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A Platform Theory of Nonprofit Pricing and the Nonprofit Platform Lerner Index

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This paper develops a novel framework for nonprofit pricing by conceptualizing nonprofits as multi-sided platforms (MSPs) that mediate exchanges between clients and donors. It introduces the Nonprofit Platform Lerner Index (NPLI), a tool that helps nonprofit managers optimize pricing by accounting for both client-price elasticity and donor-side cross-platform effects. The framework demonstrates how nonprofits can strategically leverage donor market power to subsidize client prices, including scenarios where prices fall below marginal cost or become negative. The study reconceptualizes donor engagement activities as core production inputs rather than overhead costs, aligning them with mission-critical objectives. It also explores policy implications, offering insights into antitrust considerations in donor markets. The NPLI provides regulators and managers with a quantitative tool to measure market power across donor and client markets. Future research avenues include empirical validation and applications to nonprofit governance and stakeholder management.

Keywords: Platform Theory, Nonprofit, Lerner Index

JEL: L21, L11, L31

1. Introduction

Nonprofit managers face a complex challenge when determining pricing strategies for their clients. Setting low prices can enhance access to nonprofit services, aligning with their distributional goals (Steinberg & Weisbrod, 2005). Conversely, higher prices may strengthen a nonprofit's financial sustainability, supporting its ability to fulfill charitable objectives over the long term (Young et al., 2010). Recent scholarship has advanced our understanding of charitable pricing by modeling nonprofits as multi-sided platforms (MSPs), analogous to "two-sided" platforms such as Google, Facebook, or Mastercard (Hagiu et al., 2015; Hagiu, 2009, 2014). MSPs are organizations that cater to two or more distinct customer groups simultaneously, with interdependent consumption demands mediated through the platform (Evans & Schmalensee, 2007; Glen Weyl, 2009; Rochet & Tirole, 2003, 2006).

A classic, though somewhat dated, example of a multi-sided platform is a newspaper, which sells news coverage to subscribers while simultaneously selling advertising space to businesses. The

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newspaper caters to two distinct customer groups, or "sides," whose demands are interdependent. The value businesses place on advertising space (i.e., their willingness to pay) depends on the size of the newspaper's subscriber base. A key insight from the MSP literature is that a firm can increase its overall revenues by significantly discounting prices on one side of the platform below what would be optimal for a single-sided market (Belleflamme & Peitz, 2021, Chapter 5). Kuan & Thornton (2022) extend the applicability of the MSP framework to the nonprofit sector, which often serves two interdependent groups: clients and patrons. This perspective introduces a wide range of strategic management applications for nonprofits, analogous to those developed for for-profit platforms. This paper will specifically explore optimal pricing strategies for a two-sided nonprofit organization.

Existing research on nonprofits tends to normatively advocate for low prices for clients (Eikenberry, 2009; Kluver et al., 2004; Moeller & Valentinov, 2012). Charging even a modest price to clients has been described as an "ugly necessity" (Oster et al., 2003, p. 30). However, the nonprofit management literature provides limited practical guidance on how organizations can balance the tension between financial sustainability and charitable access. This challenge becomes particularly acute during periods of shifting demand, such as economic downturns, climate-related disasters, or pandemics, when demand for services increases alongside rising costs (Exley et al., 2023). To address this gap, we develop an intuitive theoretical model of nonprofit pricing within a platform framework. Historically, nonprofit scholarship has treated donations (e.g., Okten & Weisbrod, 2000) separately from research on client pricing (e.g., Tinkelman & Mankaney, 2007). Yet, from the manager's perspective, donor and client markets are interdependent (Weisbrod, 2000).

We build on the general platform model developed in Kuan & Thornton (2022) by introducing three practical extensions tailored for nonprofit managers. First, our model demonstrates how prices for both clients and donors are interdependent and should be jointly determined. A defining characteristic of the nonprofit sector is the commitment to setting client prices below the marginal cost of production. Achieving this requires subsidies from donors or other patrons, such as government agencies or foundations. The multi-sided platform (MSP) framework reveals that such subsidies depend on the nonprofit's ability to exert market power on the donor or patron side of the platform. In extreme cases, the MSP model also explains scenarios where client prices may set prices below zero, effectively paying clients to participate. Traditional nonprofit pricing theories do not account for negative prices (i.e., subsidies), yet they are increasingly employed as tools to achieve charitable goals, such as providing free or incentivized vaccinations (Ives, 2021), weight loss (Campbell, 2021), or violence mitigation (Stanton, 2021).

Second, our paper develops the concept of donor demand, which recasts donors as customers who "purchase" a bundle of services from the nonprofit in exchange for their gift. This perspective shifts the traditional view of donor engagement activities, such as galas, fundraising events, and naming opportunities, from being ancillary or "non-preferred" activities (Weisbrod, 1991, 1998) to core elements of the nonprofit's production process that are essential to achieving its charitable objectives. Furthermore, expenditures often categorized as "overhead" can instead be understood as products designed to meet the specific preferences and expectations of donors (Chaudhry & Heiss, 2021; Qu & Daniel, 2021). This reconceptualization positions donor-focused activities as integral to the nonprofit's mission rather than as administrative burdens.

Finally, we introduce a practical pricing tool for nonprofit managers, which we term the Nonprofit Platform Lerner Index (NPLI). The Lerner Index, traditionally used by for-profit firms, helps identify market power and determine optimal pricing strategies based on demand elasticities (Froeb et al., 2018, p. 74; Lerner, 1934; Spierdijk & Zaouras, 2016). Adapting this concept, the

NPLI enables nonprofit managers to set prices by accounting for the elasticities of both donor and client demand. By identifying areas of market power, nonprofits can develop strategies to maximize subsidies available to clients.

For policymakers, the NPLI offers a quantitative measure of market power for both client and donor markets separately, extending antitrust analysis beyond client-side only measures. This tool can enhance existing measures of market concentration (e.g., HHI and concentration ratios), barriers to entry, and potentially suggests interesting questions about anticompetitive behavior in fundraising markets. We conclude by examining policy applications and future research opportunities for this innovative approach to nonprofit management.

2. Previous Approaches to Nonprofit Pricing

Hansmann (1980) notes that many nonprofits generate revenue by charging clients directly for services (e.g., school tuition, theater tickets, or operating room fees), while others charge clients nothing for their services and finance their operations via donors who do not directly consume the nonprofit's output (e.g., homeless shelters, drug rehabilitation, or disaster relief). Many nonprofits fall in between these two extremes, generating revenues from a mix of clients and donors. Goodwill or American Harvest are examples of this mixed revenue approach.[1]

Hughes and Luksetich (2018) attribute this heterogeneity to variation in the nonprofit's managerial objectives, which may range from budget maximization to output maximization. The existing theoretical literature provides a menu of objectives, each with their own unique pricing strategies (James, 2013; Steinberg, 2006; Valentinov, 2008; Valentinov et al., 2013). At one extreme, managers have a strong distaste for commercial activity, which drives them to emphasize charitable over commercial output (Schiff & Weisbrod, 1991). At the other extreme, Malani & Choi (2004) posit that some nonprofits are simply profit maximizing, or "for-profits in disguise," mimicking the objectives of their for-profit counterparts. Crucially, existing theories impose preferences on the nonprofit organization *post hoc* to explain the range of observed pricing outcomes. Yet it is not clear who chooses these objectives or if they are subject to managerial discretion (Brooks & Ondrich, 2007; Hirth, 1999; Steinberg, 1986; Vitaliano, 2003).

A distinction of the nonprofit firm is offering charitable output to clients at a price below what would be optimal for a for-profit firm. Theorists have typically applied two adaptations to economic models to generate this charitable behavior. First, researchers use variation in the objective function to impose altruistic preferences on the firm (Liu & Weinberg, 2009). Steinberg (1986) was an early paper to demonstrate that adding output to the nonprofit objective function will induce the nonprofit to offer charitable output below the price of for-profit competitors. His paper was followed by other model variations which demonstrated that adding a preference for client consumption will result in lower effective prices to clients (Brooks, 2005; James & Rose-Ackerman, 1986; Lakdawalla & Philipson, 1998, 2006).

A second common modification is to impose a balanced budget constraint on the nonprofit organization, where the nonprofit must spend all its generated revenues on charitable output. This constraint is motivated by the IRS prohibition against private insurance in IRC 501(c)(3), whereby net earnings may not be allocated to any private shareholder or individual (Hopkins &

[1] Nonprofits may also generate significant revenues from government sources or foundations. Our model can be extended to these types of agencies without a loss of generality.

Gross, 2016). The doctrine is typically applied in models by setting the profit function equal to zero (James, 2013; James & Rose-Ackerman, 1986; Rose-Ackerman, 1996; Schiff & Weisbrod, 1991). The combined effect of the balanced budget constraint and placing output in the objective function results in models where the nonprofit organization will spend all of its accumulated surpluses during a given period to subsidized charitable output.

Both modeling approaches have drawbacks. Empirical evidence that nonprofit organizations maximize their charitable output is mixed. For example, many nonprofit nursing homes do appear to behave charitably toward their clients (Vitaliano, 2003). However, select nonprofit hospitals set prices and output more like profit maximisers than charities (Brickley & Van Horn, 2002; Malani et al., 2003; Malani & Choi, 2004). Similarly, nonprofit foster care placement agencies, on average, do not behave more charitably than for-profits (Thornton & Cave, 2010). Inclusion of output in the objective function accurately models some, but not all, nonprofit organizations. Furthermore, it is unclear how these preferences for client consumption emerge only in certain nonprofit industries, or what governance structures maintain those preferences over time.

The balanced budget constraint faces similar criticisms. Despite its name, the non-distribution constraint (more precisely, the private inurement doctrine) does not prohibit the accumulation of profits by the nonprofit.[2] Nonprofit organizations often retain residual earnings for a variety of legitimate business purposes (Bowman et al., 2012; Calabrese, 2012; Chang & Tuckman, 1990). The private inurement doctrine only prohibits distributing those profits for non-charitable purposes (Hopkins, 2011). Thus, the imposition of a balanced budget constraint into a theoretical model may lead to misinterpretation of nonprofit behavior.

Our model offers an extension to existing theory. We treat charitable giving as a transaction between donors and nonprofits rather than a transfer. Instead of imposing constraints on the objective function, our model has altruistic donors exchanging charitable gifts for a bundle of nonprofit services. By characterizing charitable giving as a mutually beneficial exchange, our approach is useful for identifying strategies to increase donor subsidies or detect anti-competitive behaviors in donor markets. Furthermore, by placing altruistic preferences to donors, rather than embedding them in the nonprofit firm, we allow for charitable pricing behaviors to emerge endogenously. Crucially, we do not claim that nonprofits are never charitable. Instead, we demonstrate altruistic preferences in the firm are not necessary to induce charitable pricing and that offering a low price to clients does not preclude the exercise of market power in donor markets.[3]

In the following section, we formally present both the client and donor sides of our nonprofit platform pricing model, highlighting the distinction and interdependence between donor and client demand. We introduce the concept of the Nonprofit Platform Lerner Index (NPLI) on the client side of the market to illustrate how a self-interested nonprofit might rationally set prices below marginal cost. The remainder of the paper focuses on the donor side, where we develop the concept of donor demand, explore pricing strategies for donations, and discuss their implications for nonprofit strategy. We conclude by proposing an empirical research framework for measuring market power in donor markets and considering its broader policy implications.

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[2] Nonprofits must be organized and operated exclusively for exempt purposes, with no part of their net earnings inuring to the benefit of any private shareholder or individual. This prohibition applies to individuals who have significant control or influence over the organization, such as board members, executives, founders, or their family members. Violations of the private inurement doctrine, even in small amounts, can result financial penalties and potential loss of tax-exempt status. irs.gov/pub/irs-tege/eotopich01.pdf

[3] Google and Facebook are for-profit examples of firms that offer services at a zero price on one side of a platform while still facing anti-trust scrutiny (Hovenkamp, 2021). Visa and Mastercard have also been investigated for anti-competitive practices while charging negative prices to one side (Rysman & Wright, 2014).

3. An MSP Model of Nonprofit Pricing

This section extends the multi-sided platform (MSP) model of nonprofit organizations originally developed in Kuan & Thornton (2022). We model nonprofits as intermediaries that link clients to donors via a one-way platform, where donors value consumption of a charitable output by clients, but not vice versa. This is analogous to technology platforms where advertisers value viewers, but viewers do not value more advertisers. The model considers two interconnected sides: clients consuming charitable output and patrons providing financial support in the form of donations.

On the client side, nonprofits operate in a market offering charitable output x at price $p_x(x)$, which may be positive, zero, or negative. Client demand is downward sloping, such that $\frac{dp_x(x)}{dx} < 0$. The nonprofit has a constant unit cost of production for client output c_x.[4] See Figure 1 (Panel A) for a visual representation.

Figure 1

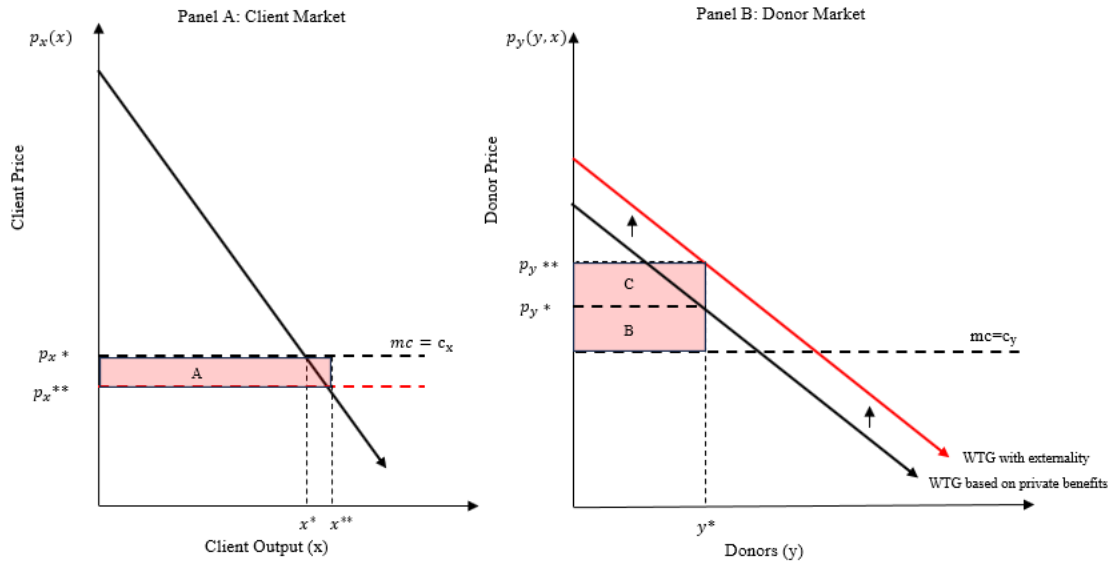

Figure 1: Market Dynamics in Nonprofit Multi-Sided Platforms

Figure 1 illustrates a nonprofit organization operating as a multi-sided platform. Panel A shows the inverse demand curve for charitable output, where $p_x(x)$ is the price clients are willing to pay for output x. The nonprofit operates in a competitive client market, so equilibrium price equals marginal cost, $p_x^* = c_x$, and quantity expands to x^*. Panel B shows the inverse donor demand function $p_y(y, x)$which gives the marginal donor's maximum willingness to give (WTG) for donor services when y donors are solicited, and client output is x. The nonprofit asks for a donation of value p_y^*, resulting in extracting area B of donor surplus of $(p_y^* - c_y)y^*$. The nonprofit exerts market power on the donor side and uses this surplus to subsidize client-side services, lowering effective marginal cost and expanding charitable output to x^{**}. As client output increases, donors derive additional indirect utility from their gifts, causing an upward shift in the donor inverse demand curve (in red) to p_y^{**}. This cross-platform effect increases donor willingness to give and generates additional surplus (area C), which can also be used to expand charitable services.

On the donor side (Figure 1, Panel B), nonprofits solicit donors, each of whom receives a bundle of donor services that include benefits such as: networking events, preferred admission, warm-

[4] We assume constant marginal costs for analytic clarity. This assumption allows the NPLI to isolate the effects of elasticity and market power on pricing decisions. In practice, nonprofits may face increasing marginal costs as output expands due to capacity limits, rising labor costs, or diminishing returns to scale in fundraising. Incorporating increasing marginal cost would not alter the intuition of the NPLI but increase analytic complexity. In the model, increasing MC would reduce the range over which below-cost pricing is optimal and mitigate feedback loops that could induce winner-take-all markets.

glow (Andreoni, 1990), social status (Kumru & Vesterlund, 2010), or reputational enhancement (Bénabou & Tirole, 2006).[5] Let $p_y(y,x)$ denote the inverse donor demand function which denotes the maximum willingness to give (WTG) for the y^{th} donor, conditional on client output x. Donors are heterogeneous in their valuation of these services. Ordering their maximum values for donor services from high to low creates a downward sloping demand curve, whose slope is represented by $\frac{\delta p_y(y,x)}{\delta y} < 0$. Nonprofits segment the donor market by starting with high-WTG individuals (top of the demand curve) and progressively soliciting donors with lower WTG, thus moving down the inverse demand function $p_y(y,x)$ as y increases.

The marginal donation received per donor (i.e., the donor transaction price) is denoted by p_y^* and may differ from the height of the demand curve. Under perfect (first-degree) price discrimination, the nonprofit could extract the entire area under the inverse demand curve above cost, capturing all donor surplus (Cabral et al., 2019). Yet WTG is difficult for the manager to observe directly, making precise donor price optimization difficult. Strategies such as giving tiers, matching gifts, and personalized appeals serve as tools to approximate and extract donor surplus (Barbieri & Malueg, 2014; Gneezy et al., 2012). To make our analysis tractable, we first consider a single donor transaction price equal to p_y^*. This simplification corresponds to a fundraising "ask" which may be either too low (the donor had a higher WTG) or too high (the donor walks away without giving). Analogous to standard consumer theory, p_y^* is the WTG of the marginal donor. Infra-marginal donors receive some surplus, as their WTG is higher than p_y^*. Donors to the right of y^* do not give because their WTG < p_y^*. The model can be extended with various forms of price discrimination (where donors contribute different amounts and their entire WTG is extracted) without loss of generality.

The model includes a cross-platform effect where donors derive indirect value from client consumption of charitable output, meaning their WTG increases with x, such that $\frac{\delta p_y}{\delta x} > 0$. Visually, this cross-platform effect is represented by an upward shift in the donor demand curve to the red donor demand curve in Figure 1, panel B. This effect formalizes a concept originally described in Schiff & Weisbrod (1991), where nonprofits receive larger gifts from donors when they serve more clients. Preference for charitable output (i.e., altruism) enters the model via this cross-platform elasticity from donors rather than through manipulation of the nonprofit's objective function. Our view is that this formulation is preferable by placing charitable preferences on donors, rather than assigning them to the organization as formulated in Glazer (2016) and Lakdawalla & Phillipson (2006).

Putting both sides of the nonprofit platform together, the nonprofit sets x and y jointly to maximize net value from both markets. Importantly, this does not imply that the organization is acting selfishly. Rather, altruistic preferences are placed on the donor via the inverse demand function $p_y(y,x)$ rather than the organization's objective function. The nonprofit organization serves as a transmission mechanism to channel donor altruism into client output. The value function can be written as:

$$V = \underbrace{p_x(x)\,x - c_x\,x}_{client\ market} + \underbrace{p_y(y,x)\,y - c_y y}_{donor\ market} \quad (1)$$

[5] In this context, the nonprofit is not producing a pure public good as in (Bergstrom et al., 1986; Samuelson, 1954), but more like a club good (Berman & Laitin, 2008; Scotchmer, 2002) where the nonprofit can exclude non-donors from its services.

where:
x = quantity of charitable output
$p_x(x)$ = client inverse demand
y = quantity of donors
$p_y(y, x)$ = donor inverse demand
c_x = marginal cost of charitable output
c_y = marginal cost of donor services & acquisition

As an illustration, imagine that a donor offers naming gifts for rooms in a university hospital. The donor receives two streams of value in exchange for the gift. First, the nonprofit generates a bundle of client services such as their name on the building, increased social status via press releases and events, as well as the private satisfaction (warm glow) of giving, all of which are granted by the nonprofit. For this, the marginal donor is willing to offer a gift of maximum value p_y^* (Figure 1, Panel B).[6] From this donor market, the nonprofit generates a potential surplus equal to area B in Figure 1. This surplus can then be used to subsidize patient output on the client side.

The donor also derives indirect value from the expectation that the hospital will use their gift to subsidize treatment for clients. This altruistic valuation of client consumption increases the donor's maximum willingness to give to p_y^{**}. This cross-platform effect is represented by shifting the entire inverse donor demand curve upward. Consequently, the total amount that donors are now willing to give is a function of both nonprofit direct services they receive and indirect client consumption. This cross-platform effect increases the surplus available to the nonprofit to B+C. To capture this surplus from donors, the nonprofit must maintain some monopoly power in the donor market via its distinct ability to convey donor benefits. Without such power, another solicitor could offer a comparable bundle of donor services and access to client consumption in exchange for a smaller gift, reducing the surplus to the incumbent nonprofit. Intense competition on the donor side would eventually drive the p_y^{**} downward toward the marginal cost of donor services c_y, leaving no surplus for the charitable subsidy.

On the client side, our nonprofit operates in a competitive environment where they charge clients price p_x^* to consume charitable medical services. A single-sided nonprofit would not charge a price lower than c_x, its marginal cost of production. However, surpluses from the donor market (B+C) may be transferred to clients (A), lowering their effective cost of production. Via competition, the price to clients will be bid down, and consumption will increase from x^* to x^{**} as client price falls from p_x^* to p_x^{**}. Competition on the client side draws the surpluses generated on the donor side.

4. Nonprofit Platform Lerner Index (NPLI)

We extend the baseline model to develop a pricing tool for nonprofit managers. The Lerner index is a widely used measure of a firm's market power, or the ability to charge a price above its marginal cost (i.e., markup) of production, or $L = \frac{p-mc}{p}$ (Lerner, 1934). The index ranges from 0 to 1, with higher values indicating greater market power. In a competitive market, prices are driven down through competition to the firm's marginal cost, or $p = mc$ and $L = 0$, indicating no market power. Firms facing less competition can maintain higher prices, where $p > mc$ and $L > 0$, indicating positive market power. The Lerner condition describes how a profit-maximizing firm

6 It is a deliberate simplification in this example that donors are constrained to a uniform gift amount. This allows us to focus on partial impacts of the platform. Full equilibrium impact of the platform would depend on relative cross-platform elasticities and are discussed more fully in Belleflamme & Peitz (2021, Chapter 3)

will set its price such that $L = \frac{p-mc}{p} = \frac{1}{|\epsilon_D|}$, where $|\epsilon_D|$ is the own-price elasticity of demand for output. The Lerner is particularly useful because it does not require knowledge about specific market boundaries or competitors (Landes & Posner, 1981) as would be required by a Herfindahl-Hirschman Index (HHI).[7]

If the elasticity of demand is known (ϵ_D), then the desired markup can be calculated. Managers can then infer if their current markup is more or less than would be prescribed by the Lerner condition. We demonstrate how nonprofit managers could use a similar approach even though they are operating in a two-sided (donor and client) market in section 8. The Lerner formulation was discussed in early platform papers (Armstrong, 2006; J. Rochet & Tirole, 2003), but our application of a Lerner condition to nonprofits is novel.

To construct a NPLI, recall that our nonprofit organization maximizes joint revenues in a value function from (1).

$$max\ V(x,y) = p_x(x)\ x - c_x\ x + p_y(y,x)\ y - c_y y$$

Which implies the following first order conditions.

$$\frac{\delta \mathrm{V}}{\delta \mathrm{x}} = \frac{dp_x(x)}{dx} x + p_x + \frac{\delta p_y(y,x)}{\delta x} y - c_x = 0 \tag{2}$$

and

$$\frac{\delta \mathrm{V}}{\delta y} = \frac{\delta p_y(y,x)}{\delta y} y + p_y - c_y = 0 \tag{3}$$

5. Markup for clients

To examine market power on the client side, we can rearrange equation (2) to give us:

$$p_x - c_x = -\frac{dp_x(x)}{dx} x - \frac{\delta p_y}{\delta x} y \tag{4}$$

Dividing (4) by p_x yields equation (5) which identifies the organization's desired markup normalized to p_x.

$$\frac{p_x - c_x}{p_x} = -\frac{dp_x(x)}{dx}\frac{x}{p_x} - \frac{\delta p_y(x,y)}{\delta x}\frac{y}{p_x} \tag{5}$$

[7] The appropriateness of market structure measures and market definition is an open discussion for the nonprofit literature. See (Harrison & Thornton, 2014) for a review of that literature.

The expression $\{ \frac{\delta p_x(x)}{\delta x} \frac{x}{p_x} \}$ is the inverse of the standard formulation for own-price elasticity of demand for x, or $\frac{\delta p_x(x)}{\delta x} \frac{x}{p_x} = \frac{1}{\epsilon_x}$. Where ϵ_x measures the sensitivity of client consumption x to changes in client price p_x. Price elasticity is typically negative, $\epsilon_x < 0$, so a larger elasticity (higher sensitivity to own price) reduces the desired markup. This portion of the equation is identical to a standard for-profit Lerner index.

The second expression on the right-hand side of equation (5) represents the cross-platform externality which links the donor market to pricing decisions in the client market. Donors will increase the maximum value of their gift with higher client consumption of charitable output, or $\frac{\delta p_y}{\delta x} > 0$. The term $\frac{y}{p_x}$ scales this change to the number of donors y as a fraction of client price p_x. A positive cross-platform externality implies that donor contributions increase with client consumption, effectively subsidizing client prices and reducing the nonprofit's reliance on client revenue. This condition implies that the desired markup is lower than it otherwise would be without the cross-platform externality because donors are subsidizing client prices. We express the cross-platform externality as $\epsilon_{p_y x} = \frac{\delta p_y(x,y)}{\delta x} \frac{y}{p_x}$ which will be positive under normal conditions.

Applying this notation generates equation (6). This is the NPLI for the client side. On the left-hand side of (6) is the markup, or price to clients less their marginal cost, expressed as a fraction of client price. The right-hand side decomposes this markup into the difference between the organization's inverse client-price elasticity and the cross-platform effect. This formulation highlights how the nonprofit's pricing strategy for clients is influenced by both terms. The inverse own-price elasticity, $\frac{1}{\epsilon_x}$, captures how responsive clients are to their own price changes, while the cross-platform externality, $\epsilon_{p_y x}$ reflects how donor willingness to give depends on client consumption levels.

$$\frac{p_x - c_x}{p_x} = -\frac{1}{\epsilon_x} - \epsilon_{p_y x} \tag{6}$$

To restate, the client-price elasticity is typically negative, $\epsilon_x < 0$, so increases in the magnitude of client-price elasticity will *reduce* the desired markup, or the amount the nonprofit will want to markup client price. The cross-platform effect is typically positive, $\epsilon_{p_y x} > 0$, so that increases in its magnitude will, by itself, also *reduce* the desired client markup. A positive cross-platform externality implies that donor contributions increase with client consumption, effectively subsidizing client prices and reducing the nonprofit's reliance on client revenue.

It is the cross-platform externality that incentivizes the nonprofit to lower the price of client output below marginal cost. Unique to our approach, below-cost pricing does not require charitable preferences of the nonprofit. Instead, nonprofit managers are simply responding to the incentives from donors. Thus, it is important for the nonprofit manager to identify pockets of demand where donors are willing to subsidize client consumption. In the extreme case, the optimal price for client output may become negative. Negative prices occur when donor subsidies tied to client consumption are so strong that they outweigh any losses on the client side. For nonprofit managers aiming to lower prices for their clients, the cross-platform externality becomes a critical strategic parameter to manage. Activities that strengthen the connection between client consumption and donor value, such as donor engagement initiatives or mechanisms that link donors to client outcomes, effectively reduce the price faced by clients.

6. Markup for donors

Subsidizing client consumption requires identifying markets where donors are willing to contribute a dollar amount higher than their cost of solicitation and maintenance. In this context, nonprofits are seeking to maximize the dollar value of a gift p_y relative to the cost of donor solicitation and maintenance c_y. The NPLI on the donor side represents the markup, or donation value above cost. To calculate a donor-side NPLI we re-arrange equation (3) to give us:

$$p_y - c_y = \frac{\delta p_y(y,x)}{\delta y} y \tag{7}$$

Dividing (7) by p_y generates the following expression.

$$\frac{p_y - \mathrm{c_y}}{p_y} = \frac{\delta p_y(y,x)}{\delta y} \frac{y}{p_y} \tag{8}$$

Which can be rewritten as a standard Lerner condition, where $\epsilon_y^* = \frac{\delta y}{\delta p_y(y,x)} \frac{p_y}{y} < 0$.

$$\frac{p_y - \mathrm{c_y}}{p_y} = \frac{1}{\epsilon_y^*} \tag{9}$$

Equation (9) expresses the NPLI for the donor side.[8] Typically donor WTG is not directly observable by the nonprofit. Willingness to give represents the maximum monetary value each donor is prepared to contribute to a nonprofit organization in exchange for the benefits of the donor services they receive from the nonprofit. Cabral et al. (2019) discussed this concept by noting how nonprofits must manage relationships with donors, to align their interests with public value creation, then devise methods to extract that value, which mirrors our process of estimating and extracting WTG.

While the inverse donor demand curve $p_y(y,x)$ represents each donor's upper limit of their contribution, the actual value of the gift extracted by the nonprofit depends on their solicitation strategies. Nonprofits rarely know or capture the full WTG because donors are unlikely to disclose it to solicitors. Yet nonprofits may employ a common set of strategies to solicit a donation as close as possible to the donor's maximum WTG. Some donors may voluntarily reveal their maximum WTG to fundraisers (Gneezy et al., 2012; Isaac et al., 2015). In other cases, the value can be approximated through experimentation (Altmann et al., 2019; Karlan & List, 2020; Karlan & Wood, 2017). Nonprofit fundraisers may also attempt to estimate WTG based on observed donor characteristics such as income, previous giving history, or affinity group. In practice, fundraisers often apply a segmentation strategy of giving tiers to approximate donors' willingness to give via giving levels or circles (Barbieri & Malueg, 2014; Kolhede & Gomez-Arias, 2022; Srnka et al., 2003).

The donor surplus available to transfer is a function of the elasticity of demand for donors. If the donor demand curve steepens (i.e., $|\epsilon_y|$ becomes smaller or more inelastic), the nonprofit gains additional surplus to transfer to clients. Nonprofits may deploy a variety of strategies to increase

[8] We include the "star" in the elasticity expression to emphasize that p_y is a function of both y and x, which is not typical in a traditional Lerner index.

market power in donor markets. Each of these strategies has the objective of reducing donor elasticity by mitigating competition from other solicitors. Examples include creating regulatory barriers to entry in education (Andersson & Ford, 2017) or healthcare (Paul et al., 2019). Nonprofits may also seek to increase differentiation from competitors via fundraising messaging so that other nonprofits will not be perceived as a viable substitute for their services (Barman, 2002; Weerawardena & Mort, 2012). Nonprofits may exercise unique control of a desirable resource such as patents (Firpo & Mireles, 2020) or certificates of need (Noh & Brown, 2018). More abstractly, prestige generating nonprofits such as elite universities or arts organizations may function as "status monopolies" to extract surpluses from esteem seeking patrons (Basu, 1987; Sexton & Sexton, 2014).

7. Empirical Estimation of the NPLI

To date, market power has remained a periphery concern for nonprofit managers and researchers. When it is considered, research has typically focused only on the client side (Philipson & Posner, 2009; Prufer, 2011; Searing, 2014). Our model demonstrates that market power measures that only examine the client-side may be underestimating total organization level market power. Furthermore, we demonstrate that charitable nonprofit organizations will need to exercise market power over donors to create client subsidies. Examples could include political organizations, religious sects, or elite educational organizations that extract large donations from elite donors to subsidize preferred client groups. The NPLI developed in this paper offers conceptual guidance for identifying market power in donor markets and strategies for nonprofit managers to extract those surpluses.

On the donor side, equation (9) on the left-hand side demonstrates one approach to calculate the NPLI directly $\left\{\frac{p_y - c_y}{p_y}\right\}$. This calculation requires knowledge of both the donor price and the marginal cost of donor services. However, these parameters are difficult to quantify with existing accounting data. Managers and researchers typically have access to accounting measures of average costs, which can differ substantively from marginal costs (Tinkelman, 2006). In some cases, industry or firm-level data can be collected to identify both the marginal donation value and marginal cost of donor services. Yet, even with such data, the true cost of donor maintenance may be underestimated, as many important costs are implicit. For example, the time executives spend on fundraising or large opportunity costs, such as naming rights for buildings or programs, are not reflected in accounting statements. Consequently, accounting measures likely underestimate the full cost of solicitation.

Fortunately, the NPLI offers an alternative approach to estimating market power for donor markets based on the right-hand side of equation 9, or $\left\{\frac{1}{\epsilon_y^*}\right\}$. Measuring elasticity only requires knowledge of donation amounts and the number of gifts to estimate the slope of the donor demand curve. Unlike traditional measures of market power that require detailed price and output data, this elasticity-based method is particularly suited to nonprofit contexts where such information may be unavailable or difficult to observe.

One common empirical approach to estimate donor demand is to place consumers into relevant "bins" (Epple et al., 2019; Kutlu & Sickles, 2017) of donors by the value of their gift. This approach is most viable when donors are organized into identifiable giving levels or circles, common in university or arts fundraising schemes. Elasticities can then be approximated by measuring the slope of the donor demand curve at these levels. Quick approximations of demand curves can also

be made via experimentation (e.g., A/B testing) with donor subsidies or matching schemes to identify price sensitivity (Gallo, 2015; Helms-McCarty et al., 2016). Such experiments provide quick insights into donor price sensitivity and help refine elasticity estimates. More elaborate econometric techniques for estimating elasticity are outlined in Bresnahan (1989) and Perloff et. al. (2007). These methods often involve estimating demand curves through direct market experiments or econometric models that account for both observed and unobserved factors influencing donor behavior.

On the client side, the NPLI decomposes markup into the contributions of clients and donors. Varying the elasticities on the right-hand side of equation 6, makes clear that it is the relative magnitude of these elasticities that determines whether to offer a price above or below marginal cost to clients. For example, if the cross-platform externality exceeds the client-price elasticity $|\epsilon_{xp_y}| > |\epsilon_x|$, then the nonprofit should charge a price greater than the marginal cost of production $p_x > c'_{xy}$, indicating a positive markup. This markup will increase in value as the ratio between the cross-price externality and client-price elasticity rises. In this circumstance, the organization should raise its prices.

The situation is reversed when $|\epsilon_{xp_y}| < |\epsilon_x|$, where the cross-platform externality is less than the organization's client-price elasticity. Under this circumstance, the nonprofit should charge clients less than the marginal cost of production, or ($p_x < c'_{xy}$). Intuitively, a modest decrease in price will result in large increases in client consumption. However, donors are relatively insensitive to output, so the marginal value of their donations will not fall. Thus, the optimal price for clients can fall below the cost of production. In a single-sided market, an organization would incur significant losses by lowering its client price. Yet, with a two-sided platform, losses on the donor side will be more than offset by increases in revenue from output insensitive clients. As client-price elasticity increases, the optimal price for clients could become negative. In this circumstance, the organization's revenues and sustainability are maximized by subsidizing the consumption of charitable clients.

The application of antitrust principles to donor markets generates unique policy questions, as nonprofit organizations' ability to subsidize client services often depends on their capacity to exercise market power over donors. This relationship conflicts with traditional antitrust goals of promoting competition. Regulators must balance preventing anticompetitive donor market consolidation against preserving nonprofits' ability to generate mission-critical surpluses. The NPLI framework reveals a paradox, limiting donor-side market power through antitrust enforcement could inadvertently reduce subsidies available for low-income clients. This tension underscores the need for more nuanced antitrust analysis. Emerging empirical evidence suggesting donor markets reach competitive equilibrium with four or fewer participants provides a potential bright-line rule for merger review (Harrison & Thornton, 2014). The NPLI's capacity to quantify cross-platform externalities offers regulators a novel tool to distinguish pro-competitive donor strategies (e.g., impact reporting that increases giving elasticity) from anti-competitive ones (e.g., exclusive donor agreements), enabling targeted interventions that preserve nonprofits' social value creation while curbing monopolistic practices.

8. Operational Example of the NPLI and Use Cases

To make the application of the NPLI more concrete, we begin this section with a stylized example that demonstrates how nonprofit managers might use local elasticity estimates to guide pricing

decisions. Our aim is not to solve a full equilibrium model but to demonstrate how managers can use elasticity-driven pricing adjustments and reallocate surpluses to expand mission delivery.

Consider a hypothetical nonprofit youth music program that charges a fee to service families (clients) and solicits donations from patrons who value youth access to the arts. Managers observe that if clients are charged \$100, then one hundred students will participate in the program. As client price falls, more students enroll. Furthermore, when donors are "asked" for a \$150 sponsorship, fifty patrons from their donor list respond with a gift of that amount. Donors who give then receive access to a bundle of donor benefits (e.g., complementary tickets, public recognition, special donor social events, etc.). The nonprofit managers approximate the cost of both client services and donor solicitation at around \$100 each.

Using historical giving data, A/B testing, and surveys, the nonprofit manager intuits a donor price elasticity of −1.5 (i.e. a 10% increase in the donor "ask" results in a 15% reduction in the number of donations, or $\epsilon_y = -\frac{15\%}{10\%}$). They further estimate a client price elasticity of −2.0, (i.e., a 10% decrease in client price results in a 20% increase in the number of students enrolled in the program, or $\epsilon_x = -\frac{20\%}{10\%}$). From their giving data, the manager also notes a cross-platform effect of 1 (i.e., each additional client served increases a donor's willingness to give by \$1, or $\epsilon_{xy} = \frac{1\%}{1\%}$). From the managers' perspective, these local elasticities are taken as given. Applying the Lerner condition of ($\frac{p-mc}{p} = \frac{1}{|\epsilon|}$) to the donor side, the nonprofit notes that its current 33% donor markup ($L_{current} = \frac{(\$150-\$100)}{\$150} =$ 0.33) is too low relative to its desired markup of 66% ($L_{desired} = \frac{1}{|-1.5|} =$ 0.66).

Suppose that the nonprofit manager considers a small increase in the "ask" price to donors. The manager raises the donor price by 10% from \$150 to \$165. With a donor elasticity of $\epsilon_y = -1.5$, the manager expects a 15% decrease in donor quantity, from 50 to 42.5 donors. However, total donation surpluses increase from \$7,500 to \$7,012.50 because net surplus per donor has increased from \$50 to \$65.

Assuming the manager reallocates donor surpluses to the client side, the per-client subsidy will increase by \$15 (from \$50 to \$65), which enables the nonprofit to reduce the client fee from \$100 to \$85. With a client elasticity of $\epsilon_x = -2.0$, this 15% price cut yields a 30% increase in client quantity demanded, or 100 to 130 students. This expansion in client output further raises donor willingness to give. Given a cross-platform elasticity of $\epsilon_{xy} = 1$, an increase of thirty clients boosts donor WTG by \$30, implying a revised donor WTG of \$195, further increasing the donor surpluses available to the nonprofit.

Importantly, each constituency will adjust its behavior (and elasticities will change) as the nonprofit alters its prices. The equilibrium outcome in the market is sensitive to how those elasticities change over their relevant demand curves. We do not model a full equilibrium in this simple example. Nonprofit managers operate within a comparative-statics decision framework, where they first infer local elasticities, then make directional changes in price, and re-observe local elasticities to repeat the sequence. This iterative process does not require knowing general equilibrium outcomes, which are sensitive to the behavior of elasticities over the relevant demand curves.

Practically, the Nonprofit Platform Lerner Index (NPLI) framework is applicable across a broad spectrum of nonprofit settings, furnishing managers and researchers with a systematic tool to

evaluate pricing strategies and optimize the allocation of surplus. For example, nonprofit museums frequently implement tiered pricing structures such as student discounts, general admission, or "pay what you can" nights. The NPLI framework can assess whether these pricing tiers are congruent with underlying market power by examining both client-side elasticity and donor willingness to subsidize access. For example, elevated cross-platform elasticity may support the maintenance of free or discounted entry, particularly when such pricing is underwritten by donor-supported campaigns.

Similarly, universities routinely extract surplus from donors through mechanisms such as naming rights, exclusive events, and affinity programs. The NPLI is instructive in evaluating whether institutions are appropriately capturing surplus from elite donors and whether tuition pricing remains viable under cross-subsidization. By systematically analyzing elasticity alongside the marginal cost of donor services, managers can implement more strategic segmentation of donor tiers. Performing arts nonprofits also employ tiered giving circles or matching grants as means of incentivizing donations. By estimating donor elasticity and cross-platform effects, managers can calibrate ticket prices and donation appeals to optimize both accessibility and financial sustainability.

In fields like political action organizations or housing development, a concentrated group of high-capacity donors may coordinate giving through community foundations, donor-advised funds, or informal alliances. While client markets may display characteristics of competition, this concentration of donor funding has the potential to constrain nonprofit market entry and output in nuanced ways. The NPLI facilitates the detection of such distortions, particularly when low client prices coincide with stagnant client volumes and increasing donor-side markups, indicative of donor-side monopsony power. These scenarios merit policy attention even where client-side competition is ostensibly robust.

Collectively, these examples demonstrate that the NPLI constitutes a versatile analytical framework for nonprofit managers. It is well-suited to diagnostic assessment of pricing consistency as well as the strategic realignment of pricing and surplus allocation to ensure coherence with both mission and market structure across the nonprofit sector.

9. Conclusions, Limitations, & Extensions

This paper introduces a novel framework for assessing pricing strategies in nonprofit platforms by integrating donor and client markets, thereby addressing the unique pricing dynamics of two-sided nonprofits. To assist managers, we develop a Nonprofit Platform Lerner Index (NPLI) to provide a practical heuristic for predicting the impact of prices on charitable output. The model challenges conventional assumptions by demonstrating that charitable pricing can emerge from donor preferences, which then subsidize client consumption. This reframing positions donor engagement as a core strategic activity rather than ancillary, emphasizing the importance of understanding and leveraging donor preferences to achieve organizational objectives.

The relationship between donor support and client expansion is particularly relevant in economically volatile periods. As Exley et al. (2023) note, organizations often face increased program demand during recessions precisely when donor funding becomes uncertain. The NPLI framework offers managers a way to assess whether donor-side pricing power can sustain or expand output during downturns. Our model also reveals that the normative discussion around market power in the nonprofit sector is more complex than in traditional consumer markets.

Elevated levels of market power in donor markets can benefit charitable clients, challenging conventional perspectives on competitive practices in the nonprofit sector.

Our model highlights the complexities of managing donors, particularly given the challenges of measuring donors' maximum willingness to give (WTG) and the marginal costs of donor services. While WTG is often unobservable, the paper suggests alternative empirical approaches such as price experimentation, segmentation strategies, and techniques to approximate the relevant demand elasticities. Additionally, it underscores the importance of considering cross-platform externalities whenever altering client prices. When donors are highly responsive to client consumption (high cross-platform elasticity), nonprofits may want to lower client prices below marginal cost to increase organizational sustainability.

While this model focuses on individual donors as the primary source of subsidy, many nonprofits receive substantial support from foundations, corporate sponsors, and government grants. These institutional patrons can also exhibit platform-like behavior, deriving value from client output (e.g., measurable impact, public accountability, or policy outcomes). In principle, the NPLI framework can be extended to accommodate such multi-patron platforms, where each funding stream responds differently to client-side expansion. Extending the model to multiple constituencies simultaneously is an attractive extension for research.

We acknowledge several limitations of the NPLI framework. For example, our model assumes constant marginal costs for donor services and focuses on revenue maximization, which may not align with every nonprofit's mission or diverse objectives. These limitations open avenues for future research to explore alternative objective functions that better reflect the variety of nonprofit goals and missions. Additionally, future research could expand upon this framework by applying multi-sided platform (MSP) theory more broadly to issues such as nonprofit governance, donor segmentation strategies, and stakeholder management.

In summary, this study extends multi-sided platform (MSP) theory to nonprofit organizations by formalizing the concept of donor pricing and integrating it into strategic decision-making. The NPLI offers a conceptual tool for analyzing market power across donor and client markets simultaneously, providing insights into how nonprofits can optimize their dual-market strategies. Future research could expand beyond pricing to explore other MSP-related strategies in the nonprofit context, such as platform governance, feature design for donor and client engagement, and decisions about which stakeholder groups to serve. These areas present significant opportunities for adapting the rich theoretical framework of MSPs to address the unique challenges and opportunities in the nonprofit sector.

Disclosure Statement

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