

Financing Social Missions: Essays on the Role of Commercialization in
Nonprofit Organizations in the U.S.

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ABSTRACT

According to theories of government and market failure, nonprofit organizations play a critical role in delivering public goods and social services. For achieving important social missions, there are multiple challenges (such as unstable government resources, limited amounts of donation, and increasing market competition) that necessitate the need for commercialization within the nonprofit sector. Recently, commercialization in the sector has evolved into the establishment of an innovative type of organization—the social enterprise. Though early scholars have raised concerns regarding nonprofit commercialization and enterprising, there is insufficient empirical evidence to make definitive claims regarding the relationship between commercialization and nonprofit organizations with social missions. Thus, this dissertation seeks to add to the literature and answer the questions: *What are the costs and benefits of commercialization in nonprofit organizations?* Particularly, *how, if at all, does commercialization influence public perceptions of nonprofit legitimacy?* And, *how, if at all, does commercialization influence a nonprofit's ability to garner financial resources?* Two empirical studies are developed focusing on two different types of nonprofit industries. The first looks at profit-seeking intentions in the daycare and recycling industries, while the second looks at actual profit generation from commercialization in higher education.

The examination starts with an online survey experiment, which tests the perceptual reactions of people toward social enterprises. Research suggests that people's perceptions of an organization will largely determine whether they are willing to interact with it; and, given that the public is likely to be less familiar with social enterprises, information about the sector will likely act as an important cognitive heuristic for people

to evaluate social enterprises. The study illustrates how sector stereotypes influence how people perceive nonprofit and for-profit social enterprises. Results from the experiment show that there is a significant effect of sector stereotype on people's perception and willingness to interact with the nonprofit or for-profit social enterprise, which can be explained by people's psychological repugnancy against profit-seeking intentions.

The second study addresses how the capital market reacts to revenues from research commercialization in nonprofit universities. Nonprofit universities increasingly rely on the issuance of tax-exempt bonds to generate capital. Therefore, financial assessments of nonprofit universities by the capital market (measured by their credit rating) has a significant influence on the capacity of these organizations to borrow for their mission. Encouraged by government policy, universities are actively engaging into research commercialization activities such as technology transfer. Research commercialization might largely benefit universities' credit ratings because it brings both pragmatic and moral legitimacy. The hypothesis is supported by evidence from pooled university data from 2007 to 2016.

Results from my dissertation raise new insights on the role of commercialization in the nonprofit sector. Overall, my dissertation helps to confirm the illegitimacy of commercialization in the social service market, and, it explores conditions that mitigate incompatibility between commercialization and social missions.

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Chapter 1: Introduction

1.1 Background

Nonprofit organizations exist in response to market and government failure in delivering public goods and social welfare (Frumkin, 2002; Salamon, 1989; Young, 2000); however, the nonprofit sector is experiencing an important change of revenue structure—that is, commercial income in social service organizations is increasingly dominant in the total revenue. Most scholars suggest that the growing amount of commercial income from fees for services and non-related mission activities is intensified by resources challenges, e.g., unstable government financial support, increasing resource and market competition, and bleak growth of donation income (Child, 2010; Kerlin & Pollak, 2011; Lester M. Salamon, 1993). Therefore, income from commercial activities provides critical resource opportunities for nonprofit social services organizations to survive. Moreover, because revenue from commercial activities is unrestricted, nonprofit organizations are able to ease resource dependence on external funders and increase financial stability by holding more operational reserves (Calabrese, 2012). Not surprisingly, then, business-like models and strategies, which are believed to be effective and efficient in enhancing organizational capacities, are embraced by the nonprofit sector. It is because of these reasons that a new hybrid organization model called social enterprise that aims to achieve social missions with commercial strategies has appeared for social services (Battilana & Lee, 2014; Dart, 2004a; Kerlin, 2010; Young & Lecy, 2014).

However, the legitimacy of commercialization in nonprofit social service organizations is still under debate. Previous scholars have raised caveats that the

commercialization of social service delivery might challenge nonprofits' inherent democratic value and instrumental functions in society. From a normative perspective, commercialization in the nonprofit sector might undermine nonprofits' important democratic roles as components of civil society (Eikenberry, 2009; Eikenberry & Kluver, 2004). From an instrumental perspective, getting involved in commercialized practice, including mission-related or unrelated activities, will result in mission deviation problems that may limit the effectiveness of nonprofit organizations (Weisbrod, 2004; Weisbrod, 1997, 1998). On the contrary, proponents of the social enterprise model suggest that the model brings not only unrestricted commercial incomes but also business-like practices such as managerialism and professionalism, which are believed to be beneficial for efficiency of service delivery and mission achievement (Dart, 2004b; Dees, 1998).

1.2 Research Question

Commercialization is now a dominant solution for nonprofit organizations to generate necessary resources for their missions. What are potential costs and benefits of commercialization? This dissertation focuses on two critical resources for nonprofit organizations and ask: how, if at all, does commercialization influence a nonprofit's ability to garner financial resources? And, how, if at all, does commercialization influence public perceptions of nonprofit legitimacy? Previous discussions on commercialization in social services or the social enterprise model focuses largely on the organization's effectiveness (Maier, Meyer, & Steinbereithner, 2016), but a missing piece of the puzzle is how audiences in the environment will react to commercial activities. A nonprofit organization depends on revenue provided by people who are potential funders,

consumers, and investors in the market; in the meantime, these actors in the market are critical sources of organizational legitimacy that justifies the existence and operation of the organization. Both material resources and legitimacy, entwine with each other, provide significant bases for organizations' survival and successes. This dissertation uses the social service and higher education industries as two contextual lenses to test how commercialization is perceived and evaluated by a public audience.

1.3 Organization of the Dissertation

In the rest of the dissertation, Chapter 2 provides a comprehensive literature review of commercialization in the nonprofit sector. The chapter first presents the development and status of commercialization in the public service market and discusses the definition of and typologies for commercialization in the nonprofit sector. I also review literature exploring economic and institutional forces that drive commercialization in the nonprofit sector and motivate the formation of social enterprise.

Chapters 3 and 4 contain two empirical studies designed to answer the overarching research question: how, if at all, does commercialization influence public perceptions of nonprofit legitimacy and the organization's ability to garner financial resources. Chapter 3 presents an online experiment to examine the effect of sector information on public perceptions of social enterprises in the social service market. The public is composed of potential donors and consumers, and both of them have a need for social services organizations to survive and succeed. Contrary to literature suggesting a blurry boundary exists between the nonprofit and for-profit sector, for people who are less familiar with social enterprises, their sector information will act as an important

cognitive heuristic guiding their intentions and behaviors of the organization. People's judgements about profit-seeking signaled by "for-profit" compared to "nonprofit" status will help us to understand how people perceive profit-seeking in the social service market. In the experiment, sector information of the social enterprise is manipulated as "nonprofit", "for-profit", and "no information", that is, to be a social enterprise with no sector information provided. Public perception is measured by people's perceived warmth and competence following previous literature (Cuddy, Fiske, & Glick, 2007; Fiske, Cuddy, & Glick, 2007a). Experiments find a significant but asymmetric effect of sector stereotype: that is, people perceive the social enterprise with a for-profit label to be colder and less competent than the nonprofit social enterprise or a social enterprise with no sector information. People's perceptual reaction then mediates their willingness to purchase from and donate to social enterprises. The effect of sector stereotype holds unchanged when information with social influence (e.g., users' star ratings) is available, and it is found both in the daycare (human-related) and recycling (technology-related) industries.

Chapter 4 discusses whether commercial behaviors of nonprofit organizations will increase their financial capacities as evaluated by a third-party credit rating agency. Nonprofit organizations, such as universities and hospitals, increasingly rely on tax-exempt borrowing and the issuance of tax-exempt bonds as capital sources; one factor related significantly to borrowing cost is the issuer's credit rating. Because commercial revenue is associated strongly with financial status based on which the credit rating companies evaluate the quality of the bonds the organization issues, Study II is designed to answer the question: How does nonprofit organizations' commercial income affect

their credit ratings? This study focuses specifically on universities which are major tax-exempt bond issuers in the nonprofit sector. The commercial behavior that Study II focuses on is the increasing research commercialization activity—i.e., technology transfer. Data analysis is conducted on a panel dataset from 2007 to 2016. The dataset is composed of university financial data retrieved from Integrated Postsecondary Education Data System (IPEDS), which is administrated by National Center for Education Statistics. Additionally, survey data of university technology transfer was collected by the Association of University of Technology Managers (AUTM), and I also relied on Moody Inc's university's bond rating scores. Results from a pooled ordered logit model suggest that the level of technology transfer, measured by the research expenditures sponsored from the industry, is has no negative effect on the probability of getting a higher rating. By investigating the effect of technology transfer on universities' credit ratings, this study sheds light on important conditions that mitigate the incompatibility between commercialization and social mission.

Chapter 2: Literature Review

2.1 Commercialization of Nonprofit Organizations

The U.S. nonprofit sector relies on resources from private donations, government grants, and investments; however, the most dominating income source comes from commercial activities (Chang & Tuckman, 2010; Tschirhart & Bielefeld, 2012). The emergence of commercial activity in the nonprofit sector in the U.S can be traced back to early 20th century (Salamon, 1993). For instance, the Girl Scout has been selling their featured cookies since 1917 to raise funds. More recently, forms of commercial activity in the nonprofit sector have extended from goods or service transactions to commercial cooperation and joint ventures (Galaskiewicz & Colman, 2006). Increasing numbers and types of commercial behaviors raise important normative and pragmatic challenges for nonprofit organizations. What are the moral challenges of commercializing social services? How will the public perceive and judge the commercialization of public welfare? Will commercial activity deviate the organization from its mission? Is commercial income replacing other revenue sources or providing additional resources for the organization? How should nonprofit managers and policy makers design and orient nonprofits' commercial activities so that the social service market is able to address the overall welfare in society? Theories and empirical evidences have partially addressed these questions, but in-depth investigations are still needed. Previous economic models and sociological theories provide current students with a valid starting point to expand the research on nonprofit commercialization. Thus it is worthwhile to revisit previous literature before discussions on specific questions for this study.

2.1.1 Commercialization: Definition and Typology

Commercialization is the engagement in economic transactions for gaining profits from the market. Therefore, the notion of commercialization has two basic aspects: first, commercialization usually contains economic transactions in terms of goods, services, or contracts; and second, the major purpose of commercialization is profit-seeking.

Because of its profit-making purpose and logic, commercial activity has long been considered as a useful tool to generate revenue. Theoretically, levels and types of commercialization are largely dependent on the economic feature of the product provided by the nonprofit organization. James (1983) and Weisbrod (1998) introduce nonprofit organizations as multiproduct providers to explain nonprofit commercial activity. In detail, their models link the mission of the organization to the economic feature of its products, and suggests that products provided by a nonprofit organization include: 1) a preferred collective good, which is a good that reflects the value and mission of the organization but difficult to be priced and traded in private markets; 2) a preferred private good, which also convey the value and mission of the organization and can be sold in private markets; 3) a nonpreferred private good, which is not substantially related to the mission of the organization but is also tradable in private markets. These classifications are generated based on the assumption that nonprofit organizations are established for certain social missions and therefore goods unrelated to their missions are less preferred. The multiproduct model provides us with an important framework to discuss the increasing trend of commercialization in the nonprofit sector.

Preferred Collective Goods

Preferred collective goods include most public goods such as basic research conducted by universities and research institutes, the preservation of endangered species provided by zoos and aquariums, art and cultural heritages held by museums, environmental protections by environmental NGOs, and so on (Weisbrod, 1998). Because missions associated with preferred collective goods are usually intangible and non-measurable, also due to the non-excludability and non-rivalrousness as public goods, nonprofit organizations can hardly generate profits from the production of these goods. Thus, traditionally, production of preferred collective goods is sponsored collectively by people in society in terms of donations and governmental subsidies (Andreoni, 1989; Hansmann, 1980). However, both the social and policy environments place nonprofit organizations under financial pressures, and urges these organization to embrace strategic commercialization as a tool to finance their core missions. Therefore, while recognizing the difficulty to marketize public goods, nonprofit organizations are increasingly collaborating with for-profit firms and engaging in commercial contracts and activities to finance their missions. These strategies, however, are accompanied with enormous costs such as the potential for mission-deviation and damages to organizational reputation. In the following sections, I will expand on these threats.

Preferred Private Goods

The feature of non-profitability is also shared by preferred private goods as suggested by James (1983) and Weisbrod (1998). Even though private goods such as health and day care services are priceable and tradable, nonprofit organizations are usually founded by a philanthropic purpose and founders are often willing to provide such services to consumers “independent of their ability to pay” (Weisbrod, 1998, p. 49).

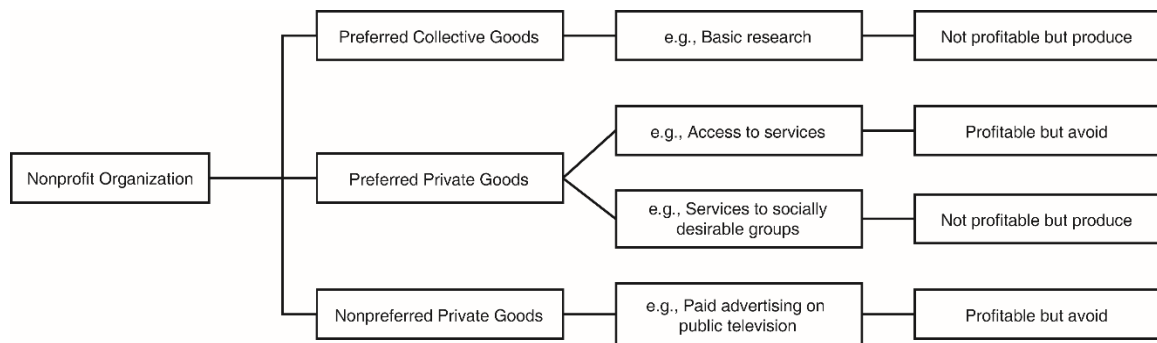
Commercial behavior in the nonprofit sector primarily comes from the transaction of preferred private good, as reflected by the dominant proportion of income from program service fee in total organizational revenue. Earned income from preferred private goods is a dominant revenue source for public service organizations because service delivery is the core mission of these organizations and services are usually private goods. Therefore, they are priceable and tradable. Thus, the expansion of public service organizations becomes the driving force of the growth of the nonprofit sector in the U.S. Between 2008 and 2015, fees for services and goods from both private sources and government increased to over 70% for the nonprofit sector as a whole; the percentage of private contributions during this time was about 12% to 13%; and, the percentage of government grants was about 8% to 9% (McKeever, 2015). Leading subsectors of nonprofits that rely largely on fees for services include health, education, human services, and environmental/animal.

Nonpreferred Private Goods

Both the preferred collective goods and nonpreferred private goods create opportunities for nonprofit organizations to generate additional revenue to finance their mission-driven activities. Indeed, generating revenue from nonpreferred private goods is widely applied by nonprofit organizations as a fundraising strategy (Bush, 1992). Membership associations also sell mission-unrelated goods to members in order to finance other activities (Young, 1998). Social enterprises widely use sales income from their for-profit subsidiary corporation to support their main mission. However, transactions of nonpreferred private goods are limited because of the costs related to nonpreferred private good is relatively high. These costs are high because income from

nonpreferred private goods is not exempt from the property tax. Second, organizations might need to establish a whole new sales system which costs additional resources (including monetary and labor) to produce, manage, and deliver the product (Adams & Perlmutter, 1991). Finally, the organization could be stressed to justify the sales of nonpreferred private goods to the public. Therefore, nonprofit managers are cautious to use nonpreferred private goods to generate additional revenues for their missions.

Figure 2 1 A Multiproduct Model for Nonprofit Organization



Note: The model is derived from Weisbrod (1998).

The basic assumption of the multiproduct model for nonprofit organization suggests that: first, nonprofit organizations are mission-driven and therefore prefer to provide goods that are directly associated with their mission and values; second, nonprofits have organizational autonomy to decide what type of products shall be provided (Weisbrod, 1998). Therefore, facing different financial situations and policy contexts, nonprofit organizations can strategically use commercialization to sustain their missions. However, financing a mission is not limited to marketized transactions of preferred and nonpreferred goods. Other strategies such as economic and strategic collaborations with for-profit corporations can also be considered as engagements in

commercial mechanisms, through which nonprofit organizations indirectly involve in market transactions or serve as instruments for commercial and thus profit purposes, with considerable financial benefits in return.

2.1.2 Driving Forces of Commercialization

Both marketized transactions of products and collaborations with for-profit firms for financial returns are strategies in response to resource scarcity for either survival or expansion. Nonprofit and voluntary activity can be driven by either demand-side or supply-side force (Frumkin, 2002), and so can the commercial activities. From a demand-side perspective, nonprofit organizations are confronting an increasingly heterogeneous society where more social demands fail to be satisfied by market transactions and public policies, which calls for the expansion of the nonprofit sector. The desire and need for expansion pressures nonprofit organizations to seek resources that they have limited ability to self-generate in a short amount of time, and commercialization becomes a better alternative compared to other revenue strategies. From a supply-side perspective, the major driving force for commercialization is resource shortfall, especially for nonprofit organizations that are established in response to available resources such as government contracts. Social and policy environments create both opportunities and pitfalls for social service organizations—governmental investments on social welfare help to expand the social service market but with unstable financial support. Therefore, organizations who are established driven by the resource availability have to seek for additional resource to avoid potential financial risks or even to survive when suffering from a resource deficit. Again, commercialization acts as a better alternative than other resource generation

strategies because it has more predictable costs and benefits, as well as other positive byproducts for nonprofit organizations.

Demand-Side Perspective

From the demand-side perspective, increasing commercialization in the nonprofit sector is a result of urgent requests from both the public and policymakers for sector expansion to satisfy heterogeneous demands for quality and professional social services. Nonprofit organizations serve significant economic roles in society—they work to meet demands that fail to be met by government policies because the government has limited knowledge and ability to serve heterogeneous needs. In addition, heterogeneous needs left by the government sometimes can either be satisfied by market forces because products and services related to these needs have little to no profitability so that private companies have little incentives to invest (Frumkin, 2002). Thus, the more heterogeneous a society or community is, the more important role that nonprofit organizations will play (Weisbrod, 1997; Young, 2000). Therefore, a growing number of nonprofit organizations have been established to meet increasing demand heterogeneity in society, which is a result of globalization and individualism (Bromley & Meyer, 2017). Confronting the urgent need to expand, more and more nonprofit organizations choose different types of commercialization to generate revenues and increase their ability to serve the public.

An increasing requirement of professionalism and mission expansion owing to market competition and policy orientations accompanies demand heterogeneity. Cases of zoos and aquariums provided by Cain and Meritt (1998) suggest that the pressure of expansion, which accelerates the commercialization in this field, comes from both the avoidance of species extinction and the scientific care of species preservation. Therefore,

instead of traditional menagerie function, nowadays zoos and aquariums create new habitats for animals combined with research and education programs, which largely increase the cost of project development and maintenance. Examples also exist in other nonprofit subsectors, including health care, higher education, human service, arts, and so on. Because of the important economic role that nonprofits have in serving social needs, the behaviors of nonprofit organizations are inevitably driven by societal demand.

Supply-Side Perspective

The expansion required by social needs is not the exclusive motivation for commercialization. In fact, scholars argue that incentives from the supply-side are key mechanisms that encourage or force nonprofit organizations to embrace commercialism. Frumkin (2002) presents a framework that theorizes the role of social enterprise, a typical application of commercialization in nonprofit service. In his framework, resources available and legitimized in the market provide opportunities for social entrepreneurs to make profits while serve as instruments of service delivery.

The creation of this market results from both the economic feature of some social services and government actions. On the one hand, commercial mode is more adaptable for preferred private services as discussed above because they are tradable and profitable on certain level. On the other hand, government policies play a strong role in incentivizing and legitimizing the commercialization of social welfare.

Burgeoning government investment in the social service market from the 1930s to the 1970s created a large profitable market that attracted a number of nonprofit and for-profit organizations to respond to calls for social welfare expansion. But more importantly, government funding retrenchment during 1980s created dramatic resource

deficits in the social service market. Considering the relative slow growth of private donations, social service organizations had to turn their financial strategies to fees and other commercial income (Salamon, 1993). Thus, some scholars argue that commercial income is a replacement of other declining revenues such as government funding and private donations. For example, LeRoux (2005) found that the amount of earned income was correlated with decreased government funding and private contributions in the Detroit metropolitan area.

Additional empirical support comes from Guo (2006) who states that “downsized private donations and public funding led to an increase in commercial revenues of nonprofits” (quoted in Kerlin & Pollak, 2011, p. 688). However, based on an analysis of a panel with a larger sample size, Kerlin and Pollak (2011) found little association between the growth of earned commercial income and declines of other revenues.

Institutional Perspective

Though rejecting the hypothesis that nonprofit organizations increase their reliance on commercial income to respond to declines in government funding as well as private contributions, Kerlin and Pollak (2011) did find an increase in the amount of commercial income in the nonprofit sector without a decrease in government funding or donations. One explanation they provided is the effect of institutional environment, suggesting that “the very steady rise in commercial activity without revenue loss elsewhere can be explained broader outside pressures and environmental influence on nonprofit overtime” (Kerlin & Pollak, 2011, p. 700). Therefore, commercialization in the social services sector might be initiated by some nonprofits who actually have successfully turned to commercial activities for more reliable financial revenue.

Commercialization in the sector may spread, however, as a result of institutional isomorphism which in turn creates a new institutional environment that provides substantial legitimacy for commercialization and business-like operations (Dart, 2004b; P. DiMaggio & Powell, 1983; Suddaby, Bitektine, & Haack, 2017).

Indeed, Dees (1998) from a practical perspective suggests that the increasing commercial activity in the nonprofit sector can be explained by “a new pro-business zeitgeist” (p. 56) in the sector as well as competitive forces in the market. In explaining increasing sector similarity, Bromley and Meyer (2017) suggest that cultural principles of rationalized science, although successful in the business sector, have formed as an isomorphic force in the environment that makes organizations in the nonprofit and public sectors change structurally and institutionally. Therefore, more and more nonprofit organizations are embracing business-like approaches to facilitate mission achievement and organizational efficiency.

Overall, research suggests that multiple forces drive the growing tendency of commercialization in the nonprofit sector in the U.S. Both demand- and supply- side perspectives suggest reasonable explanations for the increasing commercialization, which collectively argue that the motivation of commercial activities is a strategic response to the imbalance between burgeoning social needs and an unstable resource supply. In addition, neo-institutional theories help to address the discrepancy between demand- and supply-side perspective hypotheses and competing empirical findings, suggesting that the growing pro-business practices are motivated by isomorphic pressures from the success of capitalism in the private sector. Studies on driving forces of nonprofit commercialization and the emergence of social enterprises have important implications

for the field to conduct in-depth investigations and evaluations on potential effects of commercialization, including both intended and unexpected influences.

2.1.3 Effects of Commercialization

The discussion on the driving forces of commercialization in the nonprofit sector suggests that the purposes of commercialization are: 1) to generate resources to expand organizational capacity so that growing demands can be satisfied; 2) to generate resources to compensate resource supply shortfalls in the market; 3) to gain organizational legitimacy in an environment where pro-business practices and rational scientific principals are widely embraced. This section will review effects brought by commercialization in the nonprofit sector in order to determine if commercialization is an effective approach to achieve the instrumental purposes above, and if there are any unpredictable byproducts that create pitfalls for nonprofit organizations in the future.

Positive Effects

Outcome. The most salient outcome of commercialization in the nonprofit sector is sector wide growth. While facing government funding retrenchment and relatively slow growth of private contributions in the 1980s, the size of the nonprofit sector expanded dramatically, with 79 percent revenue increase during 1977 and 1989 after adjusting for inflation (Salamon, 1993). The major source of this revenue boost came from service fees and other commercial income, which grew by 93 percent during the same time period (Salamon, 1993). An observation of more recent statistics of nonprofit economics from 1982 to 2002 shows that after adjusting for inflation, overall, major types of nonprofit revenue increased which added to the growth of the nonprofit sector in both numbers of nonprofit organizations and revenues. In particular, across 20 years, the

commercial revenue of nonprofit organizations increased by 219%, excluding hospitals and higher educations which are outliers of service fee revenue. Moreover, the share of commercial revenue as a percentage of total revenue increased from 48.1% in 1982 to 57.6% in 2002 (Kerlin & Pollak, 2011). Though the growth of the whole nonprofit sector is also associated with the growth of other revenue, there is no doubt that the growing speed of commercial revenue has accelerated expansion of the nonprofit sector, especially in social service delivery.

While the nonprofit sector has gained economic expansion resulting from the growth of commercialization, the statistics do not act as a persuasive indicator that nonprofit organizations successfully use the resources to satisfy social needs. Therefore, the following question remains: What are the costs and benefits of commercialization in nonprofit social service organizations? Outcome of commercialization is yet to be systematically tested because of performance measurement complications. Theoretically, commercial revenue, which is unrestricted by external entities, provides nonprofit organizations with more autonomy and discretion in strategic management and daily operations compared with government funding and private contributions with restrictions (Calabrese, 2012). As such, theoretically, a larger share of commercial revenue might lead to a higher level of organizational autonomy, which might lead to better performance (Hillman, Withers, & Collins, 2009; Pfeffer & Salancik, 2003). Therefore, nonprofit organizations have sufficient freedom to increase their operational reserve for financial stability, to create new programs that better serve clients, or to invest in fundraising events. Thus, more commercial revenue might lead to better financial health and

capacity, which provide important bases for nonprofit organizations to achieve the missions.

Process. Commercialization might contribute to nonprofit effectiveness through impacting in market competition which motivates managerialism, professionalism, and innovation, as suggested by pro-business beliefs. Indeed, Dart (2004a) shows that organizations that marketize their major services also apply business-like approaches in management, including business-like goals that primarily focus on revenue generation, business-like service delivery which focuses on business ideas and planning, business-like management which, for instance, includes “results-focused” approaches, and business-like organizational rhetoric which creates a new linguistic environment within the organization by using more business terminology. Therefore, commercialization might lead to systematic changes, including changes in service delivery, management, governance structure, and even organizational culture. For all of these reasons, the conceptualization of social enterprise is complicated. Whether these approaches can lead to organizational effectiveness is empirically questionable. But theoretically, market competition in social service might make consumers better off because organizations have greater incentive to create value dependent on consumers’ demands. Thus, “competitive markets align the selfish motives of profit-seeking firms with outcomes that are valued by society” (Bhattacharjee, Dana, & Baron, 2017, p. 673). In addition, a systematic business-like framework might help nonprofit organizations gain institutional legitimacy (Dart, 2004b). Though service commercialization with business-like approaches might lead to pragmatic legitimacy which stresses organizational outcomes and performance, it can also provide commercialized nonprofit organizations with

important moral legitimacy which refers to “more pervasive political and ideological ideas about valid organizational models” given “contemporary social fascination with market-based solutions and mechanisms” (Dart, 2004b, p. 419).

Negative Effects

Outcome. The opportunity costs of commercialization for nonprofit organizations include the sacrifices associated with their political function. Eikenberry and Kluver (2004) suggest that commercialized nonprofit organization might discourage civic participation, focus on the financial bottom line instead of actively strengthening social capital, and recruiting board members with connection to business rather than to community. However, empirical evidence exploring whether nonprofits have a diminishing political role because of commercialization is inconsistent. For example, though professionalism brought about by commercialization seems to have neither positive nor negative effects on community-building, professionalized organizations might create more social capital (Maier et al., 2016).

Process. The negative effect of commercialization is determined by the extent to which a nonprofit organization engages in commercial activities, mainly marketized transactions of goods and services. Involving in mission unrelated business, such as selling for fundraising, could be considered a reasonable financial strategy for organizational sustainability. But it is the engagement of mission related business that most raises most concerns among scholars, because the profit-seeking logic embedded in commercialization undermines nonprofits’ economic and social function: serving social demands without making profits.

Weisbrod (2004) argues the importance and advantage of being a “pure” nonprofit organization. Without profit-seeking behavior, he suggests, nonprofit organizations are more likely than their for-profit counterparts to provide higher quality services. These services are thought to have higher levels of consumer satisfaction and less complaints and regulation violations. Indeed, in an investigation of nursing home performance, Amirkhanyan, Kim, and Lambright (2008) found that nonprofit organizations perform significantly better than their for-profit counterparts regarding service quality and access to services for impoverished clients. The mechanism behind the finding is the use of different approaches related to organizational mission and funding sources to balance strategic trade-offs.

With greater reliance on commercial income inevitably accompanied with profit-seeking logic, nonprofit organizations are more likely to face dilemmas between cost-saving and quality service (Bode, 2017). As suggested by Eikenberry and Kluver (2004), nonprofit organizations relying largely on commercial activities might cut some unprofitable programs which can leave “unprofitable” clients behind. In addition, as performance and outcome measurement is particularly emphasized in commercial and business-like logic, front-line workers of social service organizations might engage in “cream-skimming” behaviors toward clients, only serving those who are more likely to meet performance success criteria but not those who are most in need (Bevan & Hood, 2006; Bohte & Meier, 2000; Jilke, van Dooren, & Rys, 2018).

In the field of social welfare service, for example, Koning and Heinrich (2013) find evidence that higher levels of performance incentive logic leads to lower acceptance of hard-to-serve clients. Therefore, the institutional logic accompanying commercial and

business-like strategies in social service organizations might lead to equity problems and less profitable clients who are actually in needs will be left behind. As a result, nonprofit social service organizations may deviate from their most important economic function in the society: to serve unsatisfied demands because of market and government failure.

2.2 Toward a Hybrid Organization Model

Another phenomenon regarding commercialization for social missions is the hybridization of business models and social purposes. In recent years, there have been growing numbers of social enterprises and a popular term in research universities and institutes called “academia entrepreneurship” (Grimaldi, Kenney, Siegel, & Wright, 2011). In particular, the term “social enterprise” is created to provide a model for self-sustaining social and welfare service organization. Searching the term on *Google.com* shows about 10.6 billion results to date. The popularity of social enterprise in empirical world has attracted scholars’ attention. However, studies of social enterprise have yet to form a rigorous in-depth understanding of this organizational form. In fact, although there is a large number of qualitative studies of social enterprise, quantitative social enterprise research remains rare (Doherty, Haugh, & Lyon, 2014; Young & Lecy, 2014). As such, there is a significant gap that needs to be explored. While practitioners are embracing and practicing social entrepreneurship, the academic world is still far away from providing valid evidence-based suggestions to guide the efforts of these practitioners. Without solid conclusions drawn from theories and findings, policymakers are left only with social enterprise ideology.

The shortfall of social enterprise studies, particularly quantitative research, mainly results from the on-going debate on the conceptualization of the term, which in turn has led to non-consensus on the unit of analysis. Young and Lecy (2014) identify several schools of thought that conceptualize social enterprise using different rationale. For example, the Emergence of Social Enterprise in Europe (EMES) defines social enterprise as “organisations with an explicit aim to benefit the community, initiated by a group of citizens and in which the material interest of capital investors is subject to limits” (quoted by Young & Lecy, 2014).

While EMES’ definition of social enterprise emphasizes the purpose of community services, the social innovation/entrepreneurial school suggests that social enterprises are “ventures created by social entrepreneurs who themselves may have a variety of market and non-market motivations” (Young & Lecy, 2014, p. 1313). Dees (1998) provides a spectrum approach to define social enterprise, suggesting that social enterprise rests in the middle between traditional nonprofit organizations which are fully supported by donations and pure for-profit companies which operate in the market for profits. Further, Kerlin (2013) argues that the conceptualization of social enterprise is context-based; that is, institutional characteristics of social enterprises are largely shaped by the economic and democratic environments on a national level.

Young & Lecy (2014) suggest a “social enterprise zoo” metaphor which frames social enterprise as a zoo with “expansive open areas for various types of animals to share and interact” while identifying boundaries between each of them. Their work has at least two contributions to the social enterprise literature. First, the metaphor of social enterprise zoo is more comprehensive than previous conceptualizations. It allows various

existing types of social enterprises to be included in theoretical discussions. Second, the metaphor points out that different types of social enterprises have clear boundaries and sometimes they will interact with each other positively and other times they will interact with each other negatively. In their metaphor, each type of social enterprise within the “social enterprise zoo” can be studied as a case of social enterprise because it shares similar features with other social enterprises.

The metaphor of a social enterprise zoo is largely built on one key feature of social enterprise shared by most conceptualizations: hybridity of social purpose and commercial activities (Battilana & Lee, 2014; Dart, 2004a; Doherty et al., 2014). Instead of being a pure innovative model for social and welfare services in the U.S, the hybridity of social purposes and commercial activities has been observed since the middle of the 20th century when commercialization in social services dramatically increased (Salamon, 1993). Some commercial activities have become iconic brands and images for certain nonprofit organizations. For instance, the girl scout cookie for Girl Scouts of the USA is an iconic image for this organization. Thus, the hybridity created by social purpose and commercial activities is not a new phenomenon. Instead, it is an extension or reconstruction of previous strategies for nonprofits to be financially self-sustained.

While commercial activities of nonprofit organizations have been discussed, debated, and challenged by previous studies (e.g., Dekker, 2009; Eikenberry, 2009; Weisbrod, 1997), in recent years the hybrid form of nonprofit organizations termed as social enterprises is gaining more legitimacy (Dart, 2004b). This hybridity further blurs the boundaries that define different types of organizations in society, where organizations in public, private, and nonprofit sector act similar to their counterparts (Bromley &

Meyer, 2017). What are the implications of hybrid organizations? How will hybridity influence social service delivery particularly that with a philanthropic purpose? Will or how could social purposes and commercial activities be reconciled? Previous literature regarding commercialization in the nonprofit sector sheds lights on these questions and provides an important theoretical foundation for future studies of social enterprises.

2.3 Summary

The discussion of positive and negative effects of commercialization reflects a myth of business-like approaches that has been widely embraced by proponents of social enterprise. Though commercialization helps to generate unrestricted resources for nonprofit organizations, with a profit-seeking logic, nonprofit organizations might also deviate from their mission and social function. And paradoxically, commercialization might negatively affect organizational legitimacy, and in turn leading to a reduction in financial support from the public.

This myth is a result of insufficient and inconsistent empirical evidence. At least three problems create barriers preventing scholars and practitioners from in-depth understanding of social enterprise. First, the unit of analysis is difficult to identify because of the lack of conceptual consensus. Yet, empirical studies could be facilitated if a clear conceptualization was available. It is particularly difficult when the definitions of social enterprise are broadened to intangible organizational features such as innovation, entrepreneurial leadership, as well as organizational culture. One potential remedy for this problem is to consider social enterprise as a symbolic organizational type and analyze its interactions with the external institutional environment. Or, instead of taking

social enterprise as a specific type of organization with a clear definition, an alternative strategy is to unpack social enterprise through a social service and development approach and explore how elements within the social enterprise toolkit lead to different organizational process and service outcomes. Understanding the nature and interactions between business strategies and social purpose will be particularly helpful to inspire and guide current nonprofit social service organizations to conduct organizational reform through business-like approaches.

Second, theoretical discussions fail to cover all crucial determinants of nonprofit organizational success. A major debate on commercialization in the nonprofit sector focuses largely on changing of organizational behavior and the social function of commercialization, but less focus has been on external stakeholders, such as donors, consumers, government agencies, and others who are important sources of organizational legitimacy. Legitimacy is a multi-dimensional concept for institutions which acts as a key element that relates to organizational survival and success (Deephouse, Bundy, Tost, & Suchman, 2017). However, the legitimacy of social enterprise has yet been formalized due to its hybrid nature and organizational logic. How do social enterprises gain legitimacy? An early discussion by Dart (2004) justifies the legitimacy of social enterprises through the lens of Suchman (1995)'s typology, including pragmatic legitimacy, moral legitimacy, and cognitive legitimacy. However, recent legitimacy literature suggests a more complex composition of organizational legitimacy, which requires social enterprise scholars to revisit the legitimacy issue, especially from an empirical perspective.

Third, though there have been large numbers of qualitative studies on social enterprises showing how complex and challenging the hybrid model is, these grounded observations have not been verified through rigorous tests on causal relationships. Only through contributions from both qualitative and quantitative methods can scholars establish a systematic paradigm for social enterprise studies and provide practitioners and policymakers with effective approaches for social service delivery.

Confronting the above challenges, this dissertation uses two quantitative studies to explore the path toward a better understanding of the role of commercialization in the nonprofit sector using the case of the social enterprise phenomenon. The overarching research question is: What are the costs and benefits of commercialization in nonprofit social service organizations? The question will be addressed empirically from two perspectives regarding the survival and success of nonprofit organizations. The first study presented in Chapter 3 explores how, if at all, commercialization influences public perceptions of nonprofit legitimacy using social enterprises in social service markets as a scenario. While recognizing the difficulty of conceptualizing a hybrid organization, Chapter 3 consider social enterprise as a symbolic signal of uncertain type of organization and explores how the public perceives and makes legitimacy evaluations for these types of organizations in the social service market. Building on the most recent developments of legitimacy theory which connects social psychology and institutional theories, Chapter 3 uses an online survey experiment to test the proposition that people will rely on cognitive heuristics—i.e., sector information—to judge the legitimacy of social enterprise. This I term the sector stereotype model. The study hypothesizes profit-

seeking intentions which are a core logic of commercialization will lead to a lower level of legitimacy compared to non-profit-seeking intentions.

The study in Chapter 4 addresses the financial impacts of commercialization in higher education. In this study, I deconstruct social enterprise and focus on the effect of research commercialization, presented by the growth of technology transfer, on universities' credit ratings which can have substantial influence on a university's financial capacity. There has been a substantial discussion about whether research commercialization will lead to mission replacement in universities. From a financial perspective, this study hypothesizes that as research commercialization increases universities' revenue, its potential positive effect on the legitimacy of universities will lead to an increase in organizational abilities to generate other kind of resources. Thus, effective research commercialization will lead to higher credit ratings. Findings from both studies should contribute to the extant nonprofit commercialization and social enterprise literature.

Chapter 3: The Sector Stereotype of Social Service Providers

3.1 Introduction

Commercialization is seen as incompatible with the social mission of nonprofit organizations, which is reflected by the boundary between the nonprofit and the for-profit sector. However, boundaries between the nonprofit and for-profit sector in social services have become increasingly blurred. Driven by isomorphic forces and economic considerations, traditional social service providers in the nonprofit sector are borrowing commercial strategies and business practices to increase their organizational capacity for mission attainment (Bromley & Meyer, 2017). Despite these blurred boundaries, tax policies, research, and educational and training programs are all established upon a belief about the uniqueness of “nonprofitness”. As such, whether, and the way in which, nonprofit service providers are distinct from their for-profit competitors remains an important question for scholars, service providers, and policymakers (Child, Witesman, & Braudt, 2015; Knox, Blankmeyer, & Stutzman, 2006).

Early evidence suggests that nonprofit organizations behave and perform differently from their for-profit counterparts (e.g., Amirkhanyan, Kim, & Lambright, 2008). However, “nonprofitness” is not only about diverse organizational behaviors of providers in the social service market, it also evokes ideological reactions and public perceptions that determine the social service provider’s success in an ecological system in which nonprofits, for-profits, and public agencies compete (P. J. DiMaggio & Anheier, 1990). Compared to current theories and current understanding of nonprofit organizations’ unique management and performance functions, we have limited understanding of the ways in which the public perceives the difference between

competing sectors in the social service market is limited. Therefore, the purpose of this study was to investigate nonprofit organizations' perceived uniqueness from the general public's perspective. Specifically, the study was designed to answer the research question: How, if at all, are nonprofit service providers perceived differently from their for-profit counterparts?

The study first theorizes a psychological mechanism that renders different understandings of nonprofit and for-profit service providers. Under uncertainty, people follow a heuristic judgment model to make judgments and decisions in regard with the social service provider. This study posits and examines a stereotyping process in this heuristic judgment model through which people perceive the organization stereotypically only by knowing that the organization is nonprofit or for-profit. Sector information acts as an important cognitive heuristic for individuals to categorize the organization into a group of organizations with the same not-for-profit or for-profit intention. Then, people substitute their judgment based on a stereotypical understanding on the group of organizations to make their judgment about the specific organization. I also explore whether people prefer to use information with social influence, such as other people's evaluation, instead of sector information to judge the organization.

I rely on the stereotype content model (SCM) to operationalize the perceptual elements of nonprofit and for-profit status, which is defined through warmth and competence. For hypothesis testing, I conducted two online survey experiments that manipulated both the sector and information for people's evaluation of a social enterprise in two service areas: the daycare and recycling industries. Findings from both experiments show that the nonprofit is perceived to be warmer than its for-profit

counterpart, while the difference of perceived competence is relatively small. In addition, the findings also suggest that the stereotypical difference between the nonprofit and the for-profit mainly results from people's repugnance against profit-seeking intentions in the social service market. The study makes theoretical contributions to the sector boundary literature by confirming the existence of the sector stereotype and exploring its potential mechanism and outcomes. It also provides practical implications for nonprofit managers and social entrepreneurs on marketing and communication strategies.

The remainder of this article begins with an overview of perceptual differences between nonprofit and for-profit organizations, and then posits a link between the public's perceptions of social enterprises and sector information using a heuristic judgment model upon which the hypotheses are established. Next, the article introduces the experimental design, outlines the process, and overviews the findings before concluding with a discussion of implications.

3.2 Nonprofits and For-profits: Perceptual Differences and Consequences

3.2.1 Public Perception, Resource Generation, and Legitimacy

Public perceptions are crucial in establishing legitimacy and generating resources for social service organizations. Legitimacy is "...a generalized perception of organizational actions as desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions" (Suchman, 1995, p. 574). Legitimacy rests "in the eye of the beholder" (Ashforth & Gibbs, 1990, p. 177) or "within the psyches of social actors" (Zimmerman & Zeitz, 2002, p. 418). Legitimacy is a key resource for organizations because it brings important consequences. Thus, it plays a

critical role in social and economic exchanges, as most stakeholders will interact only with legitimate organizations (Deephouse et al., 2017).

The formation and change of organizational legitimacy is a function of how individuals perceive the organization on a micro level and how individual's perception interacts with collective perception on a macro-level. Therefore, public perception is a direct reflection of organizational legitimacy granted by the people. Recent studies have shown that organizational legitimacy is a perception formed through a multilevel process. At a micro level, an organization's individual evaluators act as the source of legitimacy with respect to perceptions of the organization's macro-level properties. These evaluators consult and communicate opinions within a group, render their judgments, and act based on those judgments (Bitektine, 2011; Suddaby et al., 2017; Tost, 2011). At a macro-level, a collection of individuals' judgments represents legitimacy in the form of validity, and validity is an important social cue for individuals when evaluating future legitimacy. Therefore, the formation of legitimacy is a cycle of interactions between individual evaluations of the organization and macro-level public perceptions.

Organizational legitimacy can be granted by different stakeholders in the environment, including policy makers, key evaluators, rating agencies, and people in the public. Public perceptions are particularly important for social service organizations, because audiences' judgments influence the organization's financial and social support significantly (McDougle & Lam, 2014; Moore, 2000; Schlesinger, Mitchell, & Gray, 2004). Indeed, experimental evidence has shown that people are more likely to purchase products from organizations that they perceive are competent (Aaker, Vohs, & Mogilner, 2010), while they are less likely to purchase products from organizations that they

perceive are immoral or greedy (Lee, Bolton, & Winterich, 2017). The behavioral consequences of perception can be understood further through the SCM (Fiske, 2018; Fiske, Cuddy, & Glick, 2007b; Fiske, Cuddy, Glick, & Xu, 2002).

3.2.2 Public Perception: The SCM

Perception is a broad concept that covers different psychological concepts. Previous nonprofit studies have used trust (Schlesinger et al., 2004), confidence (McDougle & Lam, 2014), and public attitudes (O' Neill, 2009) to operationalize public perceptions of nonprofit organizations. More recently, a growing body of literature suggests that people make perceptual judgments based on two basic psychological traits, warmth (e.g., friendliness, trustworthiness, empathy, and kindness) and competence (e.g., intelligence, power, effectiveness, efficacy, and skillfulness), which lead to substantially different behavioral outcomes (Cuddy, Glick, & Beninger, 2011). While perceived warmth and competence have been introduced and proven to play significant roles in judging other people and social groups, some literature has extended these traits to explain the way people judge organizations (Aaker et al., 2010; Dreves, Tscheulin, & Lindenmeier, 2014). Indeed, the modern institutional environment personifies current organizations increasingly, and therefore organizations are perceived as autonomous, coherent, and morally responsible actors (Zucker, 1987).

People's perceived warmth and competence will lead them to engage in different behaviors toward both individuals and organizations. For example, Todorov et al. (2005) found that political candidates' facial appearance produces variations in voters' perceptions of their competence, which influences voting outcomes causally. Cuddy et al.'s (2007) Behaviors from Intergroup Affect and Stereotypes (BIAS) Map shows that

different levels of a specific social group's perceived warmth and competence can form stereotypes, which then lead to relevant behaviors, such as helping and cooperation. People's perceptions of warmth and competence also affect their behaviors with respect to the focal organization. For instance, both Aaker et al. (2010) and Lee et al. (2017) provided experimental evidence that people are more likely to buy products from suppliers they perceive are more competent and warmer.

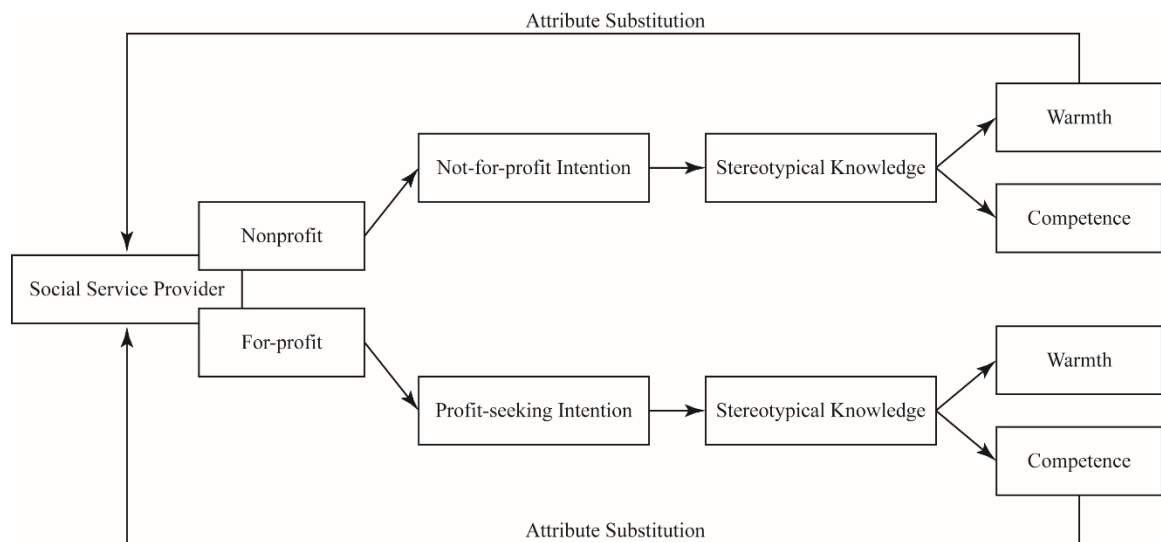
In summary, variations in the focal organization's perceived warmth and competence can determine whether people are willing to interact with it. Therefore, it is worthwhile to examine factors that influence people's perceptions of social service organizations' warmth and competence. In this article, I propose sector information as an important judgment heuristic that affects people's perceptions of an organization's warmth and competence within the social service industry.

3.2.3 The Sector Stereotype

People use heuristics to make judgments (Kahneman & Frederick, 2005; Tversky & Kahneman, 1974). When certain information is considered a heuristic, people unconsciously use their judgments of the heuristic as a substitute for their judgments of the subject itself. As the nonprofit vs. for-profit label is culturally loaded and often evokes ideological reactions (P. J. DiMaggio & Anheier, 1990), sector information can be considered an important cognitive heuristic which signals the intention of the organization and triggers the stereotyping process. Stereotyping is an automatic, effortless categorization process in people's mind (Fiske & Taylor, 2017). When knowing the for-profit or not-for-profit intention of the organization, people automatically categorize the organization into a group of organizations with the same

intentions. That is, being a nonprofit or for-profit represents a prototypical or stereotypical exemplar, the properties of which are used as heuristic attributes to evaluate organizations of the same category. In this study I posit that people will judge nonprofit and for-profit organizations differently based on their stereotypical understandings of the nonprofit and for-profit sectors, which loads on warmth and competence traits. Figure 3.1 illustrates the theoretical framework which combines the heuristic judgment model and SCM.

Figure 3. 1 The Sector Stereotype: A Theoretical Framework



This study uses social enterprise to understand perceptions of sector differences between nonprofits and for-profits. Because they do not fit any established organizational category that provides them an appropriate base for official legal incorporation (Galaskiewicz & Barringer, 2012), social enterprises can be registered as either a nonprofit or for-profit firm, which allows us to observe the way that sector information matters to organizations with similar purposes and logics. Given that scholars often face challenges in conceptualizing social enterprise (see Young & Lecy, 2014 for a

discussion), without consensus on the definition of social enterprise, people may be more like to rely on sector information and other cognitive heuristics to judge these organizations.

Proposition: People will judge social enterprises based on sector information, and their judgments will be similar to their perceptions of organizations in either the for-profit or nonprofit sector.

3.3 Hypotheses

3.3.1 Nonprofit vs. For-profit: Difference in Perceived Warmth

Empirical evidence has shown that people perceive that nonprofit organizations are warm (Aaker et al., 2010; Dreves et al., 2014; Lee et al., 2017). Previous studies have identified two mechanisms that explain this perception. First, organizations registered as “nonprofit” are subject to a non-distributive constraints. Therefore, they are less likely to take advantage of information asymmetry to reduce services quality. Nonprofit organizations, then, are perceived to be more trustworthy in public service delivery (Handy et al., 2010) and are considered an effective remedy for contract failure (Hansmann, 1980). The second mechanism influencing nonprofit organizations’ perceived warmth is the current social knowledge of the nonprofit sector. Social conformity theory suggests that people’s perceptions of one organization are subject to isomorphic pressures and social consensus (Suddaby et al., 2017). Thus, one of the important factors that leads to positive perceptions of the nonprofit sector is its reputation for charitable and benevolent missions and behaviors. This is particularly true in the U.S. because of nonprofits’ historically long-term efforts and activities in charitable issues and

social services. Meanwhile, the government endorses such deeds by providing the sector with policy advantages, most importantly, tax-exempt status (Hansmann, 1981).

Nonprofits' reputation for benevolence is also established and disseminated through communications and marketing during fundraising campaigns, which are often facilitated through social networks today. Therefore, although people may have limited knowledge about the non-distribution constraint, empirical studies show that people perceive that nonprofit organizations are warm and trustworthy.

In contrast, people have emotionally negative perceptions of for-profit organizations' warmth mainly because of their profit-making intention. Hansmann (1980) has argued that for-profit service providers are more likely to take advantage of information asymmetry to maximize profits. Indeed, research has shown that people may use intention as a heuristic in judging outcomes (Fiske et al., 2007b), and a for-profit intention often results in a zero-sum market exchange. That is, the only way sellers can benefit more is to exploit value from buyers. Because people are sensitive and strongly motivated to avoid exploitation, defensive measures against profit-seeking intentions will be triggered (Campbell & Kirmani, 2000). Therefore, people hold anti-profit beliefs and perceive that profit-seeking intentions are socially immoral (Bhattacharjee et al., 2017). In addition, the presence of a for-profit motive increases perceptions about the harmfulness of firms. Indeed, for-profit service providers may become involved in cream-skimming behaviors—a form of statistical discrimination that indicates that service providers select perceived “cost-efficient” clients intentionally based on stereotypes of racial or age groups (Jilke et al., 2018). There has been considerable empirical evidence that has confirmed people's negative perceptions of for-profit firms

(Aaker et al., 2010; Dreves et al., 2014; Handy et al., 2010; Lee et al., 2017; Schlesinger et al., 2004). Thus, it can be expected that:

H1: People will perceive that nonprofit social enterprises are warmer than for-profit social enterprises.

3.3.2 Nonprofit vs. For-profit: Difference in Perceived Competence

The research on competence, or the differential performance between the nonprofit and for-profit sectors, has now developed two competing understandings. On the one hand, nonprofit organizations are perceived to be incompetent. Salamon (1989) suggested that the nonprofit sector exhibits philanthropic amateurism because "...for a considerable period of time, the problems of poverty and want were attributed to the moral turpitude of the poor," and therefore the beneficiaries require more "...moral suasions and religious instruction but not medical aid or job training" (p. 42). However, this situation has changed because of the increasingly instrumental roles that nonprofit organizations play in social service delivery, especially as hired agents of the government (Lipsky & Smith, 1993). Other scholars have suggested that nonprofit organizations are incompetent because of their organizational culture. The nonprofit sector is known to be warm and friendly, while its competence and other related performance indicators are not included in job promotion and evaluation systems (Aaker et al., 2010).

On the other hand, competing empirical findings have suggested that nonprofits can sometimes be judged as *more* competent than are their for-profit counterparts. Two theoretical reasons may be able to reconcile this disparity, both of which relate to the specific service that the organization provides. First, people make judgments based on cognitive heuristics that cue their related experiences (Kahneman & Frederick, 2002). A

survey of 14,423 nursing homes suggested that nonprofit organizations perform better than their for-profit counterparts with respect to service quality (Amirkhanyan et al., 2008). Such collective judgments of nonprofit and for-profit providers' performance in a particular industry then could create a social consensus, which provides heuristics allowing people to make judgments. Second, competing arguments with respect to nonprofits' competence can be expected because of the anti-profit beliefs aforementioned. These beliefs consider profit orientation to be greed, and sometimes, immoral. Recent evidence has demonstrated that moral judgments are related causally to perceived competence through an evaluation of social intelligence, which is characterized as "...effectively navigating complex social situations" (Stellar & Willer, 2018, p. 197). This indicates that observing (or perceiving) immoral behavior leads to a perceived failure of the agent in understanding another person's thoughts and feelings, the unwillingness to adapt effectively to changing situations, and a failure to adhere to social norms society holds deeply and values as most important. In turn, organizations with overt prosocial missions will yield to negative moral judgments of their profit-seeking intentions, which ultimately undermine people's perceived competence and intentions to support these organizations financially (Lee et al., 2017). Considering the theories and evidence supporting both sides of these competing arguments, I proposed the following hypotheses to explore the complexity of perceived competence:

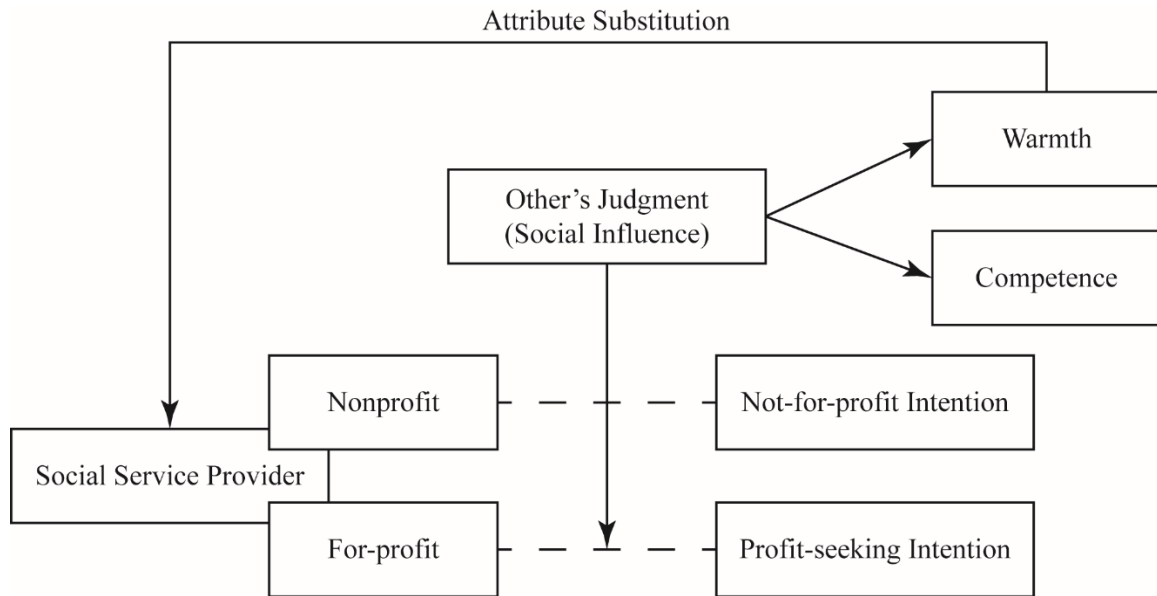
H2a: People will perceive that for-profit social enterprises are more competent than are nonprofit social enterprises.

H2b: People will perceive that nonprofit social enterprises are less competent than are for-profit social enterprises.

3.3.3 Social Influence as a Moderator

Despite the important heuristic function of sector information, people may place more weight on other types of information, especially information with social influence such as other people's judgments. Figure 3.2 illustrates the theoretical process of the moderating effect of social influence information. Judgment from others is a typical cue of validity that people use to make judgments through a passive evaluation process to conserve cognitive energy (Tost, 2011). It is used because people are likely to control their own opinions and behaviors to maintain congruence between individuals and groups based on social conformity theory. Thus, when information about the collective judgment of the focal social enterprise is available, potential service recipients will rely more on social influence information than on sector information to make an individual judgment that is highly congruent with collective judgments. This argument is also in line with social influence theory which suggests that people tend to conform with the evaluation and judgments from others to have a more accurate interpretation of the reality and act correctly. This study focuses on the way that positive collective judgment moderates the effect of sector information. In summary, I expect that a positive collective judgment of a social enterprise will moderate the perceptual difference attributable to variable sector information.

H3: The availability of others' judgment will weaken sector information's effect on people's perception.

Figure 3. 2 Moderating Effect of Others' Judgment

3.4 Methods

This study examined whether and in what way people perceive nonprofit and for-profit social enterprises differently. It also investigated the way collective judgment information interacts with sector information in people's cognitive processes. This study used two online survey experiments to test the hypotheses, each of which had a 3 (no sector information vs. nonprofit vs. for-profit) \times 2 (no collective judgment vs. positive collective judgment) factorial design. Study 1 was set in the daycare industry, and Study 2 was set in the recycling industry with using same design in Study 1. In both studies, subjects were required to judge a hypothetical social enterprise. The experiment uses social enterprise as a case to detect the effect of sector stereotype. This strategy helps to clear out people's previous understanding of prototype organizations in certain area

which might lead to consistent judgment without the influence from sector tags. As an innovative type of organization, a social enterprise creates uncertainty for judgment and evaluation because there is no consensus of the definition of social enterprise. In such situation, people are more likely to use the sector tag as a categorization signal to judge the social enterprise following the theoretical framework proposed in Table 3.1, and people's inconsistent understandings of social enterprises will not systematically influence the internal validity after randomization.

3.4.1 Study 1: Daycare Industry

Study 1 used a vignette that included information about a hypothetical social enterprise in the daycare industry. The daycare market in the U.S. is an important subarea of social service and consists of a mix of both nonprofit and for-profit providers with no dominant type of firm. Therefore, the sector information on social enterprises in the industry was considered a cognitive heuristic the public uses to make judgments in a mixed market with uncertainties. The vignette included two factors: information on the sector and collective judgment. Differential sector information was applied in three groups: a control group without any sector information about the social enterprise, a treatment condition that identified the social enterprise as a nonprofit organization (nonprofit group), and a treatment condition that identified the social enterprise as a for-profit business (for-profit group). Including a control group ensured an appropriate baseline was available with which to observe the effect of nonprofit or for-profit status. In addition, comparisons between the treatment and control groups helped explore whether people have only positive perceptions of one type of social enterprise without

negative perceptions of the other, or the converse. The sector information was manipulated across these groups in the following ways:

- 1) Different organizational tags were used.
 - a) No sector information tag for the social enterprise in the control group.
 - b) “Nonprofit organization” tag for the social enterprise in the nonprofit group.
 - c) “For-profit business” tag for the social enterprise in the for-profit group.
- 2) The domain name of the contact email address was manipulated as “.net” for the neutral group, “.org” for the nonprofit group, and “.com” for the for-profit group (Aaker et al., 2010; Lee et al., 2017).
- 3) The mission statement of each scenario began with the sector information about the social enterprise and read: “As a [no information]/nonprofit/for-profit social enterprise...”

Collective judgment information was manipulated according to two conditions: one provided 54 evaluators’ four-star rating, and the other included no rating information. The 3×2 factorial design ultimately led to six experimental groups (see Appendix Figure 1).

3.4.2 Study 2: Recycling Industry

Study 2 differed from Study 1 only by its service context—recycling industry. Similar to the U.S. daycare industry, the recycling market also is highly competitive and includes both nonprofit and for-profit firms. Study 2 was motivated by theoretical concerns. It examined the ability to generalize Study 1’s experimental results to other social service fields. It is possible that people’s stereotypical understandings of nonprofit and for-profit organizations differ because of the high heterogeneity across kinds of

services (P. J. DiMaggio & Anheier, 1990). In addition, it is expected that moral judgments' effect on competence is more pronounced when people judge competence in fields with substantial social aspects (services) than fewer social domains (physical products). Compared to daycare, which supplies human services, recycling is a technical service (Walker, Lee, James, & Ho, 2018). Such a difference is associated with variations in moral standards that allow me to test the complex role of perceived competence (see H2a and H2b). Thus, Study 2 followed the design of Study 1, kept all manipulations the same, and used only a different logo, name, and mission statement for the hypothetical social enterprise.

3.4.3 Participants

A total of 1,210 participants (43% Female, $M_{age}=36$) were recruited through Amazon Mechanical Turk (MTurk), which is a crowdsourcing web service in which anonymous online workers complete web-based tasks for money, and it has been accepted widely as a legitimate source of participants for experimental research (Crump, McDonnell, & Gureckis, 2013; Paolacci, Chandler, & Stern, 2010). Participants were compensated US\$ 0.50 after finishing both studies. Two participants were eliminated because their surveys were incomplete.

3.4.4 Procedure

Participants were required to take the survey experiment through the Qualtrics interface. After reading the introductory information, they were assigned randomly to one of the six groups in Study 1 or 2. In both studies, after they read the vignette, participants were asked to report their perceptions of the social enterprise about which they had just read with respect to 12 traits of warmth and competence with response options that

ranged from -50 (not at all) to 50 (very much). The traits rated included three high and three low traits from each dimension (high warmth: warm, caring, generous, $\alpha=0.80$; low warmth: mean, unfriendly, selfish, $\alpha=0.89$; high competence: competent, effective, efficient, $\alpha=0.86$, low competence: slow, weak, disorganized, $\alpha=0.90$). All traits appeared randomly in two question blocks to avoid any order effects. The survey also measured people's donation and purchase intentions, which might be associated with their reported perceptions. After they finished one study, participants were asked to follow the same procedures in the next study. We realized that participants might determine the purpose of the experiment and read the vignette in the second study with specific intentions. Therefore, the order in which the two studies was presented was randomized to statistically minimize biases in the outcome variables. After they completed all questions in both studies, participants provided basic demographic information, including their gender, age, race, education, income, employment, and political ideology. Questions that assessed attention and a manipulation check also were included in the survey and appeared in random order.

3.4.5 Analysis

The data analysis was conducted with ANOVA and difference-in-means tests. The results reported below derive from the analysis of all respondents ($N=1,208$). However, the attention check question ("Please move the slide to 20") did detect 103 problematic responses. I compared the results with and without these problematic responses and found no substantial alternative findings, therefore, results from a full sample are reported here.

Table 3. 1 Descriptive Data and ANOVA Results (N=1,208)

Warmth		Day Care			Recycling		
		Nonprofit	Forprofit	Neutral	Nonprofit	Forprofit	Neutral
With Rating	Mean	53.22	37.06	51.26	49.69	33.53	41.58
	SD	34.82	34.77	32.10	34.06	34.45	32.34
Without Rating	Mean	53.19	35.91	49.61	45.25	29.63	48.20
	SD	34.12	37.91	33.69	33.26	32.18	32.41
<i>ANOVA</i>		df	F	Eta-Squared	df	F	Eta-Squared
Sector		2	26.77***	0.0427	2	26.69***	0.0426
Rating		1	0.22	n.s.	1	0.09	n.s.
Sector × Rating		2	0.06	n.s.	2	3.53**	0.0059

Competence		Day Care			Recycling		
		Nonprofit	Forprofit	Neutral	Nonprofit	Forprofit	Neutral
With Rating	Mean	47.12	39.43	43.84	50.50	44.00	43.40
	SD	34.13	34.79	30.62	36.09	33.51	33.40
Without Rating	Mean	44.44	41.75	42.75	45.69	43.83	49.67
	SD	35.68	34.46	32.01	34.62	32.85	31.68
<i>ANOVA</i>		df	F	Eta-Squared	df	F	Eta-Squared
Sector		2	2.41*	0.0040	2	1.58	n.s.
Rating		1	0.06	n.s.	1	0.05	n.s.
Sector × Rating		2	0.58	n.s.	2	2.72	n.s.

Note: 1) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$;
 2) n.s. means not statistically significant.

Table 3. 1 Descriptive Data and ANOVA Results Cont. (N=1,208)

Willingness to Purchase		Day Care			Recycling		
		Nonprofit	Forprofit	Neutral	Nonprofit	Forprofit	Neutral
With Rating	Mean	25.48	19.45	22.07	25.14	18.53	23.58
	SD	19.37	21.76	17.38	20.78	24.80	17.76
Without Rating	Mean	21.84	14.37	19.69	23.56	18.33	22.63
	SD	21.95	23.91	19.70	21.92	20.75	19.96
<i>ANOVA</i>		df	F	Eta-Squared	df	F	Eta-Squared
Sector		2	10.76***	0.0177	2	8.87***	0.0146
Rating		1	9.55**	0.0079	1	0.56	0.0005
Sector × Rating		2	0.42	n.s.	2	0.11	n.s.

Willingness to Donate		Day Care			Recycling		
		Nonprofit	Forprofit	Neutral	Nonprofit	Forprofit	Neutral
With Rating	Mean	19.36	7.18	10.57	16.48	8.07	15.03
	SD	21.97	30.68	26.32	25.25	30.25	24.34
Without Rating	Mean	16.58	5.10	11.68	14.10	7.53	17.36
	SD	25.10	29.99	26.87	28.91	28.40	22.12
<i>ANOVA</i>		df	F	Eta-Squared	df	F	Eta-Squared
Sector		2	19.74***	0.0319	2	11.97***	0.0195
Rating		1	0.65	n.s.	1	0.02	n.s.
Sector × Rating		2	0.59	n.s.	2	0.79	n.s.

Note: 1) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$;

2) n.s. means not statistically significant.

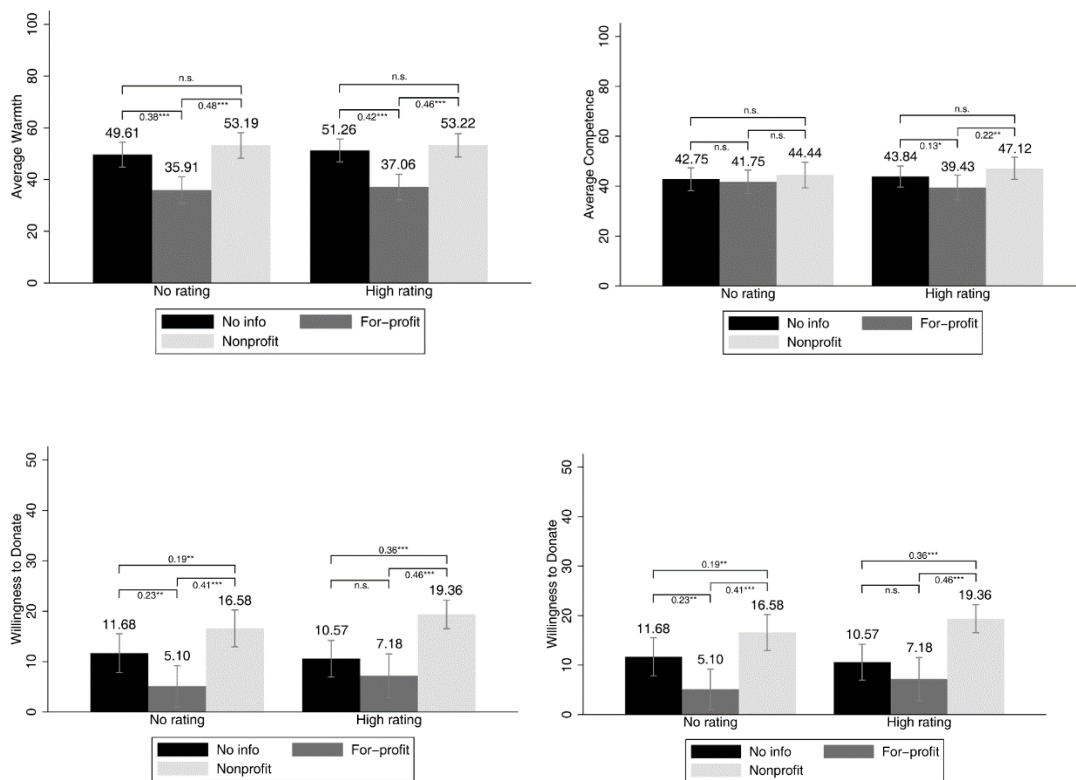
3.5 Results

3.5.1 Study 1: Daycare Industry

The experiment was designed to examine: 1) whether people perceive nonprofit and for-profit social enterprises differently; 2) to what extent, if any, collective judgment information affected the outcomes. Table 3.1 reports the means and standard deviations of each outcome as well as the results of omnibus ANOVA tests. In this vignette, sector information had a significant treatment effect, while collective judgment represented by star ratings was not statistically significant. Additionally, the interaction between sector information and collective judgment was not statistically significant. Figure 3.3 illustrates the mean differences with 95% confidence interval. The results suggest that people perceive that nonprofit social enterprises are significantly warmer than for-profits (Cohen's $d=0.46$ in the high rating condition, $p<0.001$; Cohen's $d=0.48$ in the no rating condition, $p<0.001$). However, sector information did not appear to influence perceived competence, although participants perceived that nonprofit social enterprises were slightly more competent than are for-profit enterprises (Cohen's $d=0.22$, $p=0.0231$), but only when collective judgment information was available. It also is worth noting that from a perceptual perspective, participants did not judge the nonprofit and the social enterprise without sector information significantly differently. Therefore, rather than indicating that participants perceived nonprofit social enterprises more positively than for-profit social enterprises, they exhibited less preference for for-profit social enterprises compared to both nonprofit social enterprises and those without any sector information. The experiment also measured participants' willingness to purchase and donate under different conditions. The results show that those in the nonprofit condition reported a

significantly greater willingness to purchase (Cohen's $d=0.29$ in the high rating condition, $p=0.0028$; Cohen's $d=0.33$ in the no rating condition, $p=0.0014$) and donate (Cohen's $d=0.46$ in the high rating condition, $p<0.001$; Cohen's $d=0.41$ in the no rating condition, $p<0.001$) than did those either in the for-profit condition or the control condition, except that there was no significant difference between their willingness to purchase in the nonprofit condition and the control condition when there was no collective judgment information. Again, in general, the for-profit social enterprise in the daycare vignette was the one with which participants were least likely to interact.

Figure 3. 3 Mean Differences in Day Care Vignette



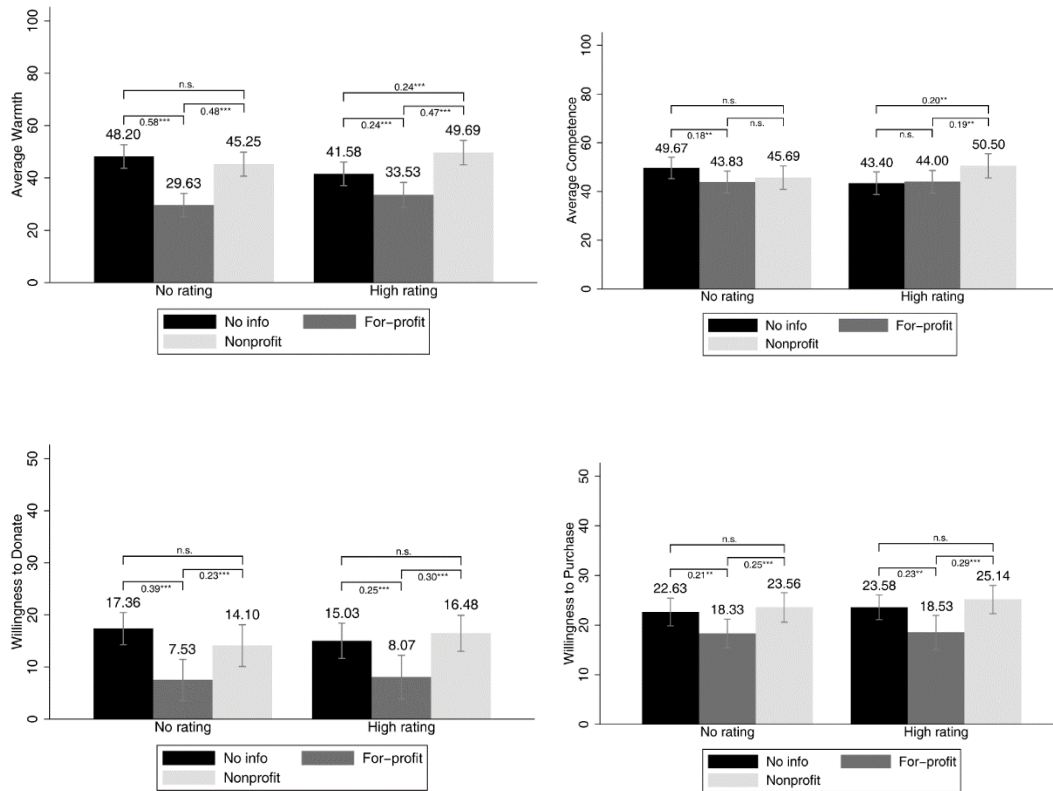
Note: 1) Cohen's d for difference-in-mean t -test reported.

2) * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

3) n.s. means not statistically significant.

3.5.2 Study 2: Recycling Industry

The results from Study 2 nearly mirrored those from the daycare vignette. The right panel of Table 3.1 suggests that the sector information, whether for a nonprofit, for-profit, or the group that presented no sector information, was a significant factor that resulted in differences in participants' perceived warmth and competence with respect to the social enterprise, as well as their willingness to purchase and donate. However, neither the collective judgment information nor its interaction with sector information was statistically significant. Figure 3.4 reports the mean differences with 95% confidence interval in the recycling vignette. People reported a significantly lower level of perceived warmth (Cohen's $d=0.47$ in the high rating condition, $p<0.001$; Cohen's $d=0.48$ in the no rating condition, $p<0.001$) and competence in the for-profit condition than in the nonprofit (Cohen's $d=0.19$ in the high rating condition, $p=0.061$; not significant in the no rating condition) or the neutral condition (not significant in the high rating condition; Cohen's $d=0.20$ in the no rating condition, $p=0.0721$). While the difference in perceived competence was mixed, the effect sizes of the significant differences were relatively trivial. Figure 3.4 also shows that people reported significantly least willingness to purchase and donate in the for-profit condition, while there was no difference in willingness to do so between the nonprofit and control conditions.

Figure 3. 4 Mean Differences in Recycling Vignette

Note: 1) Cohen's *d* for difference-in-mean *t*-test reported.
 2) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
 3) *n.s.* means not statistically significant.

3.6 Discussion

Differences between nonprofit and for-profit providers have important implications for the development of theory in nonprofit organizations. It also is important for policymaking in social service organizations and social entrepreneurs' sector choices, as well as understanding consumer and donor behaviors. However, studies have suggested that the boundary between the nonprofit and for-profit sector is becoming blurred, especially because nonprofit organizations are relying increasingly on commercial income and selling social services in the market just as their for-profit counterparts. Based on the SCM, from a perceptual perspective, this study revealed the

existence of organizational stereotypes that can influence organizations' resource generation and legitimacy. Using social enterprise as a case, this study established a theoretical framework by connecting the model of heuristic judgment and organizational stereotype. Specifically, the study experimentally examined: 1) The way people perceive nonprofit and for-profit social enterprises differently, if at all, and 2) The extent of such perceptual differences, if any.

Findings from the experiment supported the previous argument that there is a stereotypical sector difference from a perceptual perspective. This, however, was not completely consistent with previous evidence of organizational stereotypes. In this experiment, nonprofit social enterprises were perceived to be warmer than were for-profits. In contrast, the experimental results showed that for-profits were perceived to be *less* competent than were nonprofits, although the effect size was relatively small. In addition, by adding a control condition in which no sector information was presented for the social enterprise, the study found that the effect of sector information was *asymmetric*. That is, there was only a minor perceptual difference between a social enterprise without sector information and a nonprofit social enterprise. Therefore, rather than maintaining that sector differences are important, it is reasonable to claim that for-profit status matters. People downgrade for-profit service providers perceptually compared to other types of service providers. This finding is consistent with previous evidence of people's repugnance against for-profits, which suggests that profit-seeking is perceived to be immoral (Bhattacharjee et al., 2017). As the profit-seeking intention competes with the moral value required in the social service market, especially when the social mission is salient, for-profit organizations are less likely to be accepted as

appropriate social services providers. This finding reaffirms Hansman's claim (1980) that people place more trust in nonprofit than for-profit service providers. On the other hand, the positive factor in profit-seeking, such as market competition, which stimulates innovation, did not seem to influence people's perceived competence of for-profit providers. On the contrary, for-profit social enterprises were perceived to be least competent across the three experimental conditions, although the effect size was relatively small. Two potential mechanisms might explain this finding. First, nonprofits are perceived to be more competent than are for-profits because of the halo effect of the warm trait, which indicates that when people perceive that one organization is warm, they will perceive that it is competent automatically (Nisbett & Wilson, 1977). However, the halo effect cannot explain why people have different perceptions of warmth and competence in different experimental settings (Aaker et al., 2010; Dreves et al., 2014; Lee et al., 2017). Second, the perceived immorality of the profit-seeking intention might indicate that the organization has a lower level of social intelligence, which mediates the relation between profit-seeking intention and perceived incompetence (Stellar & Willer, 2018), for which further investigations are needed.

This finding implies that sector difference is not defined only by the institutional logic behind the sector tag, but also the social cognition of audiences in different markets (P. J. DiMaggio & Anheier, 1990). People prefer the implicit notion of a nonprofit, which contains important moral and instrumental values in certain service industries where service quality is difficult to measure and low quality constitutes unacceptable risk (Hansmann, 1980). While institutional isomorphism urges social service organizations to be more commercialized for financial capacity and sustainability, pressures from the

public's stereotypical understanding of nonprofit or for-profit organizations require social service organizations to conceal their profit-seeking intentions. Therefore, sector boundaries will continue to exist until the public abandons its stereotypical understanding of the sector tag, and changes the standard of legitimization, which diminishes conflicts between profit-seeking intention and social missions; otherwise, nonprofit organizations have to maintain their nonprofit image without showing any behaviors abnormal to a nonprofit stereotype in the public's eyes. The significant difference in the warmth trait and limited difference in the competence trait might indicate that people's preference for nonprofits in social service is highly emotional and unstable (Cuddy et al., 2011). The stereotypical cognition of high warmth might lead to a higher expectation of moral standards, and when immoral behaviors are disclosed, such as scandal, fraud, or profit-seeking intentions such as the most recent admission policy reform by Metropolitan Museum of Art in New York City, the loss of legitimacy and reputation might be more serious in the nonprofit than in the private sector. Thus, while high warmth might lead to more resources and legitimacy, it also indicates more resource investment in meeting moral expectations by increasing financial transparency and accountability management.

The sector stereotype, or people's repugnance against for-profit status in social service markets, has important implications for organizations' resource generation. Findings from the experiment showed that, regardless of the vignette, people were more likely to interact (purchase and donate) with the nonprofit than the for-profit social enterprise, and the difference in people's willingness between the nonprofit condition and those in the control condition was not significant in the recycling vignette but was in the daycare vignette. Therefore, compared to a nonprofit social enterprise, a social enterprise

with profit-seeking intentions might have significantly fewer potential customers and generate less financial support from fundraising events. The former is particularly important for service providers that generate major revenue from market transactions with customers. However, the design of this study did not allow us to observe whether the for-profit sector information had a causal effect on the difference in willingness to interact through the perceived immorality reflected in the trait of warmth. Bootstrap mediation tests were conducted following Preacher and Hayes (2008) and Zhao, Lynch, and Chen (2010), and the results reported in Appendix Figure 2 revealed that warmth is a partial mediator through which for-profit status influences people's willingness to purchase and donate adversely in both the daycare (willingness to purchase: 95% CIs [-4.01, -1.92]; willingness to donate: 95% CIs [-2.81, -0.98]) and recycling vignette (willingness to purchase: 95% CIs [-3.65, -1.73]; willingness to donate: 95% CIs [-3.35, -1.45]); however, more sophisticated research designs are required to test perceived warmth's causal effect in bridging the relation between for-profit status and people's willingness to interact (Imai, Keele, Tingley, & Yamamoto, 2011).

Although previous studies have suggested that people may rely on others' evaluation as a validity cue to make judgments, this study found neither a direct treatment nor interaction effect of the collective judgment information. Thus, sector information had a strong effect in this experiment which the collective judgment did not moderate; and thus, the third hypothesis was not supported. However, as collective judgment information can be delivered in multiple ways, the way the information is presented might have a stronger effect than the content itself. For example, specific sources of the information, such as authorized third-party evaluators, might be perceived as a more valid

cue than anonymous users' star ratings. Therefore, replications and more in-depth experimental investigations are required.

Lastly, findings from this study also call for more conceptual replications in other service contexts with different groups of subjects, since the area of service sets the major category for people to make judgment according to the prototypical organization within this category. Findings from two experiments in this study, which are different from previous experimental results, have shown such variation (see Dreves et al., 2014 as an example). For social service recipients, the service context, such as daycare or hospital, acts as the major category for consideration, and their final choice of service provider depends on their judgments on organizational candidates through comparisons with the prototype organizations in this category, which can be reflected by stereotypes. Modern organizational category studies define prototype organizations as "the most representative or central member of a category in the eyes of a given audience" (Vergne & Wry, 2014, p. 72). Not only suggesting the fact that features of prototype organizations vary according to the audience in different service areas, this definition implies that a prototype organization in certain service contexts might be subject to changes of public opinions and individual socialization. Thus, further studies should not only include conceptual replications but should also explore how the prototype organization in people's eyes might change.

3.7 Conclusion

The sector difference between nonprofit and for-profit exists in social service markets because it requires moral values maintained by the stereotypical understanding

of “nonprofitness”. Profit-seeking motives, as indicated by the for-profit sector information, evoke a significantly cold and potentially incompetent organizational image, which might affect organizational legitimacy and income adversely. Against the background in which policymakers are promoting marketization in service provision, both types of service providers should consider public perceptions an important factor in resource generation. While it might be better to conceal for-profit status in the case of for-profit providers, nonprofit organizations are not immune in communications with the public, because the theoretical mechanism suggests that the negative bias toward for-profit status results from the immorality such sector information conveys. Therefore, nonprofit organizations also might suffer from perceptual prejudices if particular organizational behaviors are perceived as profit-seeking. Examples might include large amounts of mission-unrelated transactions and collaborations with private companies to generate profit. Thus, social service organizations’ managers should pay particular attention to legitimizing or justifying their commercial strategies, or use other strategies to moderate the negative effect of profit-seeking intentions in building organizational capacity. Because this study used social enterprise as a research setting, it also offers implications for social entrepreneurs in the sector choice dilemma.

Chapter 4: Research Commercialization and the Credit Ratings of Nonprofit Universities

4.1 Introduction

The model of commercialization varies across different areas where organizations exist for social missions. Although it is worthwhile to have an overall understanding of how commercialization influences all such organizations, this approach ignores important organizational and environment features shared with organizations in the same subarea which leads to substantial heterogeneous effects of commercialization. Thus, this study uses nonprofit universities in the U.S., as a case to explore the potential impact of commercialization.

One of the most debatable commercialization models in the higher education industry is technology transfer, a core commercial activity in a broad notion of academic entrepreneurship. The Bayh-Dole Act enacted in 1980 encourages universities and research institutions to increase engagements with industries in terms of technology transfer and other types of research commercialization, which have provided profound revenue increases for both universities and society. From 1996 to 2015, technology transfer and commercialization have contributed up to \$1.3 trillion to U.S. gross industrial output and \$591 billion to U.S. gross domestic product. However, commercialization might backfire on nonprofit universities in a variety of ways. Financially, Weisbrod (1998) raised critical concerns about commercialization from theoretical perspectives and suggested that organizations should be cautious about the effect of commercialization on other revenue generation strategies. Considering the social mission of higher education, in spite of potential increases in universities' net assets

because of incomes from technology transfer, scholars have raised caveats that it might lead universities to focus only on applied science rather than basic science research which is less likely to be commercialized and teaching (Crespi, D'Este, Fontana, & Geuna, 2011). As a result, research universities may deviate from their missions and lose reputational legitimacy.

Similar to early discussions on the threats of commercialization to organizations with social missions, debates on university technology transfer mainly focus on the tension between commercial and social goals, which depends on an assumption that organizations are motivated by the economic incentives that result from market transactions, for example, the licensing revenue from technology transfer. The tension will be exaggerated in organizations with hybrid missions because they are forced to maximize profit from limited investment so as to reserve as much as possible for social missions. However, financial benefits from commercialization does not only come from market exchanges. When the commercialization is legitimized by key audiences in the environment, commercial activities with limited focus on profit maximization might also bring substantial financial rewards to the organization. In this case, the tension between commercial and social goals will be eased, since the managerial focus on achieving profit-maximization has turned to maintaining behavioral legitimacy instead of goals that are naturally contradictory against the organization's social mission. Following this logic, this study hypothesizes that technology transfer activities will advance nonprofit universities' capacity and examines the effect of technology transfer through a focus on university credit ratings, a crucial factor that directly influences universities' financial decision making and performance. Using a merged panel dataset in higher education, the

study highlights important features of commercialization in organizations with social missions which foster organizational capacity.

4.2 Literature Review

4.2.1 Research Commercialization and Technology Transfer

Research commercialization is a worldwide phenomenon and universities increasingly stimulate technological entrepreneurship via patenting, licensing, start-up creation, and university-industry partnerships (Grimaldi et al., 2011) . These activities are encouraged by the Bayh-Dole Act 1980 which “instituted a uniform patent policy across federal agencies and removed many restrictions on licensing” (Grimaldi et al., 2011, p. 1046). More importantly, the Bayh-Dole Act allows universities to commercialize research sponsored by federal research grants using technology transfer. The Bayh-Dole Act largely intensifies the direct contributions of universities and research institutes to economic growth, largely strengthening the economic role of academic institutes in social development (Grimaldi et al., 2011). From 1996 to 2015, technology transfers and commercialization have contributed up to \$1.3 trillion to U.S. gross industrial output and \$591 billion to U.S. gross domestic product (AUTM).

The purpose of the Bayh-Dole Act is two fold. First, the Act was motivated by a debatable argument that “patents resulting from federally funded research were unexploited due to insecurity regarding their ownership” (Kenney & Patton, 2009, p. 1408). Therefore, the Act is socially desirable because it intensifies university innovation which contributes to the well-being of society. Second, the Act is also a consequence of interest group lobbying, including universities, research institutes, and industries who

recognize opportunities and potentials of cross-sector collaboration. In particular, for universities, the desire to “appropriate the fruits of their employees’ federally funded research was undoubtedly fueled by the emergence of the biotechnology industry, whose promise of riches to invention owners culminated with the spectacular initial public stock offerings of Genentech in 1980 and of Cetus in 1981” (Kenney & Patton, 2009, p. 1408). The process of technology transfer involves interaction between individual inventors (researchers) and business buyers, mediated by Technology Transfer Offices (TTOs). In a three stage model of licensing process proposed by Thursby and Thursby (2002), the licensing starts with inventors’ disclosure of discoveries which have commercial potential. After the disclosure, TTOs evaluate the patent and commercial potential. The process ends with the execution of license and option agreements between universities and industry buyers.

Although some scholars argue that the Act has created a win-win situation for both universities and the society—e.g., generate considerable resources by research commercialization and society is benefited from marketized research, other scholars raise critical assertions predicting that a high level of technology transfer activity will lead to mission displacement in universities. Washburn (2008), for instance, suggests that the passing of the Act undermines the environment for basic research which is fundamental for human beings to understand the world but usually has less potential for immediate commercialization and technology transfer. However, opponents claim that instead of being crowded out by intensified applied research, basic research will not be downgraded for its less commercial potential; on the contrary, increasing applied research will encourage overall research efforts including basic research because it provides important

scientific foundations for applied research (Thursby & Thursby, 2011). In fact, the analysis by Thursby & Thursby (2011) finds supportive evidence of the positive relationship between the amount of basic research publications and increasing technology transfer activities. However, even though universities reserve the right to use licensed inventions for other research and educational purposes to sustain their missions, patenting and licensing which protect intellectual property will inevitably limit broad diffusion of scientific findings (Weisbrod, Ballou, & Asch, 2008).

Technology transfer as an important component of research commercialization has received limited research attention through a financial lens. There is consensus that related activities such as patenting and licensing create potential revenue that intensifies university research and financially sustains universities with unstable government funding (Kenney & Patton, 2009; Weisbrod et al., 2008). In addition, effective technology transfer is expected to increase other revenues in indirect ways. First, industry bidders might increase their collaborations with university inventors through contracting R&D programs and may also provide financial support to labs. Second, reputation established through successful patenting and licensing projects might increase donations from companies and alumni. Third, universities that succeed in academic entrepreneurship are likely to get more government grants and funding because their activities facilitate regional social and economic development through patenting, licensing, university spin-offs, as well as start-ups. Therefore, effective academic entrepreneurship operation not only achieves the major goal of the Act which is to exploit university research and incentive innovations but it also benefits universities in terms of improved financial health. However, simultaneously, the burden and cost to afford and

manage research projects in order to achieve the effectiveness of academic entrepreneurship is also expanding (Bozeman, 2000; Bozeman, Rimes, & Youtie, 2015). To increase the effectiveness of technology transfer, it has been suggested that universities should increase inventors' share of royalty payments to further motivate research patenting and licensing, which would reduce the revenue share to universities from commercialized inventions (Belenzon & Schankerman, 2009; Thursby & Thursby, 2011). In addition, the need for more advanced research facilities and equipment has increased. Thus, the financial pressure to purchase research facilities might be higher for mid-size universities that are often eager to survive in the technology transfer market. Further, the investment costs associated with maintaining a professional TTO are inevitable and essential for successful academic entrepreneurship, especially the critical role played by these administrative offices designed specifically for patenting and licensing activities (Grimaldi et al., 2011). Finally, the aforementioned burden might become more stressful because failures in meeting these demands might lead to loss of valuable faculty members who choose to move to other universities with more friendly organizational and institutional environments for academic entrepreneurship. This could also result in the loss of excellent students, funding, as well as reputation (Wu, Welch, & Huang, 2015).

Therefore, the financial benefit of technology transfer is still a puzzle which has yet to be examined through the lens of university finance. Although evidence shows that technology transfer initiatives intensify the development of both basic and applied science, the cost to achieve this goal is still a missing piece of the puzzle. In fact, it is arguable that technology transfer can bring substantial financial benefits through

patenting and licensing. Data from the annual survey by the Association of University Technology Managers (AUTM) in 2016 reports only 160 licensed inventions generating more than 1 million, less than 1% among all licensed patents that generates income. Thus, it is possible that excessive investment in technology transfer might result in only limited economic return, while other revenue sources might be ignored. In the meantime, the debate about commercialization might lead to legitimacy issues and conflicting perceptions of organizational identity among faculty members, which in consequence could result in further resource deficits. Therefore, the level of engagement in research commercialization could directly influence universities' capacity for revenue generation, even not through technology transfer itself. In order to sustain their financial status and compete with other universities for resource and legitimacy, both public and nonprofit universities are motivated to seek additional revenues, such as borrowing through tax-exempt debt as a solution to finance increasing demand of organizational development and competition (Denison, Fowles, & Moody, 2014).

4.2.2 Borrowing and Credit Rating of Nonprofit Universities

Nonprofit universities are subsidized by the federal tax policy through the access to tax-exempt bond markets where interests of these bonds are exempted from the federal income tax. This reduces the interest costs of the issuers and in turn helps universities to meet their capital needs (Ely & Calabrese, 2016). Indeed, nonprofit universities are under increasingly fierce competition, and as a result, the demand for campus facilities and research infrastructure is skyrocketing for attracting quality students and professionals (Denison et al., 2014). In addition, though without empirical evidence, the trend of

academic entrepreneurship which brings economic benefits to universities might also intensify the need for more research facilities and equipment.

Facing growing capital demands, borrowing is suggested as an alternative way to generate resources to finance capital development which usually cannot be afforded by regular cash flow (Calabrese & Ely, 2015; Ely & Calabrese, 2016). Nonprofit universities' dominant the total number of borrowers in the higher education industry. Calculations by Calabrese & Ely (2015) show that the number of nonprofit issuers of tax-exempt bonds increased approximately 105% between 1997 to 2010. This could be explained by two reasons. First, compared with public universities, nonprofit universities without stable appreciation from state government have more reliance on capital from tax-exempt bonds (Denison et al., 2014) and they have relatively independent fiscal status compared with public universities whose borrowing costs might be significantly influenced by state tax policies (Moody, 2008). Second, the total amount of tax-exempt debt outstanding increased after the Taxpayer Relief Act of 1997, which lifted the \$150 million cap on nonprofit university issuers assigned by the Taxpayer Relief Act in 1986 (Ely & Calabrese, 2016). The analysis by Ely & Calabrese (2016) suggests that both the share of tax-exempt debt in nonprofit higher education significantly grew after 1997, and the growth rate is around 8 percentage points.

Despite the increasing and substantial reliance on tax-exempt bonds in higher education, studies focusing on credit ratings of universities, especially nonprofit ones, are relatively scant. Considering that borrowing from tax-exempt bonds is not only a fashionable way for capital generation, but is also gradually developing as an inevitable source of revenue for organizational development and competition, nonprofit universities

have to strategically manage their financial affairs and other activities to keep their credit rating on a high level which significantly matters to borrowing cost and issuers' reputation (Capeci, 1991; Chen, Kriz, & Wang, 2016; Denison, Yan, & Zhao, 2007; Grizzle, 2010, 2012).

An important strand of public finance literature focuses on how credit rating companies evaluate the credit quality of bond issuers. In 2017, Moody Inc. issued a new rating methodology to explain its approach to assess the credit risk of public and nonprofit colleges and universities globally. In detail, broad factors for credit rating include market profile, operating performance, wealth and liquidity, as well as leverage. All these factors are measured by several sub-factors with different weighting power (Moody Inc, 2017). However, the eventual credit rating is not simply a result of these quantitative factors. The most recent rating methodology by Moody Inc. suggests that final credit ratings are also determined by a combination of quantitative measurements of universities' financial situation, such as operating reserves, and qualitative evaluations including universities' reputations (Moody Inc, 2017).

Aligning with Moody's methodology, research also shows various quantitative and qualitative determinants of municipal bond credit ratings other than basic economic and demographic features of the bond issuer (Denison et al., 2007; Johnson & Kriz, 2005). Though research specifically on nonprofit credit ratings is scarce, public finance literature on factors impacting municipal bond ratings makes important contributions for understanding assessments of nonprofit university credit ratings since both public and nonprofit agencies issue tax-exempt municipal bonds. First, financial indicators are suggested to have a significant effect on credit rating assessment, for example, revenue

diversification (Grizzle, 2012). Second, managerial outcomes are also associated with municipal credit ratings. Denison and colleagues (2007) analyzed the determinants of municipal bond ratings in Texas school districts and found that management performance had significant predictive power. Third, municipal bond ratings are thought to be influenced significantly by institutional factors, such as fiscal institutions including revenue limits, expenditure limits, balanced budget rules, restrictions on debt issuance (Johnson & Kriz, 2005), deposit and withdrawal rules (Grizzle, 2010), and tax limits (Palumbo & Zaporowski, 2012). In particular, Moody (2008) suggested that the credit ratings of public universities are closely associated with the state debt policy because of the fiscal relationship between state government and public universities within the jurisdiction. However, private nonprofit universities might be not subject to state debt policies since they accept much less appreciation from state governments. Therefore, the borrowing behaviors of public and nonprofit universities are likely to be substantially different, which lead to different assessments on their credit ratings (Denison et al., 2014). In addition, sector differences have shown significant impacts on issuers' borrowing cost of public debt. Badertscher, Givoly, Katz, & Lee (2018) empirically suggest that private owned firms have different information environment in which public owned firms operate so that the overall borrowing cost for private owned firms are higher than their public counterparts. This is reflected in their bond valuation and credit ratings.

4.3 Hypothesis

The development of academic entrepreneurship activities is motivated by both the societal demand of new technologies and universities' demand of more financial

resources. The relationship between research universities and the industry is maintained by stable and reciprocal interactions. Moreover, the passage of the Bayh-Dole Act of 1980 created a legitimate policy environment, facilitating the marketization of invention and technology development. This study hypothesizes that nonprofit universities' technology transfer activities will benefit a university's resource generation and financial situation from different aspects. These benefits can be reflected by the university's credit rating. Credit ratings indicate the tax-exempt bond issuer's ability to pay debt service which is rated based on both quantitative and qualitative factors (Denison et al., 2007). The most recent methodology by Moody Inc. shows that credit ratings for nonprofit universities are evaluated generally based on market profile (30 percent), operating performance (25 percent), wealth and liquidity (25 percent), as well as leverage (20 percent), and the final rating might vary based on other qualitative indicators (Moody Inc, 2017). Considering important financial returns and spillover effects of research commercialization activities, a university's credit rating can be enhanced by higher level of technology transfer in at least three ways.

The first and most direct reason for the hypothesis is that active technology transfer will increase the financial capacity of the nonprofit university by not only generating more unrestricted revenue but also large amounts of subsidies from the field. The annual licensing survey by Association of University Technology Managers shows 195 respondents (165 universities) reported more than 2.9 billion dollars income from technology licensing activities, over a half of which are income from running royalties (AUTM, 2017). Different from government grants and private contributions which might be restricted by founders, income from licensing activities is usually unrestricted.

Therefore, licensing activities provide nonprofit universities an additional solution to create unrestricted revenue, other than through tuitions and fees or unrelated business. A more important financial benefit from active technology transfer comes from increasing the amount of research funds from government and industry. Intensified by the economic value of technology transfer for industries and the society, in 2017, 34.6% of total research funding was provided by funders other than universities, which largely eases universities' financial burden on research and allows them to have more financial flexibility. Both public finance literature (e.g., Calabrese, 2013) and credit rating methodology highlight the importance of unrestricted cash flow in public and nonprofit organizations. Thus, a higher level of technology transfer activity will largely increase the financial stability, autonomy, and the sustainability of public and nonprofit universities, which can lead to more creditable ability to pay down debt.

Second, active technology transfer is suggested to result in better reputation which can attract more prospective resources. On one hand, public and nonprofit universities with more technology transfer activities are more engaged with university-industry interaction and communication. Additionally, more successful licensing transactions can create an industry-friendly image for the university. This can help the university to gain more trust and opportunities for further relationship development. On the other hand, research suggests that more licensing activities based on applied science and technology research has a positive spillover effect on basic research because: 1) universities might use licenses or royalty income to fund basic research; and 2) development of basic scientific research is an important prerequisite of research on applied science and technology (Thursby & Thursby, 2011). Therefore, technology transfer activities can

stimulate the development of both applied and basic scientific research which is an important aspect of a university's reputation. More importantly, effective technology transfer leads to positive social impact and public value (Bozeman et al., 2015). For example, scholars at University of San Carlos developed a biomedical process to convert mango waste, such as peels and seeds which will release foul odors and attract disease-carrying insects if left to rot, into commercially viable ingredients (AUTM, 2016). The positive externality of technology transfers shows the contribution of the nonprofit university to society and reaffirms its commitment to its mission, which in turn enhances the university's reputation. Considering the important effect of university reputation on resource generation ability, a higher level of academic entrepreneurship activities is expected to result in a higher credit rating.

Lastly, the level of technology transfer is an important management performance indicator of the university, which is closely related to credit rating of tax-exempt bond ratings (Denison et al., 2007; Moody Inc, 2017). Universities are important mediators between individual researchers or inventors and technology buyers in the industry; and, therefore, both the quality and quantity of licensing is closely related to how university departments manage and facilitate academic entrepreneurship activities. Bozeman's contingent effectiveness model of technology transfer suggests that the outcome of academic entrepreneurship is partially determined by features of the transfer agent (i.e., the university), which includes sector, resources, organization design, management style, political constraints, and so on (Bozeman, 2000). A more specific study by Wu et al. (2015) suggested that the perceived cost-saving practices of TTO is a significant predictor of patent licensing outcomes. Yet, whether a university actively facilitates

research commercialization activity reflects the university's strategic positioning and consideration regarding financial management and resource generation. In sum, considering all these mechanisms through which technology transfer activity increases public and nonprofit universities' ability to pay down debt, this study proposes that a higher level of technology transfer activity will lead to a higher tax-exempt bond rating.

4.4 Empirical Model and Data

4.4.1 Model Specification

To test the proposed hypothesis, the study develops following models based on previous studies on the determinants of tax-exempt bond ratings (Denison et al., 2007):

$$RATING_{t+1} = \alpha + \beta TTA_t + \gamma E_t + \pi D_t + \theta F_t + \delta M_t + \varepsilon,$$

where $RATING_{t+1}$ is the observed tax-exempt bond rating in year (t+1). TTA_t represents the level of technology transfer activities, operationalized as the natural log of research expense from industries in year of t. E_t is a vector of economic variables of one nonprofit university. D_t is a set of demographic variables capturing socio-economic features of the nonprofit university. F_t is a vector representing a set of financial variables which determine universities' financial capacity to pay the debt service. M_t captures a set of variables to capture the management performance. ε is the error term.

4.4.2 Data and Variables

Data used for this study is drawn from three sources: ratings of tax-exempt bonds issued by nonprofit universities are provided by Moody Inc from 2008 to 2017; data of university technology transfer is collected from Statistics Access for Technology Transfer (STATT) Database which maintains data collected by AUTM Licensing Activity Surveys

from participating academic institutions since 1991; financial data for public and nonprofit universities, as well as data for economic, demographic and management variables comes from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS).

The outcome variable for the analysis is the underlying credit rating of a nonprofit university's tax-exempt bond given by Moody Inc. Specifically, Moody Inc. maps the aggregation of financial and other qualitative factor score of a university to an alphanumeric score ranging from Aaa (the highest) to Ca (the lowest). Following previous studies on municipal bond ratings, the study creates an ordinal variable based on the distribution of credit ratings in the final sample (Chen et al., 2016; Denison et al., 2007; Grizzle, 2010, 2012), as shown in Table 4.1. An ordered logit maximum likelihood model is used to estimate the parameters.

Table 4. 1 Credit rating distribution of Nonprofit Universities in the Sample

Moody Rating	Ordinal Credit Rating	Frequency	Percent
Aaa	5	59	24.79
Aa1	4	47	19.75
Aa2	3	39	16.39
Aa3	2	20	8.4
Below Aa3	1	73	30.67

Table 4.2 presents a list of all exploratory variables with expected associations with the outcome variable and data sources. Table 4.3 reports descriptive statistics. The major exploratory variable is the level technology transfer activity, which is operationalized as the natural log of research expenses from industry. Research expenses from private companies in industry act as a proxy for technology transfer activity because it shows a clear boundary between universities and industries. Although there exist four

typical research investments from different sources, including federal, state and local, industries, and institutional research and development (R&D) fund, research activities sponsored by industries are more committed to actual commercialization and marketization (Powers, 2004). On the contrary, R&D funds from levels of government might not necessary indicate active technology transfer although the Bayh-Dole Act has made it possible. Therefore, research expenses from industries are considered to be a more accurate measure of the level of technology transfer activities—the more expenses the university reports, the more it is engaged in such activities.

Table 4. 2 Exploratory Variables Included in the Analysis (2007-2016)

Variable Name	Measurement	Expected Sign	Source
Major Exploratory Variable			
TTA	The natural log of research expense from industries in year of t	+	STATT
Financial Variables			
Liquidity	Monthly days cash on hand	+	IPEDS
Rev_diver	Herfindahl-Hirschman Index (HHI)	-	IPEDS
Debt_afford	Total debt to cash flow	-	IPEDS
ln_endow	The nature log of total amount of endowment	+	IPEDS
Management Variable			
Retention	First year student retention rate	+	IPEDS
Economic Variable			
Enroll	Total student enrollment	+	IPEDS
Demographic Variables			
P_loan	The percentage of students receiving student loan aid	-	IPEDS
P_aid	The percentage of students receiving any other financial aid	-	IPEDS

Table 4. 3 Descriptive Statistics (N=131)

Variable Name	Measurement	Mean	Standard Deviation	Minimum	Maximum
TTA	The natural log of research expense from industries in year of t	16.492	1.344	11.096	19.540
Liquidity	Monthly days cash on hand	197.087	464.161	-621.961	3898.482
Rev_diver	Herfindahl-Hirschman Index (HHI)	0.284	0.115	0.138	0.797
Debt_afford	Total debt to cash flow	0.449	0.265	0	0.938
ln_endow	The nature log of total amount of endowment	21.455	1.299	13.911	24.441
Retention	First year student retention rate	92.333	13.845	0	100
12 month Enroll	Total student enrollment (in thousands)	15.793	11.525	0.192	57.321
P_loan	The percentage of students receiving student loan aid	37.776	18.565	0	87
P_aid	The percentage of students receiving any other financial aid	70.778	18.097	0	100

Four financial variables capturing the financial status of the nonprofit university are included. First, the liquidity of the university is controlled. Liquidity is defined as “cash or financial resources without donor restrictions, which can be efficiently converted into cash quickly” (Bowman, 2011, p. 179). It is operationalized as monthly days of cash on hand, which is the result of “Unrestricted cash and investments (university only) that can be liquidated within one month, multiplied by 365, divided by operating expenses less depreciation and other large non-cash expenses” (Moody Inc, 2017, p. 15). Aligned with Moody’s rating methodology, liquidity is considered to be an important factor affect credit ratings because it is a critical dimension of a university’s near-term ability to meet debt service requirements (Moody Inc, 2017). Second, revenue diversification is included to capture the revenue structure of the university which is suggested to have an important influence on financial volatility and debt capacity) (Yan, Denison, & Butler, 2009). Following Moody’s methodology and previous empirical evidence, a more diversified revenue structure is expected to be associated with higher credit ratings (Grizzle, 2012). Herfindahl-Hirschman Index (HHI) is calculated for each observation using detailed revenue source, including income from tuition and fees, total appropriation from federal, state and local government, income from grants and contracts of federal, state and local government, private gifts, private grants and contracts, contributions from affiliated entities, revenue from sales and services of both educational activities and auxiliary enterprises, hospital revenue, independent operations revenue (revenue does not related to university mission), investment returns, and other revenues. Third, a university’s debt affordability is measured by its total debt to cash flow, which is a result of “total debt divided by operating income plus depreciation, amortization, interest, and

other large non-cash expenses” (Moody Inc, 2017, p. 15). Also, considering the critical role of university endowment in serving “as buffers for fiscal shocks to nonprofits’ revenue streams” (Calabrese, 2011, p. 124), the analysis controls the wealth of university endowments using the natural log of total amount of endowment.

Finally, first year student retention rate is included to capture management performance of the university. As suggested by Denison et al (2007), given that credit rating is a perceptual score combined with both quantitative and qualitative considerations of credit evaluators, management performance is an important non-fiscal factor for credit raters because it reflects the effectiveness of bond issuers’ governing process. Economic variables controlled for in the analysis include total student enrollment which captures the size of the university. It has been suggested that total student enrollment may be positively related to the credit rating (Denison et al., 2007). As demographic variables, the percentage of students receiving student loan aid and the percentage of students receiving any other financial aid are included as proxies for the number of low-income students in the university.

4.5 Results

Given the ordered nature of the dependent variable, a pooled ordered logit model is applied to estimate the effect of technology transfer activities on the credit rating of university tax-exempt bonds. Models 1 through Model 5 in Table 4.4 report the results. As expected, estimations of all models show that more amount of technology transfer activities lead to an increased likelihood of getting a better credit rating for both nonprofit and public universities. However, the coefficient is not statistically significant.

Table 4. 4 Ordered Logistic Models

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
ln_rindexp	0.554*** (0.21)	0.260 (0.20)	0.238 (0.21)	0.183 (0.20)	0.262 (0.30)
ret_pcf		0.562*** (0.17)	0.574*** (0.19)	0.454* (0.23)	0.445* (0.26)
efytotlt_k			0.008 (0.02)	0.005 (0.02)	0.000 (0.04)
loan_p				-0.041 (0.03)	-0.005 (0.04)
anyaidp				-0.007 (0.02)	0.013 (0.04)
lqud					0.009*** (0.00)
hhi					-2.859 (4.04)
debttafford					4.617* (2.76)
ln_endow					2.378** (0.93)
Year Dummy	Yes	Yes	Yes	Yes	Yes
N	237	223	223	223	131
Wald Chi2	10.64***	45.64***	63.80***	89.63***	322.76***
Pseudo R ²	0.052	0.241	0.241	0.262	0.656

Notes:

1. * p<0.1, ** p<0.05, *** p<0.01.
2. Standard errors in parentheses are clustered on university level.
3. Brant test suggests that proportional odds assumption is not violated.

The findings are also generally consistent with prior research on managerial and financial determinants of university credit ratings, which verifies the model's validity. First, the university retention rate is positively associated with the likelihood of a better credit rating, which indicates the positive effect of this university managerial outcome on credit rating. Second, liquidity and the wealth of a university endowment are positively associated with a better credit rating. Moreover, a higher ratio of the debt holding to the cash flow leads to a lower likelihood of getting a better credit rating. While the

coefficient is not statistically significant, the effect of revenue diversification on credit rating is negative as expected.

Table 4. 5 Marginal Effects

	(1) Below Aa3	(2) Aa3	(3) Aa2	(4) Aa1	(5) Aaa
TTA	-0.0016 (0.048)	-0.0150 (0.390)	-0.0485 (0.594)	0.0623 (0.099)	0.0028 (0.083)
12-month Enroll	0.0000 (0.000)	0.0000 (0.002)	-0.0001 (0.007)	0.0001 (0.009)	0.0000 (0.000)
P_loan	0.0000 (0.001)	0.0003 (0.008)	0.0009 (0.001)	-0.0012 (0.007)	-0.0001 (0.016)
P_aid	-0.0001 (0.002)	-0.0007 (0.019)	-0.0024 (0.029)	0.0030 (0.009)	0.0001 (0.004)
Retention	-0.0027 (0.082)	-0.0254 (0.661)	-0.0823 (1.004)	0.1058 (0.131)	0.0047 (0.140)
Liquidity	-0.0001 (0.002)	-0.0005 (0.014)	-0.0018 (0.021)	0.0023 (0.003)	0.0001 (0.003)
Rev_diver	0.0174 (0.525)	0.1635 (4.254)	0.530 (6.498)	-0.6802 (1.182)	-0.0302 (0.905)
Debt_afford	-0.0281 (0.848)	-0.2641 (6.865)	-0.8551 (0.023)	1.0985 (1.406)	0.049 (1.460)
ln_endow	-0.0145 (0.437)	-0.1360 (3.534)	-0.4403 (5.374)	0.5657 (0.679)	0.0251 (0.751)

Table 5 reports the marginal effects of each variable in the ordered logit model on the dependent variable. Since the interpretation of coefficients in the ordered logit model is not as straightforward as in other linear models, interpretation via marginal effects facilitates our understanding of the magnitude of the major explanatory variables. Numbers in the table indicate the probability change if the value of explanatory variable increases by one unit, while holding other variables at their means. For example, marginal effects of level of technology transfer suggest that with 1% increase in research expense from industry, the likelihood of getting an Aa3 rating will decrease 1.5%, and the likelihood of getting an Aa1 rating will increase 6.23%. Thus, industry supported

technology transfer has substantial positive effects to a universities' credit rating, though the effect is not statistically significant.

The comparison of marginal effects of other variables suggests that financial indicators have generally larger influence on a university's credit rating than other variables. This reflects the major purpose of rating agencies' assessment philosophy. Thus, while a 1% increase of the retention rate will lead to a 10.58% increase of the likelihood of getting an Aa1 rating, a 1% increase in endowment will increase the probability of getting the same rating by 56.57%, holding other variables at their means.

4.6 Conclusion

Research commercialization in the higher education industry has attracted numerous skeptics and debates because the profit-seeking intention embedded in commercialization is ultimately conflicting with the social mission of higher education. Such conflicts create at least two debatable problems for public and nonprofit universities: does research commercialization lead to mission drift and financial challenges? The finding from this study adds important evidence for answering this question: high levels of research commercialization activity does not hurt the credit rating of nonprofit universities. By estimating a pooled ordered logit model based on data from nonprofit universities in the U.S., the results show no statistically significant negative effect of technology transfer activities. Results of marginal effect analysis suggests that a 1% increase in the expense for technology transfer from the industry increases the likelihood of getting an Aa1 rating by 6.23%. It, however, decreases the probability of receiving a rating below Aa3 by 1.5%, holding other variables constant at their means.

These findings lead to several important theoretical insights on the discussion of commercial behavior in nonprofit universities. First, it is important to consider how congruent the resources are that are invested into mission related activities and those that are assigned for commercialization activities. In other words, how much additional cost should the organization spend for the commercial success? For nonprofit universities, technology transfer activities involve moderate additional costs, which includes mostly administrative costs to facilitate the transferring process (such as the TTOs), while the major input for research commercialization is also one of the most important investments for universities' missions. In fact, technology transfer encouraged by the Bayh-Dole Act is a way to exploit the economic value of major activities, especially those that have remained undiscovered for a long time. When a collaboration between the university supplier and the industry has been formed, the additional cost of technology transfer might be offset by the industry buyer's financial support. Therefore, in the case of public and nonprofit universities, research commercialization benefits the financial status of the university through generating revenue with a limited amount of organizational resources.

Second, commercialization may foster organizational effectiveness and health when it is legitimated by multiple key audiences. One important feature of research commercialization through technology transfer is its policy support by the Bayh-Dole Act of 1980, which formally acknowledges the commercial and social value of scientific research and therefore supports marketization and industry-university partnerships. Meanwhile, the public, including industry and lay people, also plays a crucial role in legitimating research commercialization behavior because of its economic value and positive externalities. For example, an advanced artificial knee joint developed by the

University of Toronto was licensed to and commercialized by LegWorks Inc., a for-profit social enterprise, which provided a more affordable solution for individuals who need advanced prosthetics. However, while research commercialization is legitimated by the public and policy in general, bottom-line financial metrics are still important for specific cases of technology transfer and industry-university collaboration. Thus, misbehavior in research commercialization might drive the organization out of the space of legitimacy. For example, the University of Minnesota was pushed by students in 2001 to lower the price of its licensed AIDS drug in Africa (Weisbrod et al., 2008). A student-led nonprofit organization called Universities Allied for Essential Medicines targeted elite universities, urging them to provide more affordable medicine to developing countries when negotiating patent agreements with the medical industry. Therefore, the legitimacy of research commercialization should be understood as a contingent factor which largely depends on how the university communicates and negotiates with both the public and its industry partner. In fact, the advent of university TTOs is a consequence of universities assigning additional administrative costs particularly for legitimacy management by balancing the commercial for-profit needs of the industry and the public purpose of scientific findings and technology.

Third, legitimated commercial behaviors might play a more important role in achieving organizational effectiveness than the actual outcome of commercialization. Commercialization is often considered to be a strategy to maintain organizational financial stability and sustainability through unrestricted revenue generated by commercial activities. Therefore, the managerial logic for commercialization usually focuses on efficiency and profitability, which forces managers to focus on profit-seeking

strategies and therefore the conflict between commercial behavior and an organization's social mission will be more salient. To reiterate, although universities and research institutes are motivated by the financial incentive of research commercialization, the actual income from technology transfer is not a considerable part of university revenue—only 0.41% active licenses generated more than 1 million US dollars for universities (AUTM 2017). Thus, it would be incorrect to argue that universities engaged in technology transfer activities are motivated by economic incentive. On the contrary, benefits from technology transfer come from external investments including federal and industrial R&D funds to prospective research projects that demonstrate the potential to be commercialized. Therefore, the positive effect of technology transfer activities on university financial status does not come from the revenue of patent licensing but from external investments which largely release universities' financial burden on achieving its mission.

Chapter 5: Conclusion

Can commercialization be adopted to finance social missions? This dissertation uses two empirical studies to explore the reaction from the public, who grants financial and legitimacy resources to the organization, to commercial intentions and behaviors in public and nonprofit organizations. This chapter synthesizes the findings of these studies and discusses theoretical and practical implications, as well as limitations and plans for future studies.

5.1 Summaries of Findings

Commercialization has a natural conflicting logic against the main mission of organizations with social missions, including nonprofit and public organizations. Since these organizations are established “not-for-profit”, the profit-seeking intention strongly embedded in commercialization practices create substantial legitimacy and financial challenges for those organizations when they consider market transactions as an approach for additional funding for organizational mission. This dissertation studies external challenges from the public, which directly determines the extent to which the organization can generate resources from the market.

The legitimacy challenge comes from the incompatibility between people’s anti-profit beliefs against commercialization and the prototypical images of organizations for social missions. In Chapter 3, I compared people’s perceptual reactions to nonprofit and for-profit organizations in the social service market from a social psychological perspective. Although not a direct reflection of the founder’s original purpose, the nonprofit and for-profit tags used in this study provide insight into the main intention of the organization. This helps the public to develop a stereotypical image of the

organization based on sector. Specifically, people categorize organizations based on their nonprofit and for-profit status. These categorizations replace their judgments on the organization with those on a group of organizations with the same not-for-profit or for-profit intention. That is, the public's judgment on any one nonprofit or for-profit organization mirrors the social cognition of the traditional image of organizations with nonprofit and for-profit status. The study further theorizes that the perceived difference between the nonprofit and for-profit enterprise results from people's anti-profit beliefs: when the organization shows a salient profit-seeking intention in social service markets, people perceive the organization with a negative image because of perceived immorality. Through an experimental approach, the study identified a significant effect of sector stereotype based on such theoretical mechanisms. Results shows: 1) people perceive nonprofit organizations as being warmer and more competent than for-profit organizations; 2) the stereotypical difference is a consequence of people's anti-profit beliefs against profit maximization; 3) information with social influence fails to moderate these stereotypical differences; and 4) sector stereotypes lead to significant variations in interaction intentions including purchasing and charitable giving.

Chapter 4 explored whether research commercialization through technology transfer brings financial challenges to nonprofit universities. Although technology transfer might arguably intensify innovation in scientific research, it is debatable whether its commercial logic will create substantial disadvantages for public and nonprofit universities especially those that are highly engaged in market-based activity. Early discussion points out two potential problems of technology transfer in universities. First, motivated by the monetary incentive of technology transfer, universities will increase

their efforts on applied science research but reduce attention and support to basic science which is less profitable. Second, the cost of technology transfer might surpass its benefits due to the uncertainty of scientific research and marketization. However, as a commercialization strategy, technology transfer is able to create financial benefits to public and nonprofit universities because: 1) not only the prospective financial value, technology transfer creates important social values by marketizing inventions to benefit the society; 2) although it is debatable, technology transfer is legitimized by the Bayh-Dole Act of 1980; 3) active and well-managed technology transfer indicates universities' abilities to make contribution to society, which increases universities' reputation and consequently attracts more resources. By using university credit rating as a financial outcome variable, this study pools data from multiple sources from 2007 to 2016 to determine what level of technology transfer activity, measured by research expenses from industry, leads to a credit loss. Econometric analysis suggests no significant negative relationship between the level of technology transfer activity and a university's credit rating. The marginal effect of technology transfer suggests that with 1% increase in research expense from the industry, the likelihood of getting an Aa3 rating will decrease 1.5%, and the likelihood of getting an Aa1 rating will increase 6.23%, holding other important factors of credit rating assessment at their means.

5.2 Theoretical and Practical Implications

This dissertation contributes to the re-emerging literature in public and nonprofit administration on commercialization and business-like practices for social services by focusing on public reactions to profit-seeking intentions and behaviors of organizations

with social purposes. Using experimental methods (Chapter 3) and advanced econometric strategies (Chapter 4), this dissertation provides evidence that deepens our understanding of the effect of commercialization on public and nonprofit organizations from a social psychological and financial perspective.

The commercialization debate arises due to the distinct role that nonprofit organizations play in society. Although early literature suggests that there is an increasingly blurred boundary between public, nonprofit, and private organizations, this study identifies an important distinction between nonprofit and for-profits. This distinction is rooted in people's psychological reactions to profit-seeking intentions in the social service market. More importantly, stereotypes of the nonprofit and for-profit sector significantly affect people's intentions of purchasing and charitable giving. Therefore, the boundary between sectors, especially between the nonprofit and for-profit sectors, might not be observed in the field but deeply rooted in social cognition. For social purpose start-ups, founders of these organizations should pay attention to sector boundaries when making choices about incorporation status and commercial activity. For existing hybrid organizations, behaviors across the sector boundary might lead to loss of legitimacy.

Given concerns about resources in the social service market, this dissertation helps to identify conditions where using commercialization to finance social missions can be legitimated. The threat of losing legitimacy can be strategically mitigated so that the utility of commercialization can benefit organizations for social purposes. Results from two studies indicate a complex role of commercialization in organizations with social purposes: its essentially competing logic against social missions can be mitigated through institutional and managerial strategies. The first strategy is to avoid behaviors that are

abnormal for organizations in a specific category. It is important to notice that for the public, the major category is defined by the industry that an organization operates in, and the sector serves as a subcategory. Therefore, while “nonprofitness” serves as a proxy for a legitimate service provider, with which the public is more likely to interact, advantages of the nonprofit form diminish when these organizations compete with organizations without sector labels. Therefore, for-profit organizations with full commercialization intention can still compete with nonprofit organizations in the field as long as they perform similar to their nonprofit competitors. Such a strategy of isomorphism indicates the considerable role of the institutional environment in managing commercialization in the social service market.

Second, commercialization for social services can be legitimized by managerial practices. The major benefit of technology transfer in nonprofit universities is a consequence of the legitimacy of research commercialization but not its economic return for universities created by the market transaction. As emphasized in Chapter 4, technology transfer results in limited income from patent licensing agreements with industry buyers, which can hardly provide significant additions to universities’ unrestricted revenues. In fact, it is due to substantial R&D funds from different entities in society that brings important financial and reputational benefits to universities that engage in research commercialization. Therefore, although efficient gains from market transactions are a key indicator of managing commercial activities, process-focused practices that legitimate the commercial activity through negotiation and communication can also bring considerable financial gains from other channels. In fact, turning managerial focus from results-focused commercialization to process-focused

commercialization can reduce the theoretical conflict between profit-maximization intention and social mission.

Thus, while recognizing people's stereotypical anti-profit beliefs against commercialization, it may be a possible strategy for public and nonprofit organizations to adapt in order to finance social missions. An important practical takeaway point from previous discussions is that public and nonprofit managers should communicate carefully about commercial activities with the public. In particular, as a small amount of information might create uncertainty and encourage people to use clues with easy access that generate stereotypical understanding, communication with the public should be established based on more comprehensive information. In addition, managers should be able to clearly define audiences for communication. Although previous discussion indicates that organizations can avoid legitimacy loss when following common practices in each major organization category (e.g., the industry that an organization operates in), the category varies across different audiences. For example, while parents consider daycare center to be the major category, social bonds investors might consider social enterprises to be the major category. Therefore, managers should design different communication strategies according to various audiences who look at the organization based on their own relationships with the organization.

5.3 Limitations

This dissertation is not without limitations. First, the experiment in Chapter 3 only recruited a nonprobability sample from Amazon MTurk. Although subjects from MTurk have no significant influence on the internal validity of the experiment, the

generalizability of the findings is sacrificed for internal validity. Specifically, it is important to note that, as the sector stereotype is formed based on people's cultural background, socialization, knowledge, and experience, which varies across different social groups, the sector stereotype embedded with various understandings or even ideologies about commercialization might create substantially heterogeneous effects on people's decision making, legitimacy judgment, and consequential behaviors.

Second, the experiment only investigated the sector stereotype in daycare and recycling industries in the U.S. Although the findings from those two industries were consistent, it would be incorrect to argue that findings from this study can be generalized to other industries with both nonprofit and for-profit competitors. A critical prerequisite to hypothesize the effect heterogeneity of sector stereotype is to understand people's perceived standard of organizations in certain industries, or the organizational prototype of one industry (Vergne & Wry, 2014). People make judgments based on the perceptual comparison with the prototype; and thus, judgmental differences will vary according to perceived gap between the focal organization and the prototype.

Third, the experimental design did not allow me to further examine how the sector stereotype affects people's perceptual judgments and behavior intentions in more complex situations, for example, in situations where more information is provided about the organization. Although sector stereotype suggests that people have general preference for nonprofits over for-profits, in the real-world, people are bombarded with a great deal of information and they tend to put weight on multiple criteria, which might be a function of their needs, resources available, and environment in which they live. The experiment confirmed the trade-off and simplified the situation where only sector information was

manipulated. This approach helped to identify the significant causal effect of sector stereotype but failed to capture its effect in more complicated scenarios.

Fourth, the experiment did not empirically examine whether the negative perception against the for-profit social enterprise *only* originates from people's repugnancy against profit-seeking intention. It is a conclusion drawn from the finding that people perceive the for-profit social enterprise negatively compared with the social enterprise without the sector tag, while there is no significant perceptual difference between the social enterprise without the sector tag and the nonprofit one. Although the study uses the social enterprise as a case to dilute the effect of people's familiarity of a certain type of organization, it is still possible that people do hold the image of a prototype social enterprise by understanding the term, which could be a nonprofit organization. Therefore, in addition to the anti-profit belief that contributes to the sector stereotype, it is still questionable whether people's prejudice in favor of the nonprofit tag is also a theoretical mechanism of the sector stereotype, as suggested by Hansmann (1980). Thus, future studies need to empirically address how additional tag add value to or undermine the image of a perceived prototype social enterprise or other type of service provider.

Fifth, Chapter 4 also suffers from generalizability issues, as it uses a small nonprobability sample to infer the effect of technology transfer on universities' credit ratings. Universities in the sample are mostly research universities that responded to the survey conducted by AUTM. Therefore, not all universities that were invited to the survey and those that did not respond to the survey were omitted from the study. Meanwhile, the study also failed to capture commercial behavior in other teaching-

oriented universities. Thus, although the study helps to understand how legitimate commercialization can foster universities' capacity, the findings should be generalized to other field even those within the higher education industry with caution.

5.4 Future Studies

This dissertation serves as an initial empirical investigation of commercialization in the public and nonprofit sector from a social psychological and financial perspective. In accordance with previously presented limitations, future studies should take follow steps to enhance the generalizability of the empirical evidence and deepen our understandings of commercial strategies in the social market.

In particular, the experiment should be replicated using larger sample from random sampling strategy to increase the representativeness of the sample and the generalizability of the conclusion. In addition, conceptual replications in other nonprofit subsectors for examining the sector stereotype should be conducted to confirm the external validity of the results. To do this, it is also important to use empirical strategies to capture people's perceived prototypical image of organizations in different social service markets. This will contribute to our understanding of the heterogeneous effect or even different patterns of sector stereotypes in social service markets.

Second, field experiments are necessary for capturing the magnitude of sector stereotypes in real-world settings. This strategy will enable us to understand whether and to what extent people rely on sector information to judge organizations and make decisions accordingly.

Third, it is important to identify specific commercial strategies in different areas with social purposes instead of considering commercialization as a universal toolkit. Commercialization appears in different forms (Maier et al., 2016), and some of these forms, such as technology transfer, are well-established and enjoy long-term legitimacy. Social support, however, might change the logic of managing commercialization from outcome-driven to process-driven, as implied by Chapter 4. Therefore, instead of sampling organizations from a general frame and taking subareas as industry dummies, future studies should investigate the ecology of each subarea and investigate how specific types of commercialization influence the practices of organizations with social purposes.

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Appendix 1. Experimental Vignettes

Study 1: Day Care Vignette

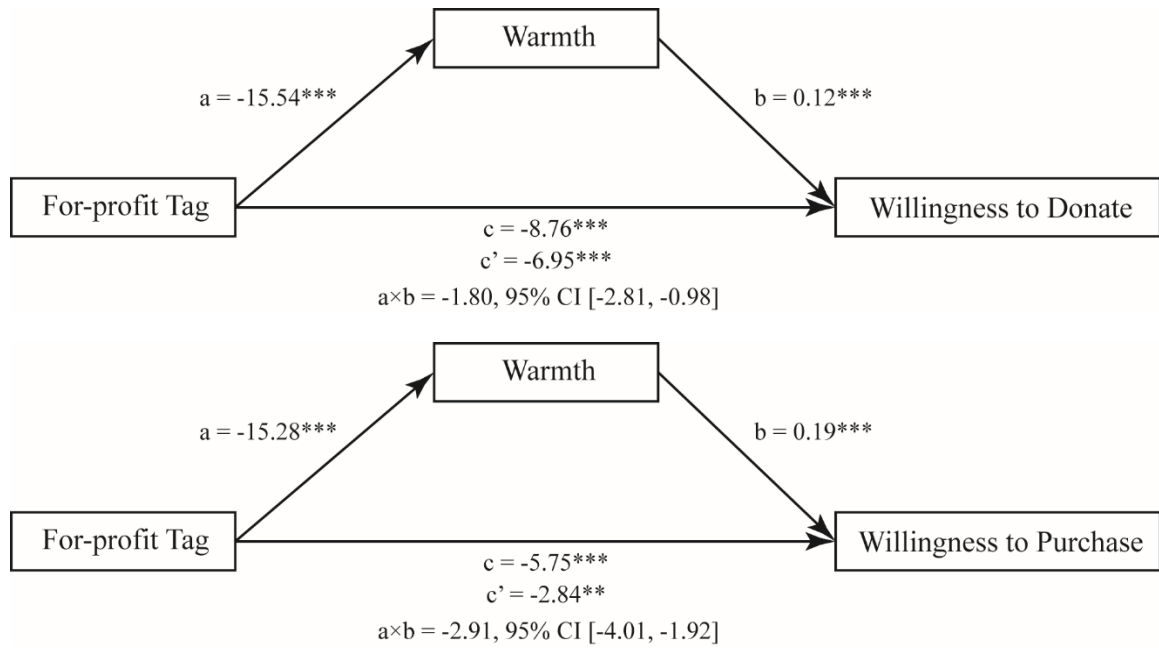
	Collective judgment	No collective judgment
Nonprofit group	 <p>Hyde Innovation Child Care and Learning Center Non-profit Social enterprise Preschool ★★★★★ (54) Contact: info@hydeinnovation.org</p> <p>About: As a non-profit social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>	 <p>Hyde Innovation Child Care and Learning Center Non-profit Social enterprise Preschool Contact: info@hydeinnovation.org</p> <p>About: As a non-profit social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>
Control group	 <p>Hyde Innovation Child Care and Learning Center Social enterprise Preschool ★★★★★ (54) Contact: info@hydeinnovation.net</p> <p>About: As a social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>	 <p>Hyde Innovation Child Care and Learning Center Social enterprise Preschool Contact: info@hydeinnovation.net</p> <p>About: As a social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>
For-profit group	 <p>Hyde Innovation Child Care and Learning Center For profit Social enterprise Preschool ★★★★★ (54) Contact: info@hydeinnovation.com</p> <p>About: As a for-profit social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>	 <p>Hyde Innovation Child Care and Learning Center For profit Social enterprise Preschool Contact: info@hydeinnovation.com</p> <p>About: As a for-profit social enterprise, the mission of Hyde Innovation Child Care and Learning Center is to provide children with the foundation needed for a happy and successful life.</p>

Study 2: Recycling Vignette

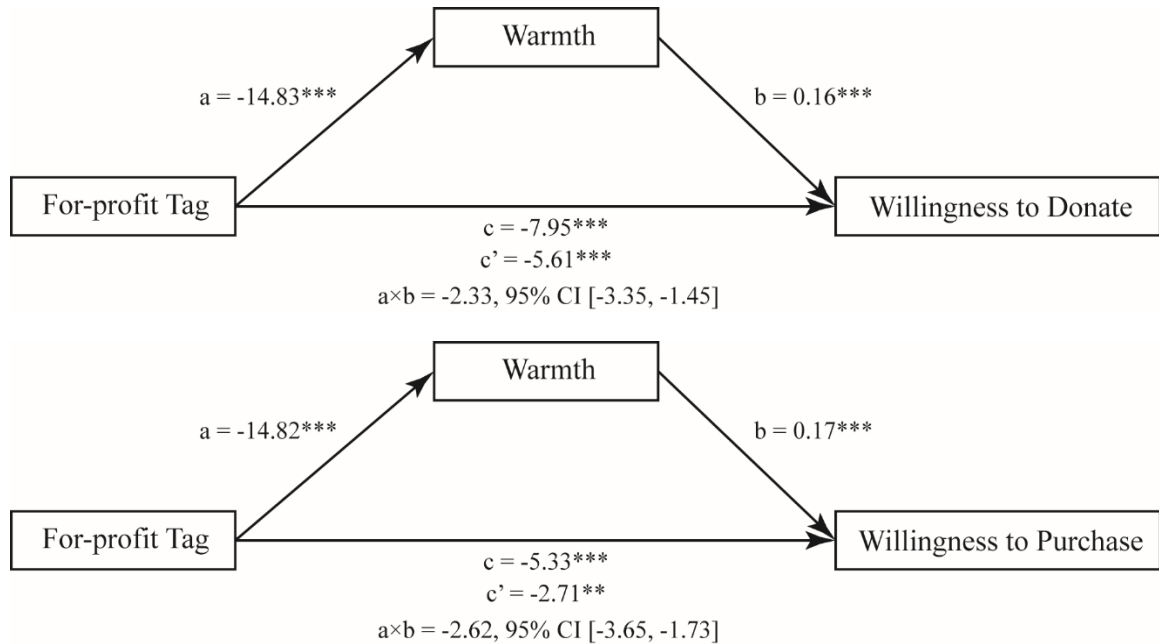
	Collective judgment	No collective judgment
Nonprofit group	 <p>Green Recycling Non-profit Social enterprise Door-to-door service ★★★★★ (54) Contact: info@greenrecycle.org</p> <p>About: As a non-profit social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>	 <p>Green Recycling Non-profit Social enterprise Door-to-door service Contact: info@greenrecycle.org</p> <p>About: As a non-profit social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>
Control group	 <p>Green Recycling Social enterprise Door-to-door service ★★★★★ (54) Contact: info@greenrecycle.net</p> <p>About: As a social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>	 <p>Green Recycling Social enterprise Door-to-door service Contact: info@greenrecycle.net</p> <p>About: As a social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>
For-profit group	 <p>Green Recycling For profit Social enterprise Door-to-door service ★★★★★ (54) Contact: info@greenrecycle.com</p> <p>About: As a for-profit social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>	 <p>Green Recycling For profit Social enterprise Door-to-door service Contact: info@greenrecycle.com</p> <p>About: As a for-profit social enterprise, Green Recycling recycles cell phones, laptops, and other electronics to reduce and reuse electronic wastes through professional services and strategic initiatives.</p>

Appendix 2. Bootstrap Mediation Test

Study 1: Day Care Vignette



Study 2: Recycling Vignette



(* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)