors: substitution to Random House and other publishers, substitution to paper copies of titles, piracy, or consumers abstained from purchasing any books.

In Europe, the effect of the cartel was less pronounced. In France and Germany, there is no evidence that the Apple Agency Agreements significantly affected prices. Other than the MFN clauses, the Apple Agency Agreements were not substantially different from the typical agreements that publishers establish with retailers. Even so, a MFN clause would be totally insignificant because French and German publishers were (and still are) required by law to set identical retail prices for all retailers. FBP laws accomplished the same result as the MFN clauses accomplished in America and the UK.

According the Commission, the conspiracy led to an increase in e-book prices in the UK. However, there is no information easily available regarding e-book prices in 2010 or the exact effect of the conspiracy on the UK retail.

3.5. Random House Joins the Cartel

Random House did not participate in the cartel and continued to sell its books under a wholesale model until it joined Apple in the autumn of 2010. Although it was enthusiastic about Apple's entry into the retail market and the prospect of gaining control over Amazon, Random House had

reservations regarding the terms of the Apple Agency Agreement. Not only was it not comfortable with Apple's pricing terms, but Random House felt that it was not informed enough to set retail prices for its backlist titles.

The cartel sought to punish Random House for not joining the collusion. Penguin tried to encourage an (unnamed) e-book retailer to cease carrying Random Houses' books. In an email sent to the retailer by Penguin's CEO David Shanks, he said,

> *"Since Penguin is looking out for [your] welfare at what appears to be great costs to us, I would hope that [you] would be equally brutal to Publishers who have thrown in with your competition with obvious disdain for your welfare .... I hope you make [the publisher] hurt like Amazon is doing to [the Publisher Defendants]."* (DOJ "Complaint", par. 87)

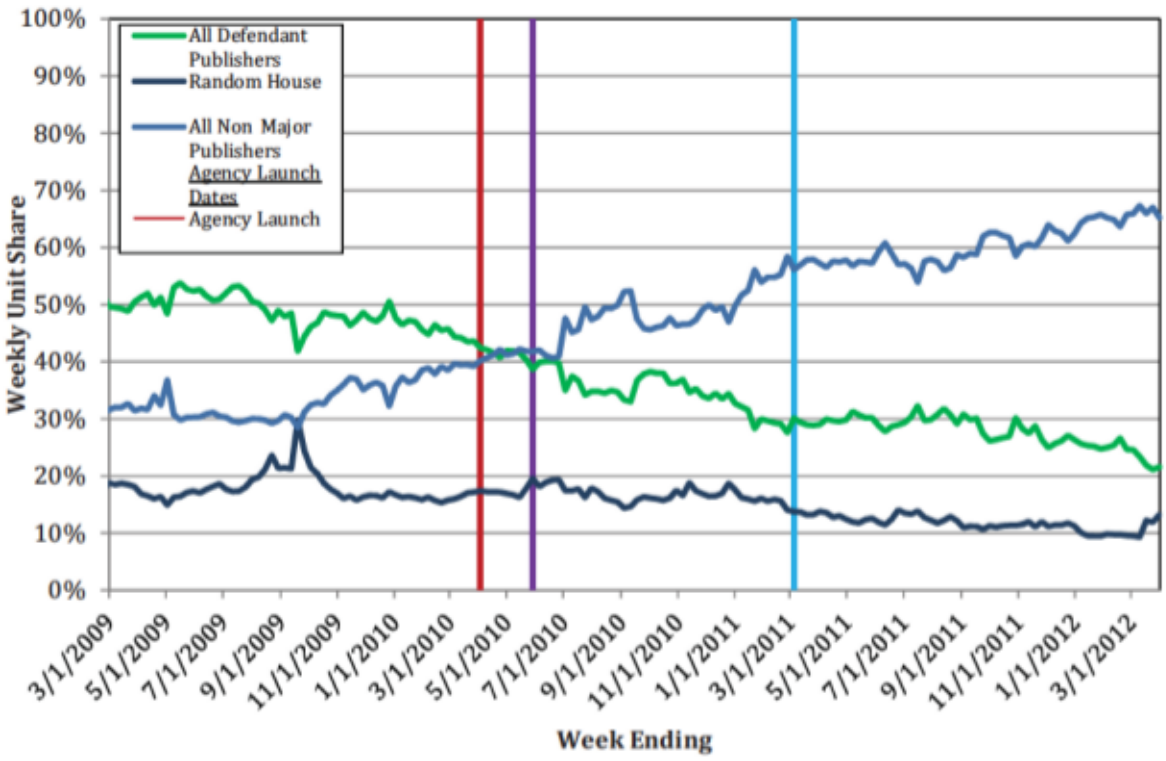
Mr. Shanks argument was that by signing agency agreements with the colluding publishers, and participating in instating the agency model, retailers would be protected from the aggressive pricing strategy of Amazon. The retailer should retaliate against Random House to protect the publishers like the publishers have protected the retailer from Amazon.

Ten months after Amazon had signed agency agreements with the defendant publishers, Random House submitted an app to Apple's App store designed to allow consumers to purchase and read Random House titles on the iPad. Apple refused the app and told Random House that its

books would only be available on the iPad if it participated in the iBookstore. By January 2011, Random House had signed an Apple Agency Agreement and was part of the iBookstore. It then offered agency agreements to all its other retailers.

According to Amazon's data, Random House sales increased by 41% between Q1 and Q2 (immediately after the release of the iBookstore in April, 2010). When Random House joined the iBookstore and adopted Apple's pricing tiers its prices increased by $18.3% on average and its unit sales fell by $16.7%. The gains and losses of Random Houses' market share are illustrated in the following chart from Dr. Gilbert's expert testimony.

Chart 3: Output Shares of Defendant Publishers, Random House, and Non-major Publishers[10]



[10] Reproduced from Gilbert, 2013. P.89

3.6. Analysis

The Apple Agency Agreements, and the MFN clauses in particular, were the mechanism that established and maintained the cartel. It provided incentives that prevented the defendant publishers from deviating from the collective strategy. Their strategy was to first transform the markets in the US and the UK from a wholesale model to and agency model. Through the agency agreements between the publishers and their retailers, the defendant publishers would be able to completely eliminate price competition by setting retail prices according to the coordinated pricing tiers created with the help of Apple.

In essence, the Apple conspiracy story contains three different pricing schemes: the wholesale model, the agency model, and the agency model with coordinated pricing. In the wholesale model, there is the publishers' market (the upstream market) and the retailers' market (the downstream market). The retailers compete in order to establish the retail price and output for the titles they sell. The output of the retail market determines the demand function faced by the publishers whereby the publishers engage in oligopolistic competition to establish the wholesale price and output.

In this system, it can be argued that both retailers and publishers engage in a differentiated Bertrand competition. In both the publishers and retailer markets, there are a small number of firms, and it can be argued that they compete in price. In the retail market, evidence suggests that price competition is fierce. Since retailers sell many of the same titles, retailer products can be viewed as being homogeneous. Retailers can differentiate their products by offering e-books in different formats. In fact, e-readers and their corresponding e-book formats are an interesting means for retailers to prevent substitution, and may explain the strong price competition in the retail market.

When deciding to purchase an e-book, consumers must consider the prices of both the e-book and the corresponding e-reader. In order to enter the e-book market, the consumer must make a fixed cost investment into an e-reader. As well, if a consumer wishes to purchase from a different retailer with its own proprietary e-book format, the consumer would have to buy an additional e-reader. Thus, e-readers create a barrier to substitution for consumers. However, this form of product differentiation may not necessarily increase e-book prices.

For example, Anne has a Nook but notices that Amazon sells New York Times best sellers (her favorite books) for considerably less. In order to take advantage of Amazon's low prices, she must purchase a Kindle. If Anne has a linear utility function, she may, for example, consider purchasing an Amazon e-book if the following relationship holds:

$$\frac{price\ of\ Kindle}{n} + \sum_{n}^{1} P_n^K < \sum_{n}^{1} P_n^B$$

where n is the number of NYT bestsellers that Anne plans to purchase in the period, and P^K and P^B represent the prices of NYT bestsellers for Amazon and Barnes & Noble, respectively. Assuming that Anne is a rational economic agent, she does not factor in the cost of the Nook because it is a sunk cost.

In order for the inequality to hold, Anne would have to purchase many e-books, and the e-book and Kindle prices offered by Amazon would have to be sufficiently low. This dynamic between e-reader and e-book prices may encourage Amazon to set lower prices for e-books in order to entice consumers to substitute away from Barnes & Noble. Furthermore, e-books and e-readers are complements. Thus, by decreasing the prices of NYT bestsellers, Amazon can

increase the demand for the Kindle.

In fact, this sort of consumer behavior may justify Amazon's loss leader strategy. By earning a loss on its e-books, Amazon could sell more Kindles, capture new entrants, and thus hinder them from purchasing e-books from competitors. The revenue earned by the Kindle could cross subsidize the losses incurred by selling NYT bestsellers at a loss. In conclusion, it is likely that retailers compete so fiercely in e-book prices not because e-books are highly substitutable, but rather that e-book price competition is an indirect means to compete in e-readers. Regardless, cases such as Amazon's $9.99 strategy or Sony's 20p promotion in the UK suggest that retailers compete in e-book prices.

Publishers also compete in price. However, due to the high degree of product differentiation in the publishers' upstream market, competition is very weak. As previously mentioned (in section 2.2.), publishers strive to provide unique content. In this way, they generate monopoly power and thus protect themselves from competing in price.

For example, Simon and & Schuster has exclusive access to the creative output of Stephen King. Likewise, HarperCollins has access to the works of Darren Shan. Although both artists create horror novels, the art produced by each writer is unique to the author. As such, a Darren Shan novel is not necessarily a good substitute for a Stephen King novel. Thus, the degree of substitution between them is very small, implying that market power exists in the publishers market, giving rise to double marginalization in the wholesale model.

However, it is worth noting that in the entire e-book market, there are many horror novels. Thus, there is a case to be made for monopolistic competition where publishers create books with a specific mix of qualities in in relation to other titles produced by the publishers. As such, each individual product may not possess a large quantity of market share. For this paper,

we shall not explore how publishers select product characteristics and instead take the characteristics of each product as given. Out main focus for this paper is price determination, so a differentiated Bertrand model will be used in the following sections instead of a Hotelling-style location model.

In contrast to the wholesale model, in the agency model, only the publishers compete. Publishers set the retail prices for their titles and the retailers act as agents to the publishers. The retailers are given a percentage of the retail price as reimbursement for their agent role. The agency model may be more efficient that then wholesale because it can correct for double marginalization. However, the assertion that the agency model is more efficient depends on the value of the commission paid by the publishers.

The agency model with coordinated pricing is the system created by the conspirators that enabled them to raise prices in the retail market above competitive levels. The agency model served as a means for the publishers to take control over prices in the retail market. Once in control of retail prices, the publishers then coordinated in order to establish uncompetitive prices. Thus, is unlikely in the agency model with coordinated pricing that prices would ever be less than prices in the wholesale or agency models. If the publishers collude to set monopoly prices for e-books, then clearly prices would be greater compared to wholesale or agency retail prices. However, as the previous narrative demonstrates, establishing a coordinated pricing scheme is far more complicated than simply setting monopoly prices. This point will be discussed in more detail in the next section.

Prior to the cartel formation, the industry operated under a wholesale model. Through their cartel, Apple and the publishers were able to transform the wholesale model into an agency model with coordinated pricing. Apple argued during their trial against the DOJ that they did not

collude to fix prices (ie. establish an agency model with coordinated pricing) but rather only participated in the establishment of an agency model (without coordinated pricing) in the e-book industry. However, as sections 3.7 and 3.8 will demonstrate, Apple's claim is false.

3.7 The Model

The goal of this section is to provide a theoretical model in order to compare the wholesale model, the agency model, and the agency model with coordinated pricing. The theoretical model predicts that, for a sufficiently low commission paid to the retailers, prices will greater in the wholesale model than the agency model, and highest in the agency model with coordinated pricing. The results given by the model are counter to the claims made by Apple (as discussed in section 3.6) and will be elaborated on in the model discussion in the following section.

To illustrate the three models, consider a trade book market with three symmetric publishers (publishers A, B, and C), and two symmetric retailers (retailers 1 and 2). There are two "pricing tiers", or alternatively, "product sets" where titles in a product set directly compete with each other. Titles that belong to different product sets compete with each other as well, but are less substitutable with each other compared to titles that belong to the same product set. For example, one product set could be horror novels while the second set represents romance novels. Each publisher produces two titles: a book for each product set. In total, there are six titles offered in this market.

Both retailers sell all six titles in their own proprietary e-book format. In total, there are 12 residual demand functions corresponding to the 6 titles offered by the publishers. The demand functions for these products can be denoted in the following way:

$$q_{ilj} = q_{ilj}\ \mathrm{P}$$

which denotes retailer i's residual demand for the title produced by publisher l for the product set j. P is the vector of all retail prices.

To solve the wholesale model, the retail market's price and quantity are first determined. The outputs found in the retailer market are used to create the demand functions in the publishers' market. Thus, the industry output is a function of both the retailers' and the publishers' marginal costs.

For the case of e-books, it will be assumed that the marginal cost of the retailers is zero, while the marginal cost faced by the publishers is greater than zero. Publishers are faced with many fixed costs. It is costly for publishers to create content; to create a book, publishers have to employ many people like writers, agents, visual artists, and editors. Transforming a book into an electronic format, and establishing the digital infrastructure for distributing e-books to retailers may also pose a significant cost. However, once content is created and the distribution infrastructure is constructed, creating and distributing copies of e-books only requires a click of a mouse. Royalties are the major marginal cost the publishers face.

Retailers face a similar cost situation. The costs of establishing a website and installing the technology required to receive payments and deliver e-books to customers may be substantial. However, once this infrastructure is established, the per-unit costs of selling an e-book are very small. Retailers may incur a marginal cost from their payment arrangements with credit card companies and other online payment systems like Paypal. However, it is not unreasonable to assume that these costs represent a small percentage of the final price of an e-book. For these reasons, and for simplicity, the marginal costs for retailers in the model will be zero.

In each market, the firms will maximize profit with respect to prices. The first order

conditions denote the reaction functions of each firm. Each retailer will have six reaction functions corresponding to the six titles they sell. Likewise, the publishers will each have two reactions functions.

Retailer i's profit function is,

$$\pi_i = \left(P_{iA1} - w_{A1}\right) q_{iA1}(\mathbf{P}) + \left(P_{iA2} - w_{A2}\right) q_{iA2}(\mathbf{P}) + \left(P_{iB1} - w_{B1}\right) q_{iB1}(\mathbf{P}) + \left(P_{iB2} - w_{B2}\right) q_{iB2}(\mathbf{P}) + \left(P_{iC1} - w_{C1}\right) q_{iC1}(\mathbf{P}) + \left(P_{iC2} - w_{C2}\right) q_{iC2}(\mathbf{P}). \quad (1)$$

The retailer maximizes profit with respect to all six of its prices to give the first order conditions. The first order condition when the retailer's profit function is maximized with respect to P_{iA1} is,

$$\frac{\partial \pi_i}{\partial P_{iA1}} = q_{iA1}(\mathbf{P}) + \left(P_{iA1} - w_{A1}\right)\frac{\partial q_{iA1}(\mathbf{P})}{\partial P_{iA1}} + \left(P_{iA2} - w_{A2}\right)\frac{\partial q_{iA2}(\mathbf{P})}{\partial P_{iA1}} + \left(P_{iB1} - w_{B1}\right)\frac{\partial q_{iB1}(\mathbf{P})}{\partial P_{iA1}} + \left(P_{iB2} - w_{B2}\right)\frac{\partial q_{iB2}(\mathbf{P})}{\partial P_{iA1}} + \left(P_{iC1} - w_{C1}\right)\frac{\partial q_{iC1}(\mathbf{P})}{\partial P_{iA1}} + \left(P_{iC2} - w_{C2}\right)\frac{\partial q_{iC2}(\mathbf{P})}{\partial P_{iA1}}. \quad (2)$$

Solving the system of the twelve first order conditions gives the prices and quantities for all six books in the retail market, as functions of all the wholesale prices. For publisher l and product set j, the upstream demand function is,

$$\sum_{i=2}^{1} q_{ilj}^{*}(\mathbf{w}) = q_{lj}^{*}(\mathbf{w})$$

where w is the vector of all six whole sale prices in the publishers' market.

The publishers then maximize profits with respect to their wholesale prices. The profit function for publisher l is,

$$\pi_l = (w_{l1} - MC)\, q_{l1}^{*}(\mathbf{w}) + (w_{l2} - MC)\, q_{l2}^{*}(\mathbf{w}). \quad (3)$$

The corresponding maximization problem yields four first order conditions. The first order condition with respect to w_{l1} is,

$$\frac{\partial \pi_l}{\partial w_{l1}} = q_{l1}^{*}(\mathbf{w}) + (w_{l1} - MC)\frac{\partial q_{l1}^{*}(\mathbf{w})}{\partial w_{l1}} + (w_{l2} - MC)\frac{\partial q_{l2}^{*}(\mathbf{w})}{\partial w_{l1}}. \quad (4)$$

Under the agency model, the publishers set the market price. The retailers sell the e-books in their respective formats and receive a commission of $(1-\alpha)$ percent of the retail price. For this model, it is assumed that α is a percentage greater than zero, each retailer earns the same commission, and the publishers do not compete on commission rates (although this would make an interesting extension). The publishers determine the retail prices for e-books by maximizing the following profit function.

$$\pi_1 = \alpha P_{111} - MC\ q_{111}\ \mathrm{P} + \alpha P_{211} - MC\ q_{211}\ \mathrm{P} + \alpha P_{112} - MC\ q_{112}\ \mathrm{P} + (\alpha P_{212} - MC) q_{212}\ \mathrm{P}\ . \quad (5)$$

From the profit function, reaction functions can be determined. The first order condition with respect to P_{111} is,

$$\frac{\partial \pi_1}{\partial P_{111}} = \alpha q_{111}\ \mathrm{P} + \alpha P_{111} - MC\ \frac{\partial q_{111}\ \mathrm{P}}{\partial P_{111}} + \alpha P_{211} - MC\ \frac{\partial q_{211}\ \mathrm{P}}{\partial P_{111}} + \alpha P_{112} - MC\ \frac{\partial q_{112}\ \mathrm{P}}{\partial P_{111}} + (\alpha P_{212} - MC) \frac{\partial q_{212}\ \mathrm{P}}{\partial P_{111}} = 0. \quad (6)$$

The two main factors that differentiate the retail prices in the wholesale model from those in the agency model are the internalization of titles by the retailer, and the size of the agents' commission. Both of these factors suggest that retail prices can be greater under the wholesale model than the agency model.

In the wholesale model, there is upward pressure on the prices of e-books because the retailer is better positioned to "internalize the externalities" of substitution. For illustrative purposes, assume that product sets 1 and 2 correspond to romance novels and horror novels. Consider the three romance novels that each retailer sells. If retailer 1 were to increase the price of one of its romance novels, consumers would have four choices: they could accept the new price, purchase the novel from retailer 2, purchase a different romance novel from retailer 1, or purchase a different romance novel from retailer 2.

In this model, each retailer sells e-books in a proprietary format, forcing consumers to purchase the corresponding e-reader. Therefore, unless the price differences between retailers were substantial, consumers would not switch e-book retailers. Given this fact, it is reasonable to extrapolate that consumers would be more willing to purchase romance novels from retailer 1. Therefore, the three romance titles offered by retailer 1 are significant substitutes.

Since retailer 1 sells three substitutable goods, it has an incentive to increase prices for all three of its romance novels. In effect, retailer 1 has some degree of monopoly power over romance novels because consumers cannot easily substitute to retailer 2's romance novels and are they not likely to read horror novels. In contrast, the agency model generates less upward pressure on retailer prices because publishers only sell two titles, and these titles belong to different product sets. As a result, publishers have control of fewer substitutable titles and thus cannot exercise any degree of monopoly power.

The first order conditions for retailer i in the wholesale model (2) and publisher A in the agency model (6) demonstrate this dynamic mathematically. A higher price is needed in order to satisfy the retailer's the first order condition because there are more positive terms in the retailer's first order condition than in the publisher's first order condition.

It is worth noting that the predictions of this model are not necessarily indicative of the current state of the e-book market. Given the atypical lost leader strategy of Amazon, there is downward pressure on retail prices congruent with Bertrand competition. However, if e-book prices were set without the cross-subsidization of e-readers, perhaps the behavior predicted by the model would be observed.

The commission paid to the retailer is the second relevant factor in comparing agency and wholesale retail prices. There is the potential that a sufficiently low commission rate could help

correct for the double marginalization effects in the wholesale model, leading to lower retail prices. However, a commission that is too great could negate the lower pricing effects of the agency model previously discussed.

Double marginalization arises from the publisher and the retailer making independent pricing decisions. An agency agreement can correct for the double marginalization by allowing a publisher and a retailer to act as one entity. There is no upstream pricing decision and, as a result, double marginalization does not occur.

However, it is not enough that the publisher and the retailer enter into a vertical arrangement. In order to ensure that prices do not increase under an agency model, the commission paid to the retailer must be sufficiently low. From the publisher's perspective, the retailers' commission is effectively a marginal cost. The smaller the value of α, the greater the retailer's commission and the greater the cost to the publisher. As the commission increases, prices increase. This claim is mathematically substantiated in the appendix, section B.1.

What commission value counters the downward pressure on prices in the agency model? Let α_c denote the critical value of the commission, evaluated at a given price level. Any value greater than α_c ensures that the agency model gives lower prices, whereas a commission smaller than α_c ensures that the wholesale model gives lower prices. A commission value equal to the critical value reflects a state where the wholesale model and the agency model give the same prices. The derivation of α_c is in the appendix, section B.2. The critical value is defined by the following equality.

$$\alpha_c = \frac{q_{1A_1}\mathrm{P} + \sum_j P_{1Aj} - w_{Aj}(MC)\frac{\partial q_{1Aj}\mathrm{P}}{\partial P_{1A_1}} + \sum_j P_{1Bj} - w_{Bj}(MC)\frac{\partial q_{1bj}\mathrm{P}}{\partial P_{1B_1}} + \sum_j P_{1Cj} - w_{Cj}(MC)\frac{\partial q_{1Cj}\mathrm{P}}{\partial P_{1C_1}} + MC \sum_i \sum_j \frac{\partial q_{iAj}\mathrm{P}}{\partial P_{1A_1}}}{q_{1A_1}\mathrm{P} + \sum_i \sum_j P_{iAj}\frac{\partial q_{iAj}\mathrm{P}}{\partial P_{1A_1}}}$$

However, it is obvious that the agency model implemented by Apple and the publishers

caused prices to increase. Adding the element of price coordination between publishers totally prevented publishers from setting the low prices one could expect from the agency model.

In the case of the agency model with coordinated pricing, it can be assumed that the three publishers collude to set prices monopoly prices. The profit function and corresponding first order condition with respect to P_{1A1} are

$$\pi_M = \sum_i \sum_j \alpha P_{iAj} - MC\ q_{iAj}\ \mathrm{P} + \sum_i \sum_j \alpha P_{iBj} - MC\ q_{iBj}\ \mathrm{P} + \sum_i \sum_j \alpha P_{iCj} - MC\ q_{iCj}\ \mathrm{P}\ . \tag{7}$$

$$\frac{\partial \pi_M}{\partial P_{1A1}} = \alpha q_{1A1}\ \mathrm{P} + \sum_i \sum_j \alpha P_{iAj} - MC\ \frac{\partial q_{iAj}\ \mathrm{P}}{\partial P_{1A1}} + \sum_i \sum_j \alpha P_{iBj} - MC\ \frac{\partial q_{iBj}\ \mathrm{P}}{\partial P_{1A1}} + \sum_i \sum_j \alpha P_{icj} - MC\ \frac{\partial q_{iCj}\ \mathrm{P}}{\partial P_{1A1}} = 0. \tag{8}$$

Assuming that the size of the commission is the same in both the agency model and the agency model with coordinated pricing, it can be seen that prices are greater under the agency model with coordinated pricing than prices in both the simple agency model and the wholesale model. The colluding publishers have pricing control over more substitutable products compared to the other two products, allowing the colluding publishers to set higher prices.

For other values of α, the same principles apply as in the case of the agency model without coordinated pricing. A critical value for α in the agency model with coordinated pricing can be determine and is outlined in the appendix, section B.2. The critical value for the agency model with coordinated pricing is greater than the critical value for the agency model, implying that it is less feasible to obtain a commission that could result in lower prices in the agency model with coordinated prices. For a sufficiently high commission, prices will be greater in the agency model with coordinated pricing relative to the wholesale model.

3.8 Model Discussion

As section 3.6 discussed, Apple asserts that it helped the publishers establish the agency model in the e-books industry and did not create a coordinated pricing scheme with the goal of increasing prices. However, the predictions provided by the theoretical model suggest that Apple's claim is false; Apple and the publishers succeeded in establishing an agency model with coordinated pricing which caused an increase in e-book prices.

If Apple and the publishers did establish an agency model without coordinated pricing, we would expect prices to fall (provided that the commission paid to retailers was sufficiently small). The model predicts that prices under an agency model would be lower than under the wholesale model, and that prices under an agency model with coordinated pricing would be the greatest. Since prices increased as the industry transitioned from a wholesale model to Apple's "agency model", we can be certain that Apple and the publishers did succeed in establishing an agency model with a coordinated pricing scheme.

The results from the theoretical model also raise issues regarding pricing under the wholesale model. In particular, we find that pre-cartel prices observed in the US are less than the prices predicted by the theoretical model. In the wholesale model, there is upward pressure on prices due to double marginalization. In reality, we observe that under the wholesale model there is a considerable amount of downward pressure on prices caused primarily by Amazons loss leader strategy. This paradox suggests that retailer pricing behavior is far more complex than the theoretical model suggests. Some of this complexity may arise from Amazon's monopsony power or the complex price dynamics between e-books and e-readers as described in section 3.6.

Another caveat in the model regards the optimal pricing under the agency model with coordinated pricing. Similar to the previously discussed case of the wholesale model, establishing the collusive price is far more complicated than the theoretical model implies.

Specifically, in order to establish a coordinated pricing scheme, the retailers must agree to sell the books at the collusive price. The fact that the publishers and Apple found it difficult to agree on a collusive pricing scheme, and ultimately developed a compromise, suggests the possibility that the pricing terms they devised my not have been optimal for the publishers.

The publishers had very little understanding of retail pricing. In fact, this was one of the reasons Random House did not join the cartel in 2010. Random House felt that it did not have the knowledge or ability to set retail prices, and it is likely that the other publishers were in the same position. If the publishers could not effectively set retail prices, it is unlikely that they could determine optimal monopoly prices. Apple, on the other hand, had a better understanding of the retail market because of its position as a retailer. Thus, it could more accurately determine the optimal collusive prices for e-books. However, Apple had to convince the publishers to accept the pricing terms it created and ultimately make compromises on its original pricing in order to appease the publishers. In this way, Apple and the publishers may not have achieved the optimal collusive pricing system. If both parties had complete information and could calculate the optimal collusive prices for e-books, there would have been no need to negotiate pricing terms.

Apple and the publishers' difference in opinion when it came to pricing may have also been caused by the magnitude of the commission. The theoretical model illustrating the optimal collusive pricing arrangement for the publishers shows that at the commission paid to the retailer increases the, price set by the publisher also increase. However, as section B.3 of the appendix shows, as the commission paid to the retailer increases, the collusive price desired by the retailers falls. Simply put, as the commission decreases, the retailers desire a higher retail price. When the commission increases, the publishers want a higher retail price.

Unless the retailer and the publisher each earn 50% of the final retail price (which is the point where $\alpha = (1 - \alpha)$), the optimal collusive price for the retailer and the publisher will be different. If the retailers and the publishers must bargain in order to establish a market wide pricing scheme, then prices will fall somewhere between the retailers' and the publishers' optimal collusive price level, implying that prices will be less than the optimal price level of the publishers. In fact, the compromise struck between Apple and the defendant publishers verifies this prediction. The final pricing terms in the Apple Agency Agreements were greater than those originally suggested by Apple, but less than the prices desired by the defendant publishers.

4.0 Legal Resolution of the Collusion

The agency model created by Apple and the publishers was maintained for 2 years. On April 11th, 2012, the DOJ and the states, led by the Attorney General of the State of Connecticut, brought their case against the publishers and Apple. Three days later, Hachette, HarperCollins, and Simon & Schuster settled. Penguin settled on December 18th, 2012 and Macmillan agreed to a settlement on February 8th, 2013. According to the "Stipulation" documents for each settlement, the DOJ required each of the publishers break their agency agreements with Apple and their other retailers. The publishers' settlements with the states required that they pay monetary damages. Hachette, HarperCollins, and Simon & Schuster agreed to pay over $69 million to the states (Office of the Attorney General, 2012), Penguin agreed to pay $75 million, and Macmillan consented to $12 million. (Office of the Attorney General, 2013)

The Final Judgments for Hachette, HarperCollins, and Simon & Schuster were delivered September 6th, 2012. Penguins Final Judgment was issued on May 17th, 2013 and Macmillan's Final Judgment has not yet been determined. However, it is expected that the Final Judgment for

Macmillan will be similar, if not identical, to the final Judgments for the other publishers.

The DOJ's Final Judgments for Hachette, HarperCollins, Simon & Schuster, and Penguin require the publishers to terminate their Apple Agency Agreements. For their other agency agreements, the publishers must terminate the contracts or, if the contracts cannot be terminated, leave the contracts to expire. For two years after the termination of their contracts, the publishers are prohibited from restricting retail prices. As well, publishers are never to enter into agreements with retailers with MFN clauses.

Although the Final Judgment explicitly states that publishers cannot enter into agency agreements with retailers for two years after the complaint, publishers can enter into agency agreements that restrict the aggregate value of the discounts offered by the retailers. So long as the agreement does not inhibit the retailer from determining retail prices, publishers can prevent retailers from setting prices that result in an aggregate loss of profit for the titles sold under an agency agreement.

Apple did not settle with the DOJ and went to trial on June 3rd, 2013. Apple lost the trial and was found to be in violation of section 1 of the Sherman Act. In a press release on August 2nd, 2013 (DOJ Office of Public Affairs, 2013) the DOJ outlined its proposed remedies and are waiting to have the remedies approved by the court. The remedies require Apple to terminate its present agreements with the publishers. For the next five years, Apple would be prohibited from entering into an agreement with a publisher that would protect Apple from price competition.

As well, Apple would also be prohibited from entering into supplier agreements that would likely increase the prices charged by competitor retailers for e-books, music, movies, and television shows. In order to "restore competition" Apple must allow other e-book retailers such as Amazon and Barnes & Noble to put direct links from their Apple e-book apps to their

websites. This requirement will make it easier for consumers to shop around for the lowest prices. Remedies will be determined on August 9th, 2013.

The European investigation of the cartel was headed up by the UK Office of Fair Trade (OFT) in January, 2011 (Office of Fair Trading, 2011). In December of that year, the OFT handed over investigations to the European Commission who, according to the Commission's website, opened official proceedings on December 1st, 2012. On December 12th, 2012, Apple, Hachette, HarperCollins, Macmillan and Simon & Schuster submitted their final commitments. Penguin followed soon after on Jul 25th, 2013

The publishers committed to terminate all agency agreements containing price restrictions and MFN clauses. Furthermore, the publishers agreed to create no new agency agreements with MFN clauses for the next five years. For the next two years, publishers can enter into agency agreements provided that retailers are free to offer discounts of magnitude less than or equal to the commission they earn. Apple committed to terminate all its Apple Agency Agreements and not enter or enforce any agency agreement with a MFN clause for five years (European Commission "Antitrust", 2012). The commitments for both Apple and the defendant publishers in the Commission case are very similar to the settlement terms in the DOJ case.

E-book prices fell after resolutions were reached with the publishers and the competition authorities in the US and the EU. Immediately after the agency agreements of Hachette, HarperCollins, and Simon & Schuster were voided in the US, prices fell for these publishers' titles (Owen, 2012). Penguin's and Macmillan's prices also fell after they settled with the DOJ, however, the price decreases did not occur until months after the settlements were reached. It is not clear why it took so long for the prices of Penguin's and Macmillan's titles to adjust. (Owen, 2013).

In the UK, the results of the Commission's commitments were obvious. In July, 2012, Sony began its "20p" promotion, offering select titles for 20p. Amazon quickly matched the price in its UK store and the two firms maintained the promotion for 8 months. Although Sony has intended to carry on the 20p promotion indefinitely, in February, 2013, it creased the promotion. Not coincidentally, Amazon increased the prices for its books. (Farrington, 2013)

Although there is evidence to suggest that e-book prices have fallen in both the US and Europe, the overall result of the DOJ's settlement and the Commissions commitments are ambiguous. In order to definitively determine if prices have fallen and price competition has returned to the e-book retail market, data on overall e-book prices must be obtained. Unfortunately, this information is usually only available on an annual basis in the form of industry association publications. By 2014, we will be able to see if the dismantlement of the e-book cartel has restored the e-book market to its original state, or if the e-book industry has been forever changed by Apple and the Publisher defendants.

Bibliography

Apple INC.. (2012). "iTunes Preview: iBooks" Apple INC. Retrieved November 14th from https://itunes.apple.com/us/app/ibooks/id364709193?mt=8&ls=1&v0=www-its-ipad-builtinapps-ibooks-us.

Ashenfelter, Orley C.. (June 6th, 2013). "Direct Testimony of Orley C. Ashenfelter, PhD.". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

Börsenverein. (November, 2004). "The system of fixed book prices in Germany". Börsenverein. Retrieved August 5th from www.tau.ac.il/~nirziv/FixedBookPricesinGermany1.pdf.

Börsenverein des Deutshen Buchhandels. (2008). "Stellungnahme zur Preisbindung von E-Books". Börsenverein des Deutshen Buchhandels. Retrieved August 6th from http://www.boersenverein.de/sixcms/media.php/976/Preisbindung_von_E-Books_Stellungnahme_des_Vorstands.pdf.

Canoy, Marcel; Van Ours, Jan C.; Van Der Ploeg, Frederick (2006) Chapter 21: The Economics of Books. In Ginsburgh, Victor A. and Throsby, David (Eds.) Handbook of the Economics of Arts and Culture, Volume 1. (721-761), Elsevier B.V..

Digital Inspiration. (2010). "Market Share of Top Book Publishers". Amit Agrwal. Retrieved December 8th from http://www.labnol.org/tech/market-share-of-book-publishers/12468/

E Book Architects. (2011). "E Book Formats". E Book Architects. Retrieved November 14th, 2012 from ebookarchitects.com/conversions/formats.php

E Book Architects. (2011). "E Book Retailers and Distributors". E Book Architects. Retrieved November 14th, 2012 from http://ebookarchitects.com/conversions/retailers.php

European Commission, the. (March 2nd, 2011). "Memo". The European Commission. Retrieved August 5th from http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39847

European Commission, the. (December 13th, 2012). "Antitrust: Commission accepts legally binding commitments from Simon & Schuster, Harper Collins, Hachette, Holtzbrinck and Apple for sale of e-books". The European Commission. Retrieved August 5th from http://europa.eu/rapid/press-release_IP-12-1367_en.htm

European Commission, the. (December 12th, 2012). "Commitments Decision". The European Commission. Retrieved August 5th from http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39847

Farrington, Joshua. (March 18th, 2013). "V". The Bookseller. Retrieved August 6th from

http://www.thebookseller.com/news/sony-ends-20p-promotion.html

Floyd, Daniel. (2012, September 10th). "Order Denying Apple's Motion to Compel: U.S. Vs. Apple INC. et el". The United States Department of Justice. Retrieved December12th from http://www.justice.gov/atr/cases/applebooks.html

Gilbert, Ricahrd J.. (June 6th, 2013). "Direct Testimony of Richard J. Gilbert, PhD.". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

Hoffelder, Nate. (April 11th , 2013). "AAP: eBook Sales Up 41% in 2012 as Growth Slows Down". The Digital Reader. Retrieved August 5th from http://www.the-digital-reader.com/2013/04/11/aap-ebook-sales-up-41-in-2012-as-growth-slows-down/#.UgEou99QG0x

Hoffelder, Nate. (June 13th, 2013). "eBooks Reached 2.4% of the German Book Market in 2012". The Digital Reader. Retrieved August 6th from http://www.the-digital-reader.com/2013/06/13/ebooks-reached-2-4-of-the-german-book-market-in-2012/#.UgEyP99QG0x

Legifrance. (2013). "LOI n° 2011-590 du 26 mai 2011 relative au prix du livre numérique (1)" Legifrance. Retrieved August 5th from http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000024079563&dateTexte=&categorieLien=id.

Legifrance. (2013). "Loi n° 81-766 du 10 août 1981 relative au prix du livre" Legifrance. Retrieved August 5th from http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000517179.

Office of Fair Trading, the. (2011). "Investigation into arrangements between certain publishers and retailers for the sale of e-books" The Office of Fair Trading. Retrieved August 6th from http://www.oft.gov.uk/OFTwork/competition-act-and-cartels/ca98/closure/e-books#.UgFXjd9QG0x.

Office of the Attorney General, George Jepsen (August 29th, 2012). "Attorney General Jepsen Secures $69 Million Agreement with Three Major U.S. Publishers over eBook Price-fixing Allegations". George Jepsen Office of the Attorney General. Retrieved August 6th from http://www.ct.gov/ag/cwp/view.asp?Q=510082&A=2341

Office of the Attorney General, George Jepsen (July 10th, 2013). "Attorney General Jepsen: District Court Finds Apple Violated Law in eBook Price-fixing Scheme". George Jepsen Office of the Attorney General. Retrieved August 6th from http://www.ct.gov/ag/cwp/view.asp?Q=527914&A=2341

Owen, Laura Hazard. (July 11th, 2013). "Months after settlement, retailers start cutting Penguin ebook prices". Paid Content. Retrieved August 6th from http://paidcontent.org/2013/07/11/months-after-settlement-retailers-start-cutting-penguin-ebook-prices/

Owen, Laura Hazard. (September 10th, 2012). "That was fast: Amazon is already discounting settling publisher's ebooks". Paid Content. Retrieved December 13th from http://paidcontent.org/2012/09/10/that-was-fast-amazon-is-already-discounting-harpercollins-ebooks/

Syndicat national de l'édition, du. (2013). "L'édition en perspective". Du Syndicat national de l'édition. Retrived August 6th from www.sne.fr/img/pdf/SNE/RapportActivite/plaquette_2013_bassedef(1).pdf

Publishers' Association, the. (2012). "Market research and statistics". The Publishers' Association. Retrieved August 6th from http://www.publishers.org.uk/index.php?option=com_content&view=category&layout=blog&id=160&Itemid=1301

SEO Economic Research. (March, 2012). "Digitally Binding". SEO Economic Research. Retrieved August 6th from www.ivir.nl/publications/vaneijk/Digitally_binding.pdf

U.S. Department of Justice, the. (April 11th, 2012). "Competitive Impact Statement". The U.S. Department of Justice. Retrieved December 13th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (April 11th, 2012). "Complaint". The U.S. Department of Justice. Retrieved December 13th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (April 11th, 2012). "Final Judgment as to Defendants Hachette, HarperCollins, and Simon & Schuster". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (April 11th, 2012). "[Proposed] Final Judgment as to Defendants Hachette, HarperCollins, and Simon & Schuster". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (April 11th, 2012). "Stipulation for Hachette, HarperCollins, and Simon & Schuster". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (May 17th, 2012). "Final Judgment as to Defendants the Penguin Group, a Division of Pearson PLC, and Penguin Group (USA), Inc.". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (June 20th, 2012). "United States of America vs. Apple Inc. Summation". The U.S. Department of Justice. Retrieved August 6th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (September 6th, 2012). "Final Judgment as to Defendants Hachette, HarperCollins, and Simon & Shuster". The U.S. Department of Justice. Retrieved August 6th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (September 6th, 2012). "Stipulation for Hachette, HarperCollins, and Simon & Schuster". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (December 18th, 2012). "[Proposed] Final Judgment as to Defendants the Penguin Group, a Division of Pearson PLC, and Penguin Group (USA), Inc.". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (December 18th, 2012). "Stipulation for Penguin". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (February 8th, 2013). [Proposed] Final Judgment as to Defendants Verlagsgruppe Georg Von Holtzbrinck GmbH & Holtzbrinck Publishers, LLC d/b/a Macmillan". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (February 8th, 2013). "Stipulation for Macmillan". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice, the. (July 10th, 2013). "Opinion & Order". The U.S. Department of Justice. Retrieved August 5th from http://www.justice.gov/atr/cases/applebooks.html

U.S. Department of Justice: Office of Public Affairs, the. (August 2nd , 2013). "Department of Justice Proposes Remedy to Address Apple's Price Fixing". U.S. Department of Justice. Retrieved August 6th from http://www.justice.gov/opa/pr/2013/August/13-at-877.html

Which?. (2013). "Ebook readers: How to buy the best ebook reader". Which?. Retrieved August 6th from http://www.which.co.uk/technology/computing/guides/how-to-buy-the-best-ebook-reader/which-is-the-best-ebook-store/

Appendix

Section A: Timeline

2009
December 8th, 2009 – Apple sets up meetings with the six publishers
December 15th, 2009 – Apple meets with Hachette, Penguin, and Random House
December 16th, 2009 – Apple meets with Simon & Schuster, Macmillan, and HarperCollins

2010
January 4th and 5th – Apple sends term sheets to Macmillan, Simon & Schuster, and Random house
January 11th – Apple distributes draft Apple Agency Agreements to the publishers.
January 16th – Pricing tiers established.
January 18th and 19th – The Wall Street Journal and Publishers Lunch release stories about publisher negotiations with Apple. Amazon learns of the publishers' conspiracy
January 20th – Amazon announces new program for authors and publishers producing low-priced e-books
January 20th to 22nd – Publisher defendants directly communicate to Amazon their intention to move to an agency model
January 21st – Random House announces it will not sign an Apple Agency Agreement
January 24th to 26th – The publishers sign their Apple Agency Agreements
January 27th – iPad and iBookstore is launched. Macmillan, with backing of the other publishers, issues official agency offer and ultimatum to Amazon. Amazon retaliates
January 30th – Macmillan issues letter in an industry publication
January 31st – Amazon accepts Macmillan's offer and issues a complaint to the Federal Trade Commission
February 5th – Amazon signs an agency agreement with Macmillan
March – HarperCollins, Hachette, and Simon & Schuster sign agency agreements with Amazon
April 3rd – iPad is released in North America
May – Hachette signs an Apple Agency Agreements for French titles
May 28th – iPad is released in Europe
May to August – The publishers sign Apple Agency Agreements for their UK titles
June 2nd – Amazon signs an agency agreement with Penguin
August – Amazon launches UK site
December – Macmillan signs an Apple Agency Agreement for German titles

2011
January – The UK Office of Fair Trading opens investigation
April – Amazon launches German site
October – Amazon launches French site

2012
April 11th – The DOJ brings case against Apple and the publishers

April 14th – Hachette, HarperCollins, and Simon & Shuster settle with the DOJ
July – Sony launches 20p promotion in the UK
September 6th – The DOJ delivers final judgments to Hachette, HarperCollins, and Simon & Shuster
December 1st – The European Commission officially opens investigations into Apple and the publishers
December 8th – Penguin settles with the DOJ
December 12th – Apple, Hachette, HarperCollins, Macmillan, and Simon & Shuster submit final commitments to the European Commission

2013

February – Sony drops its 20P promotion
February 8th – Macmillan settles with the DOJ
May 17th – The DOJ delivers final judgment to Penguin
June 3rd-20th – Apple trial against the DOJ
July 25th – Penguin submits final commitments to the European Commission
August 9th – Apple remedies determined by the court

Section B: Commission Rates in the Agency Model

B.1. Proof that as α increases, prices increase

Consider the case of publisher A and its reaction function for P_{1A1},

$$\frac{\partial \pi_A}{\partial P_{1A1}} = \alpha q_{1A1}\left(\mathbf{P}\right) + \alpha P_{1A1} - MC\ \frac{\partial q_{1A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} + \alpha P_{2A1} - MC\ \frac{\partial q_{2A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} + \alpha P_{1A2} - MC\ \frac{\partial q_{1A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} + \alpha P_{2A2} - MC\ \frac{\partial q_{2A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} \quad (9)$$

The first order condition of the reaction function with respect to α is,

$$\frac{\partial^2 \pi_A}{\partial P_{1A1}\partial \alpha} = q_{1A1}\left(\mathbf{P}\right) + P_{1A1}\frac{\partial q_{1A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} + P_{2A1}\frac{\partial q_{2A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} + P_{1A2}\frac{\partial q_{1A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} + P_{2A2}\frac{\partial q_{2A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} \quad (10)$$

which can be re-written as,

$$\frac{\partial^2 \pi_A}{\partial P_{1A1}\partial \alpha} = 1 - \varepsilon_{1A1} + \frac{s_{2A1}}{s_{1\alpha 1}}\varepsilon_{2A1,1A1} + \frac{s_{1A2}}{s_{1A1}}\varepsilon_{1A2,1A1} + \frac{s_{2A2}}{s_{1A1}}\varepsilon_{2A2,1A1} \quad (11)$$

The price elasticity of demand is the weighted sum of the cross price elasticities.

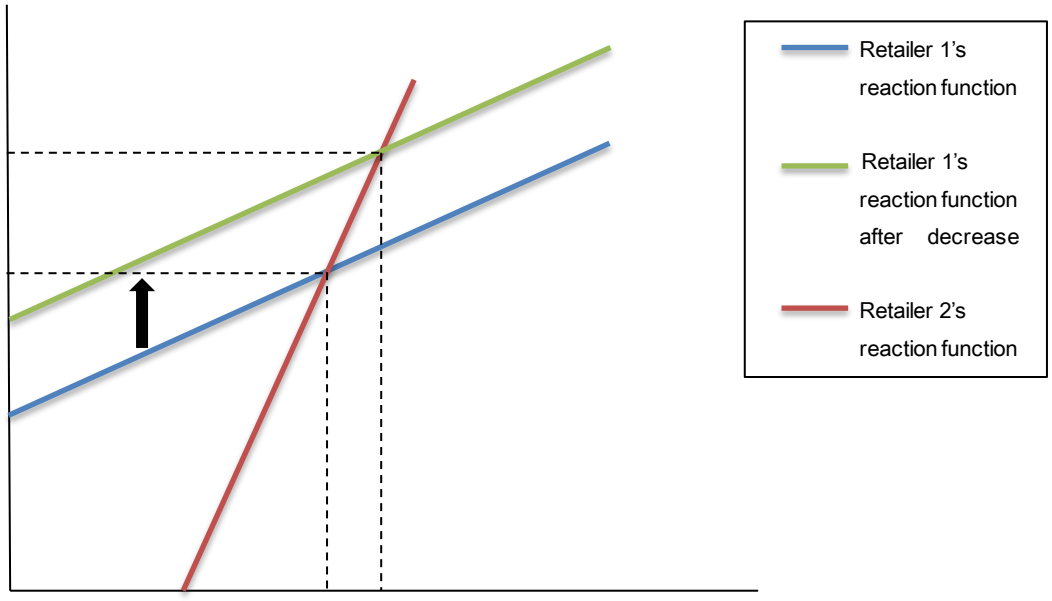
$$\varepsilon_{1A1} = 1 + \frac{s_{2A1}}{s_{1A1}}\varepsilon_{2A1,1A1} + \frac{s_{1A2}}{s_{1A1}}\varepsilon_{1A2,1A1} + \frac{s_{2A2}}{s_{1A1}}\varepsilon_{2A2,1A1} + \frac{s_{1B1}}{s_{1A1}}\varepsilon_{1B1,1A1} + \frac{s_{2B1}}{s_{1A1}}\varepsilon_{2B1,1A1} + \frac{s_{1B2}}{s_{1A1}}\varepsilon_{1B2,1A1} + \frac{s_{2B2}}{s_{1A1}}\varepsilon_{2B2,1A1} + \frac{s_{1C1}}{s_{1A1}}\varepsilon_{1C1,1A1} + \frac{s_{2C1}}{s_{1A1}}\varepsilon_{2C1,1A1} + \frac{s_{1C2}}{s_{1A1}}\varepsilon_{1C2,1A1} + \frac{s_{2C2}}{s_{1A1}}\varepsilon_{2C2,1A1}. \quad (12)$$

Replacing ε_{1A1} defined by equation (10) into equation (9) gives

$$\frac{\partial^2 \pi_A}{\partial P_{1A1}\partial \alpha} = -\frac{s_{1B1}}{s_{1A1}}\varepsilon_{1B1,1A1} + \frac{s_{2B1}}{s_{1A1}}\varepsilon_{2B1,1A1} + \frac{s_{1B2}}{s_{1A1}}\varepsilon_{1B2,1A1} + \frac{s_{2B2}}{s_{1A1}}\varepsilon_{2B2,1A1} + \frac{s_{1C1}}{s_{1A1}}\varepsilon_{1C1,1A1} + \frac{s_{2C1}}{s_{1A1}}\varepsilon_{2C1,1A1} + \frac{s_{1C2}}{s_{1A1}}\varepsilon_{1C2,1A1} + \frac{s_{2C2}}{s_{1A1}}\varepsilon_{2C2,1A1} < 0. \quad (13)$$

The derivative of the reaction function with respect to α is negative, implying that as the commission paid to the retailer $1-\alpha$ increases, the reaction function increases for any given price level.

Reaction functions for retailers 1 and 2 for publisher A's title in product set 1



B.2 Deriving α_c

α_c is found by equating the reaction functions of the publisher (6) and the retailer (1). Consider the case of publisher A and retailer 1 setting the price P_{1A1}. At the threshold point, the two first order conditions should both be equal to zero at the same price points. Setting identical prices in the two schemes, solving for α_c will give the value for the commission that will ensure that retail prices are the same in both the agency and wholesale models. The agency model reaction function and the wholesale model reaction function, respectively, are rewritten in summation form.

$$\alpha_c q_{1A1}\ \mathrm{P} + \sum_i \sum_j (\alpha_c P_{iAj} - MC)\frac{\partial q_{iAj}\ \mathrm{P}}{\partial P_{1A1}} = 0 \qquad (14)$$

$$q_{1A1}\ \mathrm{P} + \sum_j P_{1Aj} - w_{Aj}\ \frac{\partial q_{1Aj}\ \mathrm{P}}{\partial P_{1A1}} + \sum_j P_{1Bj} - w_{Bj}\ \frac{\partial q_{1bj}\ \mathrm{P}}{\partial P_{1B1}} + \sum_j P_{1Cj} - w_{Cj}\ \frac{\partial q_{1Cj}\ \mathrm{P}}{\partial P_{1C1}} = 0 \qquad (15)$$

Equating the two reaction functions and solving for α_c gives the critical value for the commission.

$$\alpha_c = \frac{q_{1A1}(P) + \sum_j (P_{1Aj} - w_{Aj}(MC))\frac{\partial q_{1Aj}(P)}{\partial P_{1A1}} + \sum_j (P_{1Bj} - w_{Bj}(MC))\frac{\partial q_{1bj}(P)}{\partial P_{1B1}} + \sum_j (P_{1Cj} - w_{Cj}(MC))\frac{\partial q_{1Cj}(P)}{\partial P_{1C1}} + MC \sum_i \sum_j \frac{\partial q_{iAj}(P)}{\partial P_{1A1}}}{q_{1A1}(P) + \sum_i \sum_j P_{iAj}\frac{\partial q_{iAj}(P)}{\partial P_{1A1}}}$$

As described in section B.1, as α increases, the marginal cost faced by the publisher decreases and the retail prices fall. A larger value of α corresponds to lower prices in the agency model, relative to the wholesale model at any given price level. Therefore, values of α that are greater than α_c imply that the agency model gives better prices, while vales that are less than α_c suggest that retail prices are lower in the wholesale model.

The effect of the publisher's marginal cost is reflected the following partial derivative.

$$\frac{\partial \alpha_c}{\partial MC} = \sum_i \sum_j \frac{\partial q_{iAj}(P)}{\partial P_{1A1}} + \sum_j \frac{\partial w_{Aj}(MC)}{\partial MC}\frac{\partial q_{1Aj}(P)}{\partial P_{1A1}} + \sum_j \frac{\partial w_{Bj}(MC)}{\partial MC}\frac{\partial q_{1bj}(P)}{\partial P_{1B1}} + \sum_j \frac{\partial w_{Cj}(MC)}{\partial MC}\frac{\partial q_{1Cj}(P)}{\partial P_{1C1}} \qquad (16)$$

The sign of the derivative is ambiguous. Without more detailed information regarding the exact relative magnitudes of the partial derivatives, it is impossible to tell how the publisher's marginal cost affects the critical value for the commission rate.

The critical value for the commission level can also be calculated for the agency model with coordinated pricing. Following the previous methodology, the critical value is found by equating the two reaction functions from the wholesale model and the agency model with coordinated pricing, with given retail prices.

$$q_{1A1}(P) + \sum_j (P_{1Aj} - w_{Aj})\frac{\partial q_{1Aj}(P)}{\partial P_{1A1}} + \sum_j (P_{1Bj} - w_{Bj})\frac{\partial q_{1bj}(P)}{\partial P_{1B1}} + \sum_j (P_{1Cj} - w_{Cj})\frac{\partial q_{1Cj}(P)}{\partial P_{1C1}} = 0 \qquad (15)$$

$$\alpha_c^M q_{1A1}(P) + \sum_i \sum_j \alpha_c^M P_{iAj} - MC\frac{\partial q_{iAj}(P)}{\partial P_{1A1}} + \sum_i \sum_j \alpha_c^M P_{iBj} - MC\frac{\partial q_{iBj}(P)}{\partial P_{1A1}} + \sum_i \sum_j \alpha_c^M P_{icj} -$$

$$MC\frac{\partial q_{iCj}(P)}{\partial P_{1A1}} = 0. \qquad (8)$$

The critical value for these two equations is

$$\alpha_c^M = \frac{q_{1A1}(P) + \sum_j (P_{1Aj} - w_{Aj}(MC))\frac{\partial q_{1Aj}(P)}{\partial P_{1A1}} + \sum_j (P_{1Bj} - w_{Bj}(MC))\frac{\partial q_{1bj}(P)}{\partial P_{1B1}} + \sum_j (P_{1Cj} - w_{Cj}(MC))\frac{\partial q_{1Cj}(P)}{\partial P_{1C1}} + MC \sum_i \sum_l \sum_j \frac{\partial q_{ilj}(P)}{\partial P_{1A1}}}{q_{1A1}(P) + \sum_i \sum_l \sum_j P_{iAj}\frac{\partial q_{iAj}(P)}{\partial P_{1A1}}}$$

Where $\alpha_c^M \geq \alpha_c$.

B.3 The Optimal Collusive Pricing for the Retailers Under the Agency Model

The optimal collusive price for P_{1A1} set by the retailers is characterized by the following reaction function.

$$\frac{\partial \pi_M}{\partial P_{1A1}} = (1-\alpha) q_{1A1}\left(\mathbf{P}\right) + \sum_i \sum_j (1-\alpha) P_{iAj} - MC \frac{\partial q_{iAj}\left(\mathbf{P}\right)}{\partial P_{1A1}} + \sum_i \sum_j \left(1-\alpha\right) P_{iBj} - MC \frac{\partial q_{iBj}\left(\mathbf{P}\right)}{\partial P_{1A1}} + \sum_i \sum_j (1-\alpha) P_{icj} - MC \frac{\partial q_{iCj}\left(\mathbf{P}\right)}{\partial P_{1A1}} = 0. \quad (16)$$

The derivative of the reaction function with respect to α is

$$\frac{\partial^2 \pi_A}{\partial P_{1A1} \partial \alpha} = -q_{1A1}\left(\mathbf{P}\right) - P_{1A1} \frac{\partial q_{1A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} - P_{2A1} \frac{\partial q_{2A1}\left(\mathbf{P}\right)}{\partial P_{1A1}} - P_{1A2} \frac{\partial q_{1A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} - P_{2A2} \frac{\partial q_{2A2}\left(\mathbf{P}\right)}{\partial P_{1A1}} \quad (17)$$

By applying the same method used in section B.1, it can be shown that this derivative has the opposite sign as equation (10). As the commission paid to the retailer increases, the optimal collusive price for the retailer decreases.