Economics Bulletin

Volume 40, Issue 1

Unbundling financial services: The case of brokerage and investment research

Sébastien Galanti
LEO - University of Orléans

Anne-Gaël Vaubourg
CRIEF - University of Poitiers

Abstract

Brokers were previously allowed to provide brokerage and financial research as a single package, but unbundling rules recently introduced in Europe now oblige them to charge separately for the two services. To analyze the effect of this regulation, we consider a theoretical duopoly model between a broker who offers a brokerage service and an investment research service and an independent analyst who offers a second investment research service. We show that unbundling rules increase the profitability and market share of the independent analyst and improve social welfare. These findings suggest that unbundling rules are relevant to the sustainability of the independent research industry.

The authors thank participants at the 32nd Annual Congress of the European Economic Association (EEA) in Lisbon, August 2017; Thomas Renault, Gunther Capelle-Blancard and participants at the 34th GdRE Symposium on Money Banking and Finance in Nanterre, July 2017; Franck Martin and participants at the CREM seminar, University of Rennes, February 2017; François Legendre and participants at the ERUDITE seminar, University of Paris-Est Créteil, April 2017; Carole Haritchabalet and participants at the CAPT seminar, University of Pau, April 2017; Cécile Bastidon and participants at the LEAD seminar, University of Toulon, October 2017; Alexis Direr, Daria Onori, Yannick Lucotte, Louis Raffestin and participants at the WIP seminar, University of Orléans, January 2018; and participants at the CRIEF seminar, University of Poitiers, February 2018.

Citation: Sébastien Galanti and Anne-Gaël Vaubourg, (2020) "Unbundling financial services: The case of brokerage and investment research", *Economics Bulletin*, Volume 40, Issue 1, pages 473-484

Contact: Sébastien Galanti - sebastien.galanti@univ-orleans.fr, Anne-Gaël Vaubourg - anne.gael.vaubourg@univ-poitiers.fr.

Submitted: May 14, 2019. **Published:** February 10, 2020.

1 Introduction

The investment research industry is central to financial markets. Share price or earnings forecasts and investment recommendations guide the financial investment decisions of fund managers or individual investors, thus directing capital to where it can be the most effective. An important ongoing debate in this industry is whether information should be provided by "sell-side" security analysts from brokerage houses, which also execute orders on stock exchanges, or by independent investment research firms. Indeed, research from brokers is suspected to be "biased", in contrast with research from independent information providers, whose profit does not rely on trading commissions. The source of the bias is attributed to the practice of "bundling", in which brokers sell brokerage services and provide investment research as a single package (Raghunathan and Sarkar 2016). Hence, sell-side analysts are enticed to maximize trade by releasing biased forecasts or recommendations (Hayes 1998, Jackson 2005, Mehran and Stulz 2007, Brown *et al.* 2015).

For this reason, new regulations were introduced in the UK in 2006 (FCA 2013), in France in 2007 (Galanti and Vaubourg 2017), and at the European level in 2018 with MiFID II (Sandler *et al.* 2016). While brokerage and financial research services were previously provided as a single package and charged globally, brokers are now required to unbundle the two types of services and clearly divide their fees. Since this regulation, an investor can buy information from independent research firms and solely pay for trade execution at a brokerage. Unbundling rules are thus supposed to help promote independent research[1].

Although a large academic literature has outlined biases in sell-side analysts' research (see notably Ramnath *et al.* 2008, for a survey), no study has analyzed whether unbundling rules foster the development of independent analysis.

This article tries to fill this gap. Our question is whether unbundling rules truly help promote independent investment research and increase social welfare. Based on the literature on bundling in a duopoly when consumers have heterogeneous reservation prices (Shy 1996, Chen 1997, Vaubourg 2006), we use a stylized model in which one duopolist is a representative agent for brokerage firms and the other is a representative agent for independent investment research firms. Our main result is that unbundling rules increase the profitability and market share of independent research analysts and improve social welfare.

This paper is a first attempt to apply an industrial organization approach to the brokerage and independent investment research industry. It provides a *rationale* for why independent firms are barely viable when bundling is allowed and gives some support to the unbundling regulation implemented in Europe.

The remainder of the article is organized as follows. Section 2 establishes the assumptions of the model. In Section 3, we study the equilibria of the benchmark model, while Section 4 considers the equilibria with unbundling rules. Section 5 investigates investor surplus and social

[1] Professionals expect that the unbundling rules in MiFID II will durably foster the development of independent research: 39 % of a panel of chief investment officers, portfolio managers and analysts anticipate "being more reliant on independent research providers" (Moullakis 2018). Furthermore, given the extent of cross-border activities in investment management firms, the Directive is expected to have a global impact (Sandler *et al.* 2016).

welfare. Section 6 concludes the article.

2 Assumptions

We consider a broker, denoted by A, and an independent research provider, denoted by B. A brokerage service exists, denoted by X, which places buy or sell orders on stock exchanges on behalf of investors (fund managers, for example). We assume that X is provided by the broker A in a perfectly competitive market. We assume that all investors have the same valuation of X, denoted by V_x, with $V_x > 0$.

We assume that the true value of a firm has two dimensions θ_y and θ_z. For example, θ_y corresponds to aspects related to the quantitative analysis of accounting or market data, whereas θ_z relates to a qualitative assessment of the firm's management and governance structure. Each investor i receives a private signal $S_{i,y}$ about θ_y and a private signal $S_{i,z}$ about θ_z, with $S_{i,y} = \theta_y + \epsilon_{i,y}$ and $S_{i,z} = \theta_z + \epsilon_{i,z}$, where $\epsilon_{i,y}$ and $\epsilon_{i,z}$ are independent and identically distributed normal variables with mean zero and variances of $\sigma^2_{i,y}$ and $\sigma^2_{i,z}$, respectively.

Investors can improve their information about the firm by buying investment research services from financial analysts. Some recent literature analyzes two sources of information: from brokerage houses and from independent research providers. Because these two groups have different resources and different incentives (Barber *et al.* 2007, Brown *et al.* 2015), they have different abilities with respect to the two different dimensions of the firm's value. A report (Fuller 2017) using fund manager surveys and interviews shows that investors (fund managers) value the "variety of opinions" (p. 9) about different aspects of a firm. The report also mentions that investors expect the two groups of research providers to have differing abilities depending on the dimensions of the firms value under study: "research skills needed to support corporate finance are not the same as those requested to serve asset managers in their investment decision-making" (p. 10), and "independent analysts should add to both the sum of knowledge and the spread of opinions" (p. 45). In fact, sell-side analysts from brokerage houses of large investment banks generally benefit from economies of scale, allowing the treatment and analysis of large accounting and market databases. Such analysts can create formalized and standardized information for a large span of firms. Recently, these analysts "are increasingly turning to data science (...) or us[ing] artificial intelligence techniques such as machine learning" (Wigglesworth 2019). By contrast, independent research providers aim at providing tailored information to investors. By focusing on the quality of management or of the governance structure, they can supplement the information on a firm's value. Based on a survey of 49 European Independent Research Providers (IRPs), the Euro IRP (2018) study found that asset management firms, in evaluating the usefulness of research, need to "focus more on feeling the quality", and that "the buy side want new ideas and insights they can interrogate and test directly with an analyst (...) and IRPs, because they tend to be more specialist, more focused, and have more expertise, are usually well-placed" (p. 13-14).

Based on this evidence, we consider that investors can improve their information about θ_y by buying Y, the investment research service provided by the broker A. They can also obtain information about θ_z by buying Z, the investment research service provided by the independent research provider B. Research services are such that $Y = \theta_y + \mu_y$ (resp. $Z = \theta_z + \mu_z$), where μ_y (resp. μ_z) is an independent and identically distributed normal variable having means zero and variances υ_y^2 (resp. υ_z^2).

Following Admati and Pfleiderer (1987) and Lundholm (1991), we know that if investor i buys the research service Y, his or her posterior belief over θ_y is normal with variance $\frac{1}{\frac{1}{\sigma_{i,y}^2}+\frac{1}{\upsilon_y^2}}$. Hence, buying Y lowers investor i's posterior variance by $\sigma_{i,y}^2 - \frac{1}{\frac{1}{\sigma_{i,y}^2}+\frac{1}{\upsilon_y^2}}$, which increases with $\sigma_{i,y}^2$. Similarly, buying Z lowers investor i's variance by $\sigma_{i,z}^2 - \frac{1}{\frac{1}{\sigma_{i,z}^2}+\frac{1}{\upsilon_z^2}}$, which increases with $\sigma_{i,z}^2$. Consequently, investors with imprecise private signals strongly benefit from purchasing Y (resp. Z), and those with very precise private signal weakly benefit from purchasing Y (resp. Z).

Let us now suppose that $\sigma_{i,y}^2$ (resp. $\sigma_{i,z}^2$) is uniformly distributed between 0 and a maximum value. Hence, the increase in investor i's variance due to the purchase of Y (resp. Z) is also uniformly distributed between 0 and a maximum value. Transposing these assumptions in a normalized framework, we finally consider that investors' valuations for Y and Z, denoted by V_y and V_z respectively, are heterogeneous, independent and uniformly distributed between 0 and 1.

In line with the idea that research services Y and Z provide information about different dimensions of a firm's value, both services can be purchased simultaneously. We also consider that the sole use of the information produced by financial analysts is to execute buy or sell orders, such that Y and Z cannot be consumed without X. Finally, we assume that each service has zero marginal cost.

The players' set of possible actions is as follows. In line with the practices described by Hayes (1998), Jackson (2005), Mehran and Stulz (2007), and Brown *et al.* (2015), broker A can practice "pure bundling"; i.e., it can offer the two services X and Y as a bundle, denoted by XY, where X is the "tying good" and Y is the "tied good". Broker A can also practice a "pure component" strategy and separately offer X and Y, denoted by X&Y. In contrast, independent research provider B does not provide any execution service and only offers research service Z.

Finally, we consider that A and B compete on prices. The prices of X, XY, Y and Z are denoted by P_x^*, P_{xy}^*, P_y^* and P_z^*, respectively. $\Pi_{i/j}^{A*}$ (resp. $\Pi_{i/j}^{B*}$) denotes A's (resp. B's) equilibrium profit when A (resp. B) chooses action i and B (resp. A) offers j. We deal with subgame-perfect equilibria (i.e., Nash equilibria in each pricing subgame and in the full game).

3 Equilibria in the baseline model

Two types of pricing subgames exist: one in which A offers XY and B offers Z and one in which A offers X&Y separately and B offers Z. Solving each of them, we obtain Lemma 1.

Lemma 1 *Each pricing subgame has a unique Nash equilibrium.*

Proof. See Appendix A1.

Using expressions for equilibrium profits in each pricing subgame provided in Appendix A1, we obtain Table 1, which describes the first-stage game. The first entry in each cell corresponds to A's equilibrium profit, while the second entry corresponds to B's equilibrium profit.

A/B	Z
XY	$\Pi^{A*}_{xy/z}$; $\Pi^{B*}_{z/xy}$
X&Y	$\frac{1}{4}$; $\frac{1}{4}$

Table 1: The first-stage game

Using Figure 3 in Appendix A1, which clearly indicates that $\Pi^{A*}_{xy/z} > \frac{1}{4}$, we derive the following proposition:

Proposition 1. *For $V_x \in]1;3[$, the full game has an equilibrium (denoted by "bundling equilibrium"), in which A offers XY and B offers Z.*

Proposition 1 indicates that, at the equilibrium, broker A practices bundling, i.e., offers XY, while the independent analyst provides Z. The rationale for this result is as follows. When A offers X and Y separately, due to perfect competition on the market for X, his or her profit on X is null. On the market for the tied (investment research) service, he or she only attracts the consumers who have a large valuation for Y, while B attracts those who have a large valuation of Z. By contrast, when X and Y are bundled, Z cannot be consumed without the bundle XY. This situation allows A to earn a larger profit by attracting not only the investors who have a larger valuation of Y (as in Figure 5) but also those who have a weak valuation for Y but a large valuation of Z (as in Figure 1).

4 Equilibria with unbundling rules

In this section, we assume that unbundling rules are implemented in the financial industry such that A is no longer allowed to bundle X and Y. A is thus compelled to adopt a "pure component" strategy, which consists of separately offering X and Y. As in Section 3, B offers Z only.

With unbundling rules, the equilibrium in which A offers XY (and B offers Z) is no longer possible. We thus obtain the following proposition.

Proposition 2. *The full game has a unique subgame-perfect equilibrum (denoted by "unbundling equilibrium"), in which A offers X and Y and B offers Z.*

Proposition 2 states that unbundling rules imply a shift from a bundling to an unbundling equilibrium, thus affecting equilibrium demands and profits. When bundling is prohibited, Z can be consumed without the bundle XY, such that the consumption of Z is no longer conditioned by the consumption of Y. This situation increases the demand addressed to the independent analyst B: as shown by Figure 3 in Appendix A1, in the bundling equilibrium described in Proposition 1, the demand for Z is weaker than $\frac{1}{2}$, while in the unbundling equilibrium of Proposition 2, it equals $\frac{1}{2}$. Hence, the goal of unbundling rules, which is to develop independent analysis, is achieved. Moreover, because B attracts more investors, he or she can set a higher price for Z, which increases its equilibrium profit: as shown by Figures 2 and 4 in Appendix A1, in the bundling equilibrium, the prices of Z and B's profit are weaker than $\frac{1}{2}$ and $\frac{1}{4}$ respectively, while in the unbundling equilibrium, they equal $\frac{1}{2}$ and $\frac{1}{4}$, respectively. By contrast, because unbundling rules prevent A from practicing bundling, A's profit is reduced.

5 Bundling *versus* unbundling

In this section, we address the effect of unbundling rules on investors' surplus and welfare.

5.1 Investors' surplus

First, addressing investors' surplus, we obtain the following proposition:

Proposition 3. *Unbundling rules increase investor surplus.*

Proof. See Appendix A2.

Proposition 3 indicates that investor surplus is improved when bundling is prohibited. When bundling is allowed, X is underconsumed because some investors do not value Y enough to buy XY. Similarly, Z is underconsumed because some investors do not value Y enough to buy XY *and* Z. This situation is represented by the square and the triangle at the bottom left of Figure 1 in Appendix A1. By contrast, when unbundling rules are applied, as illustrated by Figure 5 in Appendix A1, all investors buy at least X. They can also buy Z independent of their valuation of Y. Taken together, these effects increase investor surplus globally.

5.2 Welfare

Let us now turn to welfare, defined as the sum of A's and B's equilibrium profits and global investor equilibrium surplus. We derive the following proposition:

.

Proposition 4.
Threshold V_x^* exists such that

1. *if $V_x < V_x^*$, unbundling rules decrease social welfare,*
2. *if $V_x > V_x^*$, unbundling rules increase social welfare.*

Proof. See Appendix A3.

To understand the rationale behind Proposition 4, remember that unbundling rules increase B's profit and investor surplus and decrease A's profit. When $V_x < V_x^*$, i.e., when investors have a low valuation of the brokerage service X, the welfare-decreasing effect dominates. Indeed, one of the key implications of unbundling rules is to increase the consumption of X. But if this consumption is not strongly valued by investors, the increase in investor surplus is weak, and welfare is globally reduced. By contrast, when $V_x > V_x^*$, i.e., when investors have a large valuation of X, the increase in the consumption of X is strongly valued by investors such that welfare is globally improved.

6 Conclusion

The results obtained in this paper have one key normative implication. Because brokers have no incentive to unbundle brokerage and investment services, such unbundling must be accomplished through regulation. This situation provides some rationale for the implementation of unbundling rules, such as the European MiFID II.

Our model also has several limitations that we leave for improvement in future academic research. First, our model voluntarily leaves the "biased forecasts" problem aside. However, as the decreasing prices paid to brokers may impair the quality of their research (Walker and Flood 2018), we could consider that firms compete not only in price but also in quality. Second, to depict the rise in algorithmic trading and the recent cut in research spending, we could allow a nonuniform distribution of investors in which a larger proportion of agents do not value research (RBC 2018).

Appendix

A1. Proof of Lemma 1

Subgame {XY, Z}

In subgame {XY, Z}, investors have a choice among three possible actions: buying nothing, buying XY and buying both XY and Z. Investors buy XY if $V_x + V_y - P_{xy} > 0$ and $V_z - P_z < 0$. They consume XY and Z if $V_x + V_y + V_z - P_{xy} - P_z > 0$ and $V_z - P_z > 0$. They consume nothing if $V_x + V_y - P_{xy} < 0$ and $V_x + V_y + V_z - P_{xy} - P_z < 0$. This situation is represented by Figure 1.

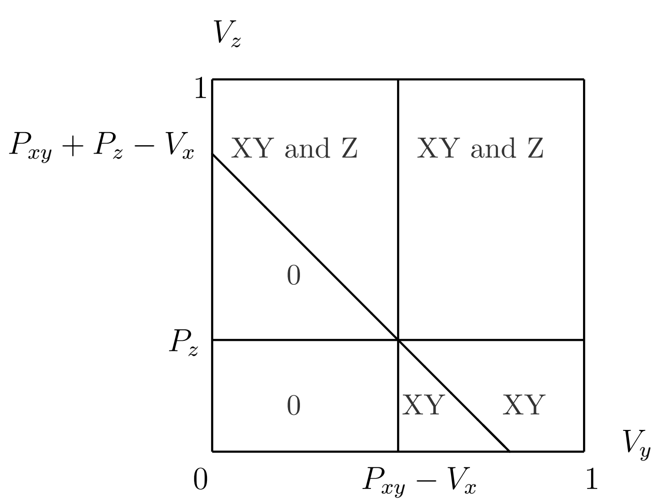

Figure 1: Investors' demand in subgame {XY, Z}

Following Figure 1, the demand for XY is $1 - P_z(P_{xy} - V_x) - \frac{1}{2}(P_{xy} - V_x)^2$, and the demand for Z is $1 - P_z - \frac{1}{2}(P_{xy} - V_x)^2$. Hence, we have $P^*_{xy} = \text{ArgMax } P_{xy}(1 - P_z(P_{xy} - V_x) - \frac{1}{2}(P_{xy} - V_x)^2)$

and $P_z^* = \text{ArgMax } P_z(1 - P_z - \frac{1}{2}(P_{xy} - V_x)^2)$. If $1 < V_x < 3$[2], the maximization program has real solutions, and subgame {XY, Z} has a Nash equilibrium. As shown in Figures 3, 4 and 5, numerical simulations allow us to compute the values of P_{xy}^*, P_z^*, $\Pi_{xy/z}^{A*}$, and $\Pi_{z/xy}^{B*}$ and the demand for XY and Z for $V_x \in]1;3[$. Hence, subgame {XY, Z} has a unique Nash equilibrium.

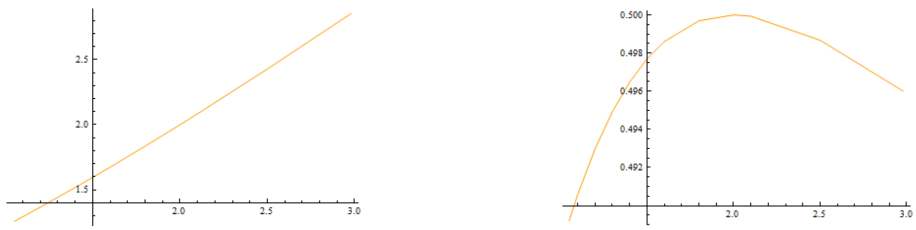

Figure 2: P_{xy}^* and P_z^* as functions of V_x

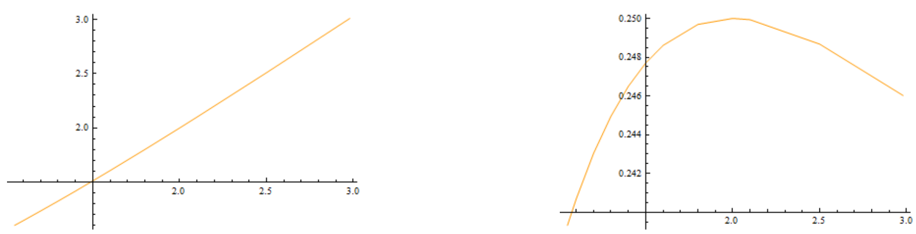

Figure 3: $\Pi_{xy/z}^{A*}$ and $\Pi_{z/xy}^{B*}$ as functions of V_x

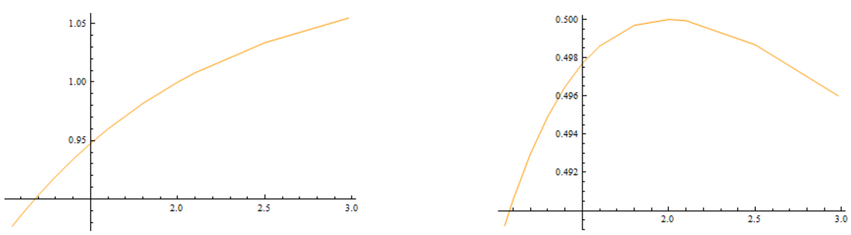

Figure 4: Equilibrium demands for XY and for Z in subgame {XY, Z}

Subgame {X&Y, Z}

Because the market for X is perfectly competitive, we have $P_x^* = 0$. Investors buy X if $V_y - P_y < 0$, $V_z - P_z < 0$ and $V_y + V_z - P_y - P_z < 0$. They consume X and Y if $V_y - P_y > 0$, $V_y - V_z - P_y + P_z > 0$ and $V_z - P_z < 0$. They consume X, Y and Z if $V_y + V_z - P_y - P_z > 0$, $V_z - P_z > 0$ and $V_y - P_y > 0$. They consume X and Z if $V_y - P_y > 0$, $V_y - V_z - P_y + P_z < 0$ and $V_z - P_z > 0$ and $V_y < P_y$. These conditions are represented by Figure 5.

---

[2] $V_x > 1$ ensures that X is valued enough to be consumed, and $V_x < 3$ ensures that consuming XY and Z is not preferred to consuming nothing even when $V_y = V_z = 0$.

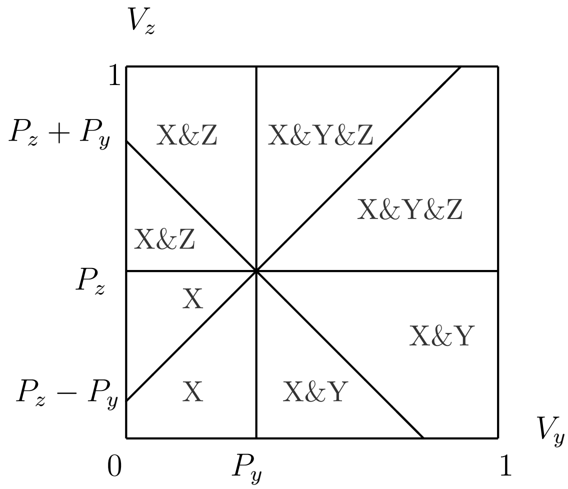

Figure 5: Investors' demand in subgame {X&Y, Z}

Following Figure 5, the demand for Y is $(1-P_y)$, and the demand for Z is $(1-P_z)$. We thus have $P_y^* = \text{ArgMax } P_y(1-P_y)$ and $P_z^* = \text{ArgMax } P_z(1-P_z)$. Subgame {X&Y, Z} thus has a unique Nash equilibrium, characterized by $P_x^* = 0$, $P_y^* = P_z^* = \frac{1}{2}$, $\Pi^{A*}_{x\&y/z} = \frac{1}{4}$ and $\Pi^{B*}_{z/x\&y} = \frac{1}{4}$.

A2. Proof of Proposition 3

We denote by S^{b*} the investor surplus when bundling is allowed; S^{u*} is the investor surplus under unbundling rules.

- Investor surplus S^{b*} is the sum of the surplus of investors who buy XY, denoted by S^{b*}_{xy}, and the surplus of investors who buy Z, denoted by S^{b*}_z.

The individual surplus of each investor who buys XY is measured by $V_x + V_y - P_{xy}*$. Hence, from Figure 2, the surplus of all investors who buy XY is

$$S^{b*}_{xy} = \int_0^{P^*_{xy}-V_x} \int_{P^*_{xy}+P^*_z-V_x-V_y}^{1} (V_x + V_y - P^*_{xy}) dV_z dV_y + \int_{P^*_{xy}-V_x}^{1} \int_0^1 (V_x + V_y - P^*_{xy}) dV_z dV_y. \quad (1)$$

The individual surplus of each investor who buys Z is measured by $V_z - P_z$. Hence, the surplus of all investors who buy Z is

$$S^{b*}_z = \int_0^{P^*_{xy}-V_x} \int_{P^*_{xy}+P^*_z-V_x-V_y}^{1} (V_z - P^*_z) dV_z dV_y + \int_{P^*_{xy}-V_x}^{1} \int_{P^*_z}^{1} (V_z - P^*_z) dV_z dV_y. \quad (2)$$

Summing (1) and (2), we obtain the global investor surplus when bundling is allowed:

$$\begin{aligned} S^{b*} &= \frac{1}{6}(6 + {P^*_{xy}}^3 + 3P^{*2}_z + 3{P^*_{xy}}^2(P^*_z - V_x) + 6V_x - {V_x}^3 + 3P^*_z({V_x}^2 - 2) \\ &+ P^*_{xy}(-6 - 6P^*_z V_x + 3{V_x}^2)) \end{aligned} \quad (3)$$

- Investor surplus S^{u*} is the sum of the surplus of investors who buy X, denoted by S^{u*}_x; the surplus of those who buy XY, denoted by S^{u*}_y; and the surplus of those who buy Z, denoted by

S_z^{u*}. Because the market for X is perfectly competitive, $S_x^{u*} = V_x$. Moreover, using Figure 6, we have

$$S_y^{u*} \;=\; \int_{P_{y*}}^{1}\int_0^1 (V_y - P_y^*)dV_z dV_y = \int_{\frac{1}{2}}^{1}\int_0^1 (V_y - \frac{1}{2})dV_z dV_y = \frac{1}{8}.$$

Similarly, we have

$$S_z^{u*} = \frac{1}{8}.$$

Finally, we have

$$S^{u*} \;=\; \frac{1}{4} + V_x. \tag{4}$$

- Comparing (3) and (4), we obtain Proposition 3.

A3. Proof of Proposition 4

We denote by W^{b*} and W^{u*} social welfare when bundling is allowed and when it is prohibited, respectively.

- When bundling is allowed, we have

$$W^{b*} = \Pi_{xy/z}^{A*} + \Pi_{z/xy}^{B*} + S^{b*}.$$

Numerical values for $\Pi_{xy/z}^{A*}$ and $\Pi_{z/xy}^{B*}$ are depicted in Figure 3, and S^{b*} is given by (3). We thus have

$$\begin{aligned} W^{b*} \;&=\; \Pi_{xy/z}^{A*} + \Pi_{xy}^{B*} + \frac{1}{6}(6 + {P_{xy}^*}^3 + 3P_z^{*2} + 3{P_{xy}^*}^2(P_z^* - V_x) + 6V_x - {V_x}^3) \\ &+\; 3P_z^*({V_x}^2 - 2 + P_{xy}^*(-6 - 6P_z^* V_x + 3{V_x}^2)) \end{aligned} \tag{5}$$

- When bundling is not allowed, we have $W^{u*} = \Pi_{x\&y/z}^{A*} + \Pi_{z/x\&y}^{B*} + S^{u*}$. Recall that, in accordance with Lemma 4, $\Pi_{x\&y/z}^{A*} = \Pi_{z/x\&y}^{B*} = \frac{1}{4}$. Hence, we have

$$W_u* = \frac{3}{4} + V_x. \tag{6}$$

Finally, numerical values for (5) and (6) are depicted in Figure 6. It indicates that—for values of V_x that are to the left of the intersection of the two curves, denoted by V_x^*—welfare is higher without unbundling rules than with unbundling rules.

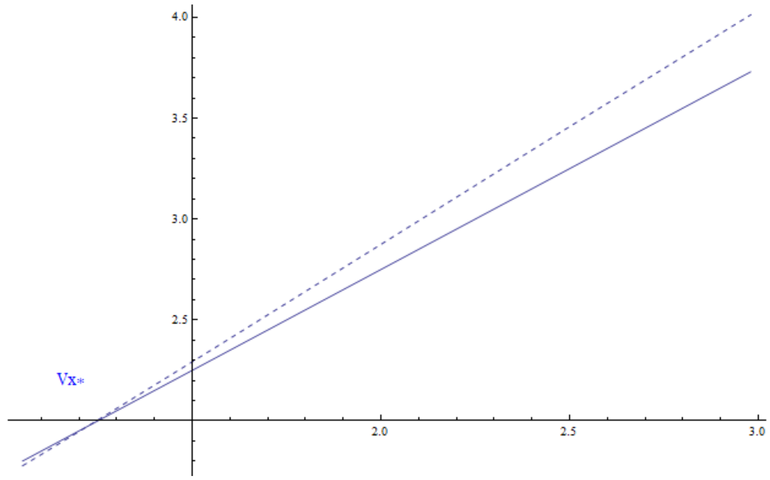

Figure 6: W^{u*} (dotted line) and W^{b*} (solid line) as functions of V_x

References

Admati, A. and P. Pfleiderer (1987) Viable Allocations of Information in Financial Markets *Journal of Economic Theory* **43**, 76-115.

Allee, K., Erickson, D., Esplin, A. and S. Laroque (2019) The Quality of Independent Analysts' Firm Value Estimates: Recent Evidence from Price Targets *Available at: SSRN: https://ssrn.com/abstract=2966282*.

Barber, B., Lehavy, R. and B. Trueman (2007) Comparing the Stock Recommendation Performance of Investment Banks and Independent Research Firms *Journal of Financial Economics* **85**, 490-517.

Brown, L., Call, A., Clement, M. and N. Sharp (2015) Inside the "Black Box" of Sell-Side Financial Analysts *Journal of Accounting Research* **53**, 1-47.

Chen, Y. (1997) Equilibrium Product Bundling *Journal of Business* **70**, 85-103.

Cowen, A., Groysberg, B. and P. Healy (2006) Which Types Of Analyst Firms Make More Optimistic Forecasts? *Journal of Accounting and Economics* **41**, 119-146.

Fuller J. (2017) A Level Playing Field for Investment Research? Challenges Facing the Buy-Side, Sell-Side and Independents *CSFI Full Report* **127**.

Demirakos, E., Strong, N. and M. Walker (2004) What Valuation Models Do Analysts Use? *Accounting Horizons* **18**, 221-240.

Euro IRP (2018) *Euro IRP Members Study*, july.

FCA (2013) Consultation on the Use of Dealing Commission Rules *Consultation Paper*, 13-17.

Galanti, S. and A.-G. Vaubourg (2017) Optimism Bias in Financial Analysts' Earnings Forecasts: Do Commission Sharing Agreements Reduce Conflicts of Interest? *Economic Modelling* **67**, 325-337.

Gu Z. and J. Xue (2008) The Superiority and Disciplining Role of Independent Analysts *Journal of Accounting and Economics* **45**, 289-316.

Hayes, R. (1998) The Impact of Trading Commission Incentives on Analysts' Stock Coverage Decisions and Earnings Forecasts *Journal of Accounting Research* **36**, 299-320.

Jacob, J., Rock, S. and D. Weber (2008) Do Non-Investment Bank Analysts Make Better Earnings Forecasts? *Journal of Accounting, Auditing and Finance* **23**, 23-61.

Jackson, A. (2005) Trade Generation, Reputation and Sell-Side Analysis *Journal of Finance* **60**, 673-717.

Lundholm, R. (1991) Public Signals and the Equilibrium Allocation of Private Information *Journal of Accounting Research* **29**, 342-349.

Martin, S. (1999) Strategic and Welfare Implications of Bundling *Economics Letters* **62**, 371-376.

Mehran, H. and R. Stulz (2007) The Economics of Conflicts of Interest in Financial Institutions *Journal of Financial Economics* **85**, 267-296.

Moullakis, J. (2018) Investment Banks Face More Research Pain *Australian Financial Review*, july.

Raghunathan S. and S. Sarkar (2016) Competitive Bundling in Information Markets: A Seller-Side Analysis *MIS Quarterly* **40**, 111-131.

Ramnath, S., Rock, S. and P. Shane (2008) The Financial Analysts Forecasting Literature: A Taxonomy with Suggestions for Future Research *International Journal of Forecasting* **24**, 34-75.

RBC (2018) MiFID II: The Research Enigma *Royal Bank of Canada, Investor and Treasury Service, Our insights*, august 21.

Sandler, M., Schrader, B. and S. (2016) MiFID II Inducement Rule: The Impact on Investment Research and Market Commentary *Journal of International Banking and Financial Law* july/august, 409-413.

Shy, O. (1996) Industrial Organization: Theory and Applications, the MIT Press.

Vaubourg, A.G. (2006) Differentiation and Discrimination in a Duopoly with Two Bundles *International Journal of Industrial Organization* **24**, 753-762.

Walker, O. and C. Flood (2018) MiFID II Leads to Exodus of Sell-Side Analysts *Financial Times*, june 23.

Whinston, M. (1990) Tying, Foreclosure and Exclusion *American Economic Review* **80**, 837-859.

Wigglesworth, R. (2019) Investment Analysts Shake-up Champions Data Mining *Financial Times*, november 29.