
QRBD

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FROM THE EDITORS

This issue of *Quarterly Review of Business Disciplines* begins with the research of Donna and George Danns, who explore youth entrepreneurship in Latin America and the Caribbean. It specifically delves into financing of youth entrepreneurship in the developing country of Guyana. The study of Ying Zheng, Yong Wang, and Crystal Jiang investigates whether doing good in society allows firms to be less likely to have financial troubles. What is the benefit of corporate social responsibility? Michael Ellis, Geoffrey Hill, and Carla Barber explore whether the choice of a computer language is important for introductory university courses. Their specific focus is on Python due to its high demand by employers.

Shaelyn Comiskey, Bryson Payne, and Victor Parker delve into the evolving issues of cryptocurrencies from an interesting societal perspective. Do cryptocurrencies allow one to divide or hide marital assets in a divorce case, or for the purposes of money laundering, and/or tax evasion? Thomas Snyder, Aaron Newell, and Mavuto Kalulu explore the question of whether charter schools have an effect on student behavior in traditional public schools. Their focus is specifically on Arkansas. Their research contradicts a common critique that charter schools are causing segregation.

Margaret A. Goralski, *Quinnipiac University*, Editor-in Chief

Charles A. Lubbers, *University of South Dakota*, Associate Editor

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FINANCING YOUTH ENTREPRENEURSHIP IN A DEVELOPING COUNTRY

Donna E. Danns, University of North Georgia

George K. Danns, University of North Georgia

ABSTRACT

This paper is a contribution to the sparse scholarly literature on youth entrepreneurship in Latin America and the Caribbean. Uniquely, it provides a case study on financing youth entrepreneurship in the developing country of Guyana, both from the standpoint of youth entrepreneurs and the agencies that provide such funding. Based on a review of literature we developed a six-fold typology of sources of youth entrepreneurship financing in developing countries. The utility of this typology is that it enables identification of stakeholders for youth entrepreneurship financing in a country or community. This paper is derived from a broader case study of the factors impacting youth entrepreneurship in the town of Linden, Guyana. Its objectives are to identify the sources for youth entrepreneurship financing; determine the profile of youth entrepreneurs who access loans and grants for business start-up and expansion; and, explicate the problems agencies report in providing financing for youth entrepreneurs in Guyana. We obtained data from a survey of youth entrepreneurs in Guyana; agency interviews with governmental, non-governmental and other entities supporting youth entrepreneurship; and, secondary sources. Among the findings are that: 77% of youth entrepreneurs surveyed sourced capital for business start-up from their personal savings and/or family and friends. Some agencies from which youth entrepreneurs derived funds were less than sanguine about youths' entrepreneurial prospects; and, programs supporting youth entrepreneurship were not coordinated, scattered across different levels of government and other agencies, did not evidence a common purpose and were advertised inadequately. Invariably, these agencies lacked adequate funding and were inconsistent in their delivery of financial support for youth businesses.

Keywords: financing youth entrepreneurship; youth entrepreneurship challenges; developing countries; Entrepreneurship in Guyana; Latin America and Caribbean youth; informal economic sector, youth unemployment

INTRODUCTION

Unemployment is one of the principal global challenges affecting the economic inclusion of youth in their respective countries. For Latin America and Caribbean (LAC) countries youth aged 15 - 29 comprised about a quarter of the region's total population or some 163 million (OECD/ECLAC/CAF, 2016). The World Bank (2019) reported that for 2018 the unemployment rate for LAC youth aged 15 – 24 was 17.6%. Youth unemployment in Latin America remained twice as high as the overall global rate and three times that of adults in the region (OECD/ECLAC/CAF, 2016). For the Caribbean sub-region, youth unemployment averages 22.6% and is among the highest in the world (International Monetary Fund, 2017; World Bank, 2019). Youth unemployment in Guyana was 25.6% in 2018 (Bureau of Statistics, Guyana, 2019). These

unemployment rates are considerably higher for younger, less-skilled youth from more disadvantaged backgrounds; higher in urban than in rural areas; and, higher for young women than for young men. International organizations and national policy makers are promoting youth entrepreneurship, as a solution, to combat high youth unemployment and to alleviate poverty in both developed and developing countries. Young people themselves are gravitating to embrace entrepreneurship often out of necessity. Gallup (2016) reported that among Latin American nations, one-fifth of the population between 15-29 years old had planned to start a business within the following 12 months of that poll.

Despite declared support by governments and international organizations for a youth entrepreneurship strategy (UNCTAD, 2015), youth entrepreneurs face considerable challenges in procuring financing for their business start-ups and expansion. Consequently, more youth entrepreneurs initiate their businesses with lower levels of capital resulting in lower profit levels and lower market value and inventories. Youth entrepreneurs in less developed countries mainly operate in the informal economic sector and are the owners and managers of businesses that face problems of financial exclusion. UNCTAD (2012, 2015) reported that access to financing is the key constraint for young entrepreneurs whom lenders view as risky, lacking credit history, work history, bank accounts and having insufficient collateral to secure loans or lines of credit.

This paper is derived from a broader case study of the factors impacting youth entrepreneurship in the depressed economic environment of the town of Linden, Guyana. Its objectives are to pinpoint the sources of financing for youth entrepreneurship; determine the profile of youth entrepreneurs who access loans and grants for business start-up and expansion; and, explicate the problems financial institutions, governmental, international and nonprofit agencies report in seeking to provide financing for youth entrepreneurship. Compared to other entrepreneurs in Linden, youth entrepreneurs are more likely to operate in the informal sector, possess lower levels of capital and/or collateral and, are perceived by lenders as riskier. Hence, the need for the focused attention, on this category of entrepreneurs, that this study aims to provide.

Based on the literature review, we constructed a typology of sources of youth entrepreneurship financing in developing countries to enable identification of these sources in Guyana. Data are obtained from: a survey of youth entrepreneurs in Guyana; agency interviews with officials from government ministries and departments, non-profit organizations, the private sector and other entities in Guyana that provide support for youth entrepreneurship; and, secondary data - derived from official reports. Located on the mainland of South America, Guyana is considered part of the Anglophone Caribbean and the wider LAC region. Like other governments in the LAC region, the Government of Guyana has articulated a commitment to encourage and incentivize the Guyanese people to embrace entrepreneurship as a realistic avenue for individual, communal and national economic development (Danns & Danns, 2019).

Guyana is a developing country with an area of 214,970 sq. km. and a population of 746,955 (Bureau of Statistics, 2012). Its income per capita in 2017 was US\$4,725 compared to US\$59,532 for the United States (The World Bank, 2018). The town of Linden has a population of approximately 30,000 people. It is the second largest town in Guyana and is located 65 miles south of the capital city, Georgetown. Linden was once a thriving mining town. The bauxite industry that was Linden's economic mainstay has diminished considerably and currently employs less than

eight percent of its previous workforce of more than 6,500 workers. One consequence of the diminished bauxite industry is that the unemployment rate in Linden has escalated, particularly among the youth. Other sources of employment in the town, mainly dominated by adults, include retailing, agriculture, transportation and government services – education, health, public safety etc.

REVIEW OF LITERATURE

The World Bank Group (2015) found that the Caribbean is under-researched when it comes to issues of entrepreneurship and innovation. A dearth of research literature on the phenomenon of youth entrepreneurship is even more striking in the broader Latin American and Caribbean region. There are, however, notable studies conducted by international institutions and scholars respectively, which will be referenced in this literature review. This paper is aimed at adding to this emergent literature.

Youth Entrepreneurship

Definitions of ‘youth’ vary widely across countries, international institutions, funding agencies, youth organizations and scholarly research. Across countries, the age range of “youth” spans from 12 (in several African countries) and extend up to 35 (UNCTAD, 2015). Youth is here defined as a young person between the ages of 18 – 35 years. Further, for this study “an entrepreneur is an individual who establishes and manages a business for profit and growth. The business is the primary source of income and it consumes most of the time and resources of the entrepreneur. Consequently, the activity of establishing and managing a business for profit and growth is called entrepreneurship” (Goel, Vohra, Zhang & Arora, 2007, p. 10).

In defining “youth entrepreneurship,” some researchers linked the concept to self-employment among youth (Chigunta, 2002; Green, 2013; OECD, 2017). The OECD (2017) posited that for both developed and developing countries “Youth Entrepreneurship can be defined as self-employment among youth” (p.18) while Green (2013) advanced that self-employment is often seen as a limited proxy for entrepreneurship, and that much of the data on entrepreneurial choices of young people related to self-employment. Schoof (2006) recognized that both entrepreneurship and self-employment are sources of new jobs and economic dynamism and can improve economic livelihoods. Schoof argued that for young people in the informal economy, micro-entrepreneurism generates income, self-reliance and a new innovative path to earning a living. The OECD advanced that “all self-employed persons are considered entrepreneurs (business owners) in one of two different categories: self-employed with no employees (own-account workers with no employees) and self-employed who employ other workers (self-employed who are employers)” (p. 202).

Positing that youth entrepreneurship can be a vehicle for enhancing individuals’ employability and social mobility, while also inducing productive transformation, OECD/ECLAC/CAF (2016) reported that young entrepreneurs from Latin American and Caribbean (LAC) region tended to be less educated and come from more disadvantaged socio-economic backgrounds than in OECD economies. Further, “With fewer resources, skills and experience, they face higher barriers for business creation, in accessing finance, acquiring entrepreneurial skills, integrating business networks, creating new markets and overcoming regulatory barriers” (p. 200).

Sources of Financing for Youth Entrepreneurs

Procuring financing for start-up, operation and expansion of their businesses is undoubtedly the major challenge faced by youth entrepreneurs worldwide (Dzisi, 2014; Gwija, Eresia-Eke & Iwu, 2014; Simmonds, 2017; UNCTAD, 2015). Heidrick and Nicol (2002) argued that youth-owned businesses must overcome the same obstacles as other businesses in financing their operations and that the hurdles are often more pronounced.

Danns and Danns (2019) pointed to a composite of international and regional institutions, governmental and other agencies that lend support to youth entrepreneurs and youth entrepreneurship promotion strategies in developing countries. Improving youth entrepreneurs' access to financing is among the types of support offered by some of these agencies (Greene 2013; UNCTAD 2012 & 2015;). However, many of these agencies lack adequate funding and other resources, target only small numbers, and some may be neither consistent nor reliable in their delivery of financial support for youth businesses. Further, even when support for youth entrepreneurs is available, information on such programs is often not accessed by most youth entrepreneurs (Danns and Danns, 2019; Simmonds, 2017).

Typology. Based on a review of research literature on financing youth entrepreneurship we proffer a six-fold typology of the sources of youth entrepreneurship financing in developing countries (See Fig 1). These sources identified from the literature are governmental agencies, international and regional agencies, banks and other financial institutions, non-governmental agencies, personal savings/family and friends, and new players/new financial instruments. Often, two or more these sources work in partnership with each other to provide youth entrepreneurship financing.

Figure 1: Typology of Sources of Youth Entrepreneurship Financing in Developing Countries



Government Financing of Youth Entrepreneurship programs. In recognition of the problems that youth entrepreneurs face obtaining funds from traditional sources like banks and other financial institutions, many governments have committed and are committing funds to assist (Danns & Danns, 2019; Ahaibwe & Kasirye, 2015; UNCTAD, 2015). In some developing countries in Africa and elsewhere, governments have developed ‘national youth funds’ to provide

some financing for youth businesses. Ahaibwe and Kasirye explained that these youth funds are financial resources contributed by governments through their annual budgets for the specific purpose of supporting youth businesses. These funds may be in the form of loans and grants and governments can disburse these in conjunction with the private sector and non-governmental organizations (NGOs). The authors discussed four such cases for Africa (Kenya, Botswana South Africa and Uganda). In Kenya, the government contributes the majority of funds for the Kenyan Youth Fund while financial institutions provide some. The Botswana Youth Fund is 100% government-funded with 50% going to loans and 50% to grants. The government of South Africa initially funded their Umsombuvu Youth Fund which overtime attracted significant private investment partnerships. The government of Uganda, in partnership with three banks, made the Uganda Youth Venture Capital Fund (UYVCF) available “to support growth of viable and sustainable SMEs by youth in the private sector” (p. 4).

In the Caribbean, the Dominica Youth Business Trust (DYBT) launched in 2004 is an initiative of the Government of the Commonwealth of Dominica and the Commonwealth Youth Programme (CYP) with support from the Organization of American States (OAS) and the Caribbean Development Bank (CDB). The DYBT is a program that involves inputs from several institutions and donors to deliver “an efficient package of services” to young entrepreneurs. Among these services are loan guarantees, mentorship and technical support for youth entrepreneurs (Government of the Commonwealth of Dominica, 2019).

Governments also incentivize youth entrepreneurs through competitions and monetary awards. The South African government, for example, provides the Youth Enterprise Award and the Entrepreneurial Ambassador award collectively aimed at bringing national recognition to youth entrepreneurs and as a method of funding (Republic of South Africa, 2013).

In reporting on youth entrepreneurship in LAC countries, OECD/ECLAC/CAF (2016) explained that public policies to tackle financing constraints are gradually being introduced, and that development banks have expanded their role in the region. Further, these agencies reported that recent programs in LAC are targeting youth entrepreneurs by providing credit guarantee schemes to assist young individuals with no collateral. Grants are also being introduced as an instrument targeting youth entrepreneurs. However, the report concluded that spending on entrepreneurship programs generally, was low and that such spending was disbursed disparately through various government ministries and government agencies.

International and Regional organizations. International agencies such as the International Labor Organization (ILO), the World Bank and the United Nations (UN) have supported the Youth Entrepreneurship strategy in developing countries by providing some financing. One example is the Youth to Youth Fund (Y2YF), a scheme run by the Youth Employment Network, an initiative of the ILO, World Bank and the UN. This scheme awarded grants to help youth entrepreneurs in countries such as Tanzania, Uganda and Kenya in East Africa ((UN Envoy on Youth, 2018).

Regional development banks provide some funding for youth entrepreneurs. In Africa, for example, the African Development Bank (AfDB) in collaboration with the European Investment Bank (EIB) manages the “Boost Africa Empowering Young Entrepreneurs” initiative. This initiative, among other goals, provides funding at the earliest stages of enterprise creation (AfDB,

2018). The Inter-American Development Bank (IDB) has a Young Entrepreneurship Program (YEP) designed to provide funding for young entrepreneurs in Latin America and the Caribbean (IDB, 2018). These agencies provide mainly concessionary loans and some grant funding.

Banks and other Financial Institutions. The OECD/ECLAC/CAF (2016) found that adequate financing is a key constraint for developing entrepreneurial activities among the young, and that scarcity of funds in the LAC region is often the outcome of a low level of financial intermediation. It was reported that “SMEs in the region receive only 12% of the total credit, while SMEs in OECD countries receive 25% of total credit; one-third of small businesses in Latin America identify access to finance as a serious restriction” (p. 208).

Commercial banks in Guyana have a poor track record of lending to small and medium size enterprises (SMEs) and youth businesses, many of which are micro-enterprises and are denied as part of this mix in that country. According to the IDB (2014a) commercial bank loans are instead granted to large companies and are denied to SMEs and new businesses. The IDB reported:

in many cases these businesses lack appropriate collateral. Commercial banks require up to 150% collateral and have cumbersome loan application processes. This acts as a major constraint to small and medium- sized enterprises (SMEs). The banking system is biased towards the exclusive use of real estate as collateral” (p.18).

Some development banks and other development financial institutions are being urged by governments to help support youth entrepreneurship. Simmonds (2017) pointed to the case of the Tanzania Agricultural Development Bank that developed a program to provide loans to over 1000 young entrepreneurs during a five-year period. Simmonds, however, cautioned that even where Development Financial Institutions (DFIs) exist, these dedicate only a limited amount of resources and effort on funding for youth. Further, he explained that some banks do not have the risk profile to engage with youth entrepreneurs as a lending class and are unprepared to work with and assist them to integrate themselves into a supply chain where there are many opportunities.

Non – governmental organizations (NGOs). Some non-governmental organizations, both national and international, are involved in the development of youth entrepreneurship and youth enterprise in developing countries (UNCTAD, 2015). While many such NGOs provide entrepreneurship training and mentorship, some also provide funding (Danns & Danns, 2019). In the Caribbean, for example, several countries have Youth Business Trusts with membership in broader umbrella international and regional NGOs. Youth Business International (YBI) and Youth Business Caribbean (YBC) have been working together in tandem to strengthen the ecosystem for young entrepreneurs by expanding access to entrepreneurial support activities for young people throughout the Caribbean (Youth Business Caribbean, 2018).

The Jamaica Youth Business Trust (JYBT) as an accredited member of Youth Business International is a non-governmental youth entrepreneurship development organization which supports entrepreneurial ventures initiated by Jamaican youths from 18 – 35 years old (Jamaica Youth Business Trust, 2019). In addition to training, business mentorship and advisory services, the JYBT provides start-up capital for eligible youth entrepreneurs. Youth entrepreneurs can borrow up to Jamaican \$500,000 per business, collateral-free, low interest loans with a minimum

of three months moratorium and up to three years to repay (JYBT, 2019). JYBT reported disbursing in excess of J\$20 million in start-up loans to youth entrepreneurs in varying industries with agri-business being the most represented. In similar vein Youth Business Trinidad and Tobago (YBTT), Barbados Youth Business Trust (BYTT); St. Lucia Youth Business Trust (SLYBT) and other Youth Business Trusts in the Caribbean and in other developing countries often provide access to start-up financing for youth businesses. Both the SLYBT and BYBT described their programs as “a private sector initiative made possible through a partnership with the voluntary sector” (SLYBT, 2019; BYTT, 2019). The YBTT describes itself as “a registered charitable body” and lists a number of other NGOs, private sector businesses, financial institutions, and international/regional agencies as its donors (YBTT, 2019). These variations underscore the fact that funding sources for youth entrepreneurship are often manifest as integrated networks and collaborative partnerships.

Personal Savings, Family and Friends. Because of the unavailability or inadequacy of formal funding, youth entrepreneurs resort to obtaining financing from family and friends when investing in productive activities for business start-up and expansion (Simmonds, 2017). Heidrick and Nicol (2002), in a study on Canadian youth entrepreneurs, pointed out that 46% used personal savings for start-up; 38% received money from family or friends; 28% obtained loans or a line of credit from financial institutions; and just 9% obtained youth business loans. The findings for this developed country are not totally dissimilar to what is reported in studies on youth entrepreneurship in developing countries. Kew, Herrington, Litovsky and Gale in the 2013 GEM/YBI Report found that approximately three quarters of youth new or nascent businesses were primarily reliant on personal savings or family and friends for funding to start a business. In Latin America and the Caribbean 75.7% of youth businesses were dependent on these sources of financing; 77.7% in Sub-Saharan Africa; and, 73.2% in Asia Pacific and South Asia (Kew et al.). DeGobbi (2014) explained that personal savings was the main source of funding for most Sub-Saharan African countries except for Liberia and Zambia which had higher shares of young entrepreneurs receiving start-up financing from family and friends.

New Players and New Financial Instruments. The OECD/European Union (2014) pointed to the emergence of several new financing mechanisms to fill the start-up capital void for disadvantaged and under-represented entrepreneurial groups, including youth, in Europe. These included loan guarantees, micro-credit, crowdfunding, peer-to-peer lending, business angels, Islamic financing and self-financing groups. Some of these newer mechanisms are finding their way into the youth entrepreneurship financing mosaic in developing countries. Simmonds (2017) reported on financing such as social impact funds, livelihood funds and informal financing mechanisms such as crowd funding for youth entrepreneurs the agricultural sector in Africa.

Otsuka and Canseco (2012) noted that young entrepreneurs needed small loans (not micro) and long-term financing but are inhibited from obtaining these because of lack collateral and credit history. Further, youth entrepreneurs are disadvantaged because the necessary financing amount may be too large for microfinance and too small for venture capitalists or angel investors, if even these exist. These authors found that, contrary to conventional wisdom, loan guarantees can prove an effective vehicle for financing youth start-ups. The authors examined a Multilateral Investment Fund financed project in Peru which selected promising youth start-ups through business plan competitions, trained the screened start-ups, and facilitated financing through a US\$1,000,000

fund (half of which was cash collateral) that guaranteed 67 percent of the credits granted to the winners. This program was executed by PROBIDE- a Lima-based NGO- in collaboration with a local university, 13 private firms, and four partner banks. The authors reporting on this loan guarantee fund stated:

It provided a total of US\$1.32 million in loans to 121 youth businesses. The average loan amount was US\$11,000 with a three-year repayment period and interest rate of 15%. The project technical assistance component supported over 16,000 young entrepreneurs in developing business plans of which 4,695 plans were presented, and ultimately 328 were selected and presented for financing. With the guarantees, a total of 121 businesses were created over the past 10 years, with a 25% failure rate. Of the remaining 90 surviving businesses, their combined sales are currently estimated at US\$11 million and they employ approximately 500 people. (p. 1)

Simmonds (2017) concluded that the availability of financing for youth entrepreneurs was no guarantee that they will become successful. He stated:

A market can have all the liquidity it wants, however without a technical assistance provider- a firm providing knowledge, business or technical skills and mentorship many youth who obtain financing will be doomed to failure. Furthermore, financial literacy and management skills are key resource gaps for many youths in some of these developed markets. (p. 6)

Problems experienced in financing Youth Businesses

Compared to larger firms, youth entrepreneurs' businesses tend to be micro, small and medium size enterprises (MSME). Consequently, accessing financing tends to be more difficult because of credit standards, technical and formal loan eligibility requirements - including requests for collateral and guarantees- and higher evaluation and monitoring unit transaction costs. Youth entrepreneurs often have little information on the solvency of their businesses inclining banks to refuse to lend or require that they pay a very high interest rate in order to borrow. It was found that among the most common reasons for excessive financing costs or even outright credit rationing are lack of a track record; lack of transparency in accounting often associated with weak disclosure capacity; and insufficient capital to offer collateral for the loan (OECD, 2017).

Typically, lenders view young people as risky; lacking credit history, work history, banks accounts and having insufficient collateral to secure loans or lines of credit (Heidrick & Nicol, 2002; UNCTAD, 2015). UNCTAD explained that collateral requirements, excessive restrictions when opening bank accounts, high banking fees, inadequate youth-friendly products, and lack of financial literacy are key impediments for youth entrepreneurs' access to financing. Simmonds (2017) focused on some of the actors who are financing youths in agriculture and found a lack of tailored financial products suitable for season-based enterprises and or farm related risks.

Youth entrepreneurs in less developed countries mainly operate in the informal economic sector, operate unregistered businesses and may be ineligible to access available credit and in general experience problems of financial exclusion. (Danns and Danns, 2019; UNCTAD 2012, 2015). The cost and time needed to register and start up a business in Latin America and Caribbean countries

are among the main obstacles to their development with the LAC reportedly lagging other regions and the global average in this regard. This issue impacts more on youth entrepreneurs and contributes to their economic and financial exclusion (OECD, 2017).

Using recent estimates from selected LAC countries, the OECD reported that entrepreneurship programs represented only a small share of the expenditure in other labor market programs such as training. Further, the OECD stated that estimating public expenditure in youth entrepreneurship can be cumbersome because programs are scattered across different levels of government, ministries and government agencies. (OECD, 2017).

The World Bank (2015) reported that generally for entrepreneurs in the Caribbean obtaining credit was very constraining. The Bank noted that the region performs poorly in terms of depth of credit information and that this increases constraints to accessing financing. The Bank concluded that generic technical assistance, training, advocacy and financing do not appear to match the entrepreneurs' requirements.

A consideration of gender is imperative for an effective understanding of youth entrepreneurs' access to financing. Women in LAC countries experience greater difficulties in starting their own businesses compared with their counterparts in the OECD countries (Kelley et al., 2014). The Inter-American Development Bank (IDB) (2014b) found that: "Despite the efforts of the public and private sector to improve the entrepreneurial environment, there is still a significant gender gap in entrepreneurship (primarily in terms of quantity and growth), which puts the female population at a disadvantage" (p. 6). These studies on women entrepreneurship in the LAC, although applicable, generally do not focus exclusively on women 18 – 35 years old.

Lashley and Smith (2015) pinpointed obstacles women entrepreneurs in the Caribbean experience including a lack of collateral, poor business or management skills (including record-keeping), risk of lending to own-account proprietors, poorly prepared applications and a concentration in low growth and small-scale sectors. Lashley (2009) noted that women's access to financing is constrained by the informal/semiformal sector, and mostly involves small amounts, which restricts growth. Lashley asserted: "a level of stasis where clients that commence activity in the informal sphere do not graduate to the formal sphere where greater opportunities for growth and development are available" (p. 8). Similarly, the Caribbean Development Bank (CDB) (2012) found that "access to finance for women continues to be one of the central barriers to growth, due to limited ownership of requisite collateral to access credit from traditional banking sectors" (p. 36). The challenges that youth entrepreneurs face accessing business financing, therefore, may be compounded for female youth entrepreneurs.

RESEARCH QUESTIONS AND METHODS

The research questions for the article are: (1) What are the sources for youth entrepreneurship financing in the town of Linden, Guyana? (2) What is the profile of youth entrepreneurs who access loans and grants for business start-up and expansion? (3) What problems do agencies report in providing financing for youth entrepreneurship in the town of Linden? The town of Linden was selected for study because the bauxite industry, which was the mainstay of its economy, has diminished considerably. For many young people, in what was once a thriving mining town, the path to success in life consisted of graduating from high school and acquiring a "good job" in the

bauxite industry. The current reality is that bauxite mining has declined considerably over the past ten years and now employs only 506 people from an earlier high in excess of 6,500. Becoming an entrepreneur was not generally on the career radars of youths in Linden. Unemployment and the lack of job prospects, however, are constraining youths to either leave the town or resort to the possibilities of entrepreneurship. Further, entrepreneurship is being promoted by policy makers in Guyana, as a key strategy to generate youth employment, reduce individual poverty and to give youths a stake and say in the development of their communities (Danns & Danns, 2019).

This article utilized data from a broader mixed method study conducted by the authors, during May – June 2018, to determine the factors impacting youth entrepreneurship in the town of Linden, Guyana. IRB approval was granted in April 2018. Survey data from the broader study were used to identify the sources of financing for youth entrepreneurs and to determine the challenges youths experience in accessing business financing. Further, it utilized qualitative data derived from agency interviews with officials and, secondary data to explicate the problems financial institutions, governmental, international and nonprofit agencies report in seeking to provide financing for youth entrepreneurship.

Survey of Youth Entrepreneurs

The survey instrument comprised: demographic questions, questions about business characteristics and start up, current business operations and assessments of the current economic environment. Included in these broad categories were questions on types of businesses owned, startup capital, revenue, profit, reinvestment, access to loans and other forms of financing, entrepreneurial skills and training, number of employees, working hours, family and other support systems, and challenges facing youth entrepreneurs.

Youth entrepreneurs in Linden operate mainly as informal/semi-formal economic operatives where most of their businesses are not registered, taxes and social security obligations are invariably not adhered to and, limited formal records are available. The researchers were able to access and interview 77 youth entrepreneurs. Thirty-five respondents were accessed through the assistance of community leaders and were interviewed in two facilities provided by the Linden Municipality. Questionnaires were distributed to eligible respondents and the research team members were available to provide any guidance required. Secondly, two teams of researchers traversed key business districts and other areas in the town and were able to locate and interview an additional 42 youth entrepreneurs at their business locations. Researchers used the snowball technique to access some of these respondents. We completed the latter interviews on a Friday and Saturday, which are the busiest business days in the town. Survey data was taken off from the questionnaires, recorded onto an excel spreadsheet and further processed using a statistical package.

To determine the sources of financing received by respondents, researchers analyzed responses to three survey questions. These questions are: “Where did you get financing from to start your business?” “Have you been able to secure any financing to grow your business since starting?” and “If yes, from where/whom?” To establish the profile of youth entrepreneurs receiving loans and grants, researchers isolated these respondents and analyzed this data by gender, age group,

number and types of businesses owned, entrepreneurship education received, challenges faced and other factors; and, compared these to other youth entrepreneurs in the survey, when applicable.

Agency interviews

Researchers for this project read news articles from Guyana and contacted governmental, international and non-governmental sources to pinpoint the key drivers of the youth entrepreneurship development strategy. A semi-structured interview schedule was developed in accordance with the study objectives and, the principal researchers conducted 18 agency interviews over a three-week period in May – June, 2018. Interviewees included ministers of government, education officers and other government department officials, the Linden Mayor and town councilors, representatives from youth funding agencies, non-profit agencies, commercial banks, other private sectors entities and community groups. Interviews were recorded and transcribed. For this paper, researchers report on agencies associated with youth entrepreneurship financing in the town of Linden; pinpoint their role in such financing; and, identify themes emerging from agency interviews on the problems agencies faced in providing youth entrepreneurship financing. This is reported in the results using themes and quotations from agency respondents.

RESULTS

Survey Results: Entrepreneurs and Business Characteristics

Table 1 provides the demographic profile of youth entrepreneurs in the survey. Seventy-seven youth entrepreneurs between the ages of 18 and 35 were interviewed. Of these, 47 or 61% were female and 30 or 39% were male. Twenty-four respondents (31.2%) were in the 18 to 25 age group; 17 or 22.1% in the 26 to 30 age group while 36 or 46.7% were in the 31 to 35 age group. Thirty-nine respondents (50.6%) identified as “Black/African;” five or 6.5% identified as “East Indian” and 33 (42.9%) identified as “mixed race.” Thirty-nine or 50.6% of respondents were single while 20 or 26% were married and 17 (22.1%) were cohabiting. Almost 64% of the female respondents and 70% of male respondents had children.

Table 1: Demographic Profile of Youth Entrepreneur Respondents

Gender	N= 77	%		N = 77	%
Female	47	61	Number of Children		
Male	30	39	No children	26	33.8
Age Group			One	13	16.9
18-25	24	31.2	Two	18	23.4
26-30	17	22.1	Three	14	18.1
31-35	36	46.7	More than 3	3	7.8
Race/Ethnicity			Highest level of Education		
Black/African	39	50.6	Primary School	7	9.1
East Indian	5	6.5	Secondary School	35	45.4
Mixed Race	33	42.9	Technical/Vocational	25	32.5
Marital Status					

Single	39	50.6	University	8	10.4
Married	20	26	Other	2	2.6
Common Law Rel.	17	22.1			
Divorced	1	1.3	Current Enrollment in Educational Institution		
Religious affiliation			Technical/Vocational School	9	12.2
Christian	56	72.7	University	7	9.4
Hindu	2	2.6	Other institutions	2	2.7
Muslim	4	5.2	Do not attend any institution	56	75.7
No religion	5	6.5	No response	3	4
No response	10	13			

The highest level of education attained was determined: 9.1% reported primary education; 45.5% reported secondary education; 32.5% reported post-secondary technical/vocational education; and, 10.4% attended university. These findings reveal that 70 out of the 77 youths had attained secondary education or higher. No youth reported never attending school. Nine and seven respondents respectively were currently enrolled in the Linden Technical Institute and the University of Guyana.

Business Characteristics. Table 2 provides some characteristics of the youth businesses. Of the 77 youths in the survey 59 or 76.6% owned one business; 14 or 18.2% owned two businesses; and, four respondents owned three businesses each. Sixty-two respondents (80.5%) earned all their income exclusively from their businesses; seven respondents had jobs along with their businesses; and, four reported earning other income by assisting their spouses. Fifty-five respondents (71.4%) were the sole owners of their businesses while 21 (27.3%) were in business with others including parents, siblings and other relatives.

Table 2: Youth Entrepreneurs' Business Characteristics (N =77)

Categories of Businesses owned*	Freq.	% of Resp.	Number of Businesses owned	Freq.	% of Resp.
Agriculture	2	2.6	One	59	76.6
Art & Craft	3	3.9	Two	14	18.2
Beauty & Grooming	12	15.6	Three	4	5.2
Butchery	1	1.3	Length of time in Business		
Catering	2	2.6	2 years or less	24	31.2
Event Planning	2	2.6	3 - 6 years	21	27.3
Garment Manufacturing	1	1.3	7 - 10 years	15	19.5
Internet services	3	3.9	11 - 15 years	11	14.3
Livestock rearing	4	5.2	Over 15 years	5	6.4
Other services	6	7.8	No response	1	1.3
Restaurant and/or Bar	4	5.2	Age at which Business was started		
Retailing/Vending	32	41.6	17 years or younger	20	26
Seamstress/Tailor	2	2.6	18 - 25 years	38	49.4
Snack preparation	8	10.4	26 years and older	19	24.7
Transportation services	5	6.5	Is Youth Entrepreneur sole owner of Business		

Tutoring	2	2.6	Yes	55	71.4
*Some respondents owned more than one business			No	21	27.3
			No response	1	1.3
No. of Persons currently employed by Business			Respondents' Business co-owners		
One	8	10.4	Parents	2	2.6
Two	11	14.3	Spouse	9	11.7
Three	2	2.6	Brothers/Sisters	3	3.9
Four	2	2.6	Other Youths	1	1.3
Six	1	1.3	Other adults (not youths)	3	3.9
Eighteen	1	1.3	Other relatives	2	2.6
None	50	64.9	No response	1	1.3
No response	2	2.6	Not applicable	56	72.7

The main business categories reported were retailing/vending (41.6%), beauty and grooming services (15.6%), snack preparation (10.4%), and transportation services (6.5%). Additionally, youth entrepreneurs engaged in event planning, catering, agriculture and livestock rearing, garment manufacturing and other sewing activities; owned restaurants, bars and meat shops; provided art and craft services, internet services, tutoring, printing and other services. Data revealed no statistically significant differences in male and female ownership of specific business categories. However, it is worth noting that of the 12 beauty and grooming business in this survey ten were female-owned and all five youth entrepreneurs in the transportation business were males.

Thirty-one percent of respondents were in business for two years or less; 27.3% were in business for three to six years; 19.5% were in business for seven to ten years, while 20.8% reported being in business for 11 years or more. Five respondents reported being in business for over 15 years. Fifty-five of the 77 youth entrepreneurs in the survey started their business at age 18 or older. Fifty-nine respondents (76.7%) reported seeing other family members run businesses.

Survey Results: Access to Financing for Start-up and Expansion

Business Start-up Financing. When asked “Where did you get financing from to start your business” 75 respondents provided answers. Nine respondents named two sources each for their start-up financing. Predominantly, youth entrepreneurs used their own funds and/or help from persons they knew to finance their start-up. Table 3 provides data on youth entrepreneurs’ sources of start-up financing. Forty-nine or 66% of respondents used money from their savings to start their businesses. Male respondents (75.9%) were more likely than females (58.7%) to report using their savings for business start-up purposes. Forty youth entrepreneurs named “savings” as their only means of start-up financing. Thirteen respondents (18%) said that someone else (family and friends) financed their start-up and they did not have to repay. Female respondents (21.7%) were more likely than males (10.3%) to have family and friends financing their start-up. In total 58 respondents (77%) named personal savings and/or family and friends as their source for start-up financing.

Table 3: Sources of Financing for Business Start-up

Financing for Business Start-up (N = 75)	*Freq.	%*
From my savings	49	66%
Someone financed my start-up and I do not have to repay	13	18%
Borrowed from the bank	7	9%
Borrowed from the Linden Enterprise Network (LEN)	1	1%
Borrowed from Inst. for Private Enterprise Development (IPED)	1	1%
Borrowed from another agency	2	3%
Grant from a non-governmental agency (SKYE, USAID)	4	5%
Grant from a Guyana Government agency	2	3%
Inheritance	1	1%
Someone financed my start-up and I have to repay	1	1%
Did not need start-up money	3	4%

*Does not add up to 75 or 100% as some respondents provided more than one source of financing

Sixteen of the 75 respondents (21.3%) acquired loans and/or grants for business start-up. One respondent accessed both a loan and a grant for start-up. Seven respondents (9.3%) got financing from a bank; two received grants from government agencies; four received grants from non-governmental agencies; four others borrowed from other agencies including the Linden Enterprise Network (LEN) and the Institute for Private Enterprise Development (IPED). Of the seven respondents that got bank loans, four reported that they also used their own savings. Respondents who procured financing through loans and grants from other agencies did not report also using own funds.

Business Expansion Financing. Respondents were asked “Have you been able to secure any financing to grow your business since starting: if yes from where/whom?” Thirty-three respondents reported getting financing to expand. Twelve respondents (15.6%) got financing from family and seven self-financed their expansion. Eleven respondents (14.3%) got loans from banks; two got financing from government programs; one from an NGO and one from a SSYDR grant. In total, 15 youth entrepreneurs (19.5%) received loans or grants for expansion purposes. This compares to 21.3% who got start-up loans and grants. Of the 15 youth entrepreneurs receiving expansion loans and grants from banks and other agencies, six or 40% of those also received loans or grants for start-up purposes.

Survey Results: Profile of Youth Entrepreneurs receiving loans or grants

This section focuses on the youth entrepreneurs in the survey who were able to acquire grants and/or loans for business start-up and/or expansion. It examines several factors and distinguishes the differences, if any, from other respondents in the general survey. Twenty-five or almost 33% of youth entrepreneurs in this survey reported receiving loans and/or grants to start or expand their businesses. Three entrepreneurs reported accessing bank loans for both business start-up and expansion. The commercial banks were the most popular source of financing for these respondents with 16 of the 25 (64%) accessing loans from this source. Nine in total had grants

from governmental and non-governmental sources, while four reported receiving loans from sources other than banks.

Of the 25 loan and grant recipients:

- 14 (56%) were female and 11 (44%) were male; Data revealed no statistically significant difference between males and females acquiring loans and grants.
- 44% were in the 31 – 35 age category, while 28% each were in the 18 – 25 and 26 – 30 age categories respectively. The data revealed no statistically significant difference among age categories acquiring loans and grants.
- 80% of loan/grant recipients owned one business while the remainder owned two or more businesses.
- 48% of loan/grant recipients were in the retailing/vending business, and 12% were in the beauty and grooming services business; 9% were into agriculture/poultry rearing.
- 52% of the loan/grant recipients had some form of entrepreneurship and business education/training prior to starting their businesses compared to 26.9% for those who did not receive such loans/grants. This difference was statistically significant ($p < .05$ level). One possible reason for this disparity is that invariably grant recipients and some loan recipients are required to attend entrepreneurship training as a pre-requisite for funding.
- 84% of loan/grant recipients reported observing a family member (mother, father and other relatives) run businesses compared to 73% for those who were not recipients of grant/ loans.
- All loan and grant recipients reported reinvested some profit into their businesses.
- There was no statistically significant difference in the level of business satisfaction between those who received loan/grants and those who did not. However, those who received loans reported feeling more worried when they think of their business than those who did not.
- Loan/grant recipients were less likely to “agree” or “strongly agree” that “the lack of collateral” was a challenge than those who did not receive such financing.
- Loan/grant recipients were less likely to “agree” or “strongly agree” that “support from the community” was a challenge than those who did not receive such financing.
- Greater than 50% of both loan/grant recipients as well as non-recipients “agreed” or “strongly agreed” that the “weak economic environment,” “lack of support from government,” “lack of funding information,” “lack of money to invest,” “high cost of running their business” and “uncertainty about the future” were challenges facing them.

Qualitative Results: Agencies involved with Youth Entrepreneurship Funding

Interviews with agencies offering support for youth entrepreneurship revealed that financial support in the form of loans and/or grants to Linden youth entrepreneurs derived from:

1. Commercial banks with branches in Linden
2. The Linden Enterprise Network (LEN)
3. The Institute of Private Enterprise Development (IPED)
4. The USAID and FAO-funded projects executed through SSYDR and the SKYE Program
5. Government ministries executing programs such as the Hinterland Employment and Youth Services (HEYS) Program and the Small Business Bureau (SBB).

Commercial Banks: Two of the six commercial banks operating in Guyana, Republic Bank Ltd. and Citizens Bank Guyana Inc., have branches in Linden. These branches undertake general

commercial banking activities in the town and have no special lending facilities for youth entrepreneurship. Both banks indicated that they are unlikely to lend for start-up businesses but loans can be acquired if the business is an on-going concern, proves that it has good potential and can repay. However, some youths in our survey indicated that they got loans from the banks to start their businesses and named one commercial bank operating in the town. The banks indicated that they lend to youths who have jobs.

The Linden Enterprise Network (LEN). LEN is a funding agency that facilitates start-ups as well as existing businesses that do not meet the requirements for commercial bank financing. It offers both loans and grants. The agency serves Region Ten in Guyana, which includes the town of Linden, and while not specifically a youth entrepreneurship lending facility, LEN offers loans and grants to youth entrepreneurs. According to LEN's executive director, an estimated 15% of LEN's funding has gone to youth entrepreneurs. LEN is funded primarily by the Government of Guyana but seeks partnership with other agencies. The Executive Director described a grant program in which the agency received funding from the Caribbean Development Bank (CDB) and partnered with the Georgetown Chamber of Commerce to train youths in apiculture and then offered them grants to start businesses. In another initiative, 35 youths were reportedly given collateral-free loans to start businesses that included ice-cream vending, salon, barbershops, poultry rearing, and construction. Some youths paid off their initial loans and borrowed again while others did not continue in business. The LEN program started in 2010 after the Linden Economic Advancement Project (LEAP), a community advisory and technical assistance facility, and its funding arm Linden Economic Advancement Fund (LEAF) ended in 2009. LEN took over the combined functions of those two facilities.

Institute for Private Enterprise Development (IPED). IPED is a national non-profit, non-governmental organization that provides loans, training and mentorship to micro and small business enterprises in Guyana. It is headquartered in the capital city of Georgetown but has a branch office located in the town of Linden. Only five percent of IPED's overall loan portfolio of G\$3B for 2018 was allocated for youth businesses. (Guyana Chronicle, March 29, 2019). According to the Business Counselor/Field Officer for Linden, IPED has a youth loan package and offers youths entrepreneurship training, some counseling, and links them to technical expertise, like agricultural officers, when the need arises. According to the field officer, the agency does not finance business start-up and, lends only to registered businesses. IPED does not seek collateral from youth entrepreneurs but has mandatory small business management training when providing loans to youth entrepreneurs. At the time of interviewing IPED Linden had seven youth loans granted under the youth loan initiative.

Specialists in Sustained Youth Development and Research (SSYDR) Inc.: SSYDR is a non-profit enterprise focusing on youth development "so as to reduce youth crime, violence and poverty among youth in Guyana" (personal communication, May 2018). SSYDR works mainly with "at risk" youth who, according to SSYDR's executive Director, comprise "dropouts, teenage mothers, youths who come from communities where there is a systemic crime environment, youths whose socio-economic conditions are pretty low and generally youths who are unemployed and don't have the wherewithal to become employed." SSYDR's foci include youth entrepreneurship training and funding as a means of reducing youth poverty. SSYDR receives funding for project execution from various donor agencies. The Executive Director pinpointed that youth

entrepreneurs in Linden have benefitted from funding that SSYDR obtained from the Food and Agricultural Organization (FAO), the Guyana Ministry of Communities through the SLED Funds and from the United States Agency for International Development (USAID). Prior to the development of SSYDR, this agency's management team executed the USAID's SKYE (Skills and Knowledge for Youth Employment) project, which had a similar focus. Upon project completion, SKYE's training curriculum was gifted to SSYDR.

The Hinterland Employment and Youth Services (HEYS) Program. HEYS is a central government funded project geared to provide scholarships, training, stipends, entrepreneurship funding and much more to youths from indigenous Amerindian villages and other hinterland areas in Guyana. Researchers for this project did not interview HEYS project officials because technically Linden is not considered as being in Guyana's Hinterland. However, it is explained here because one survey respondent of Amerindian origin pointed to this project as a funding source. It is not unusual for residents of Linden to also have some residential ties to the Hinterland.

The Small Business Bureau. The Small Business Bureau (SBB) is a "semi-autonomous" Guyana Government agency that was created to fulfill and execute the mandate set out in the Small Business Act No 2 of 2004 (SBB, 2018). One of the SBB's four functional areas is access to financing for small business. It achieves this by partnering with international agencies, local commercial banks, the Institute for Private Enterprise Development (IPED) and other entities to fund and implement projects and connect small businesses to such funding. One such project was the US\$5 Million Micro and Small Enterprise (MSE) Development Project for which the Inter-American Development Bank (IDB) was the funding entity and the SBB the implementing body. This project aimed at addressing two main bottlenecks for MSEs – limited funding and limited business skills. The project operated through a credit guarantee facility, an interest payment support facility and a low carbon grant scheme for businesses. Two local commercial banks and IPED facilitated the loan process while the government supported a reduced interest rate for all project loans disbursed (Guyana Redd + Investment Fund, 2013, SBB, 2016). One youth entrepreneur from the Linden sample survey benefited from an SBB sponsored loan.

Qualitative Results: Problems associated with Funding Youth Entrepreneurs

Researchers asked agencies to outline some of the problems associated with financing youth entrepreneurs. The agencies dependent on government subventions explained that government funding was sporadic and insufficient. LEN for example, explained that from 2010 to 2015 it was "starved for funding" but got some funds when a new government administration came into power. Further, funding agencies reported problems dealing with youth entrepreneurs from Linden in general (not necessarily respondents from the sample survey). Some distinct themes emerged from these agency interviews. Agencies reported that youth entrepreneurs: lacked good business ideas and were not forward looking; lacked a sense of responsibility and were not motivated; lacked financial and general literacy; lacked a deep sense of what business entailed; lacked collateral and assets; and, had poor business and management skills. This section reports on these and other emerging themes.

Lack of good business ideas/Not forward looking. The theme of youths not having good business ideas emerged specifically from institutions that offered loans. These institutions reviewed closely

the quality of loans and were interested in lending to what one interviewee called “quality borrowers.”

One loan officer from IPED said:

“Youths have corner shops: five or six on the same street with everyone offering the same products; not much distinguishing or differentiating them from each other. There are not many persons with a niche in the market.”

One banker concluded that:

“The youths are stuck in a box; they think just of Linden when there are a number of surrounding areas that can form their market. They can venture out into a number of the riverain areas but are reluctant to go that extra mile.”

LEN’s Director stated:

“We’re living in an innovative age... We don’t see a lot of people [youths] getting into tourism but Linden has a lot of opportunities [Youths] need to see what is there and try to be transformative.”

The director however, reported observing several promising exhibits from youths at a recent trade show.

Lack of a sense of responsibility/ Lack of Motivation. There were mixed sentiments about the motivation of youth entrepreneurs and youths generally in Linden. Some lending agencies felt that the youth entrepreneurs were not responsible and lacked the responsibility to carry on businesses. One banker said: *“The youths are not responsible enough to do these businesses. A lot of them start and then they stop.”*

LEN’s Director stated:

The youths always have to be motivated. They start the programs but do not complete. [we are] constantly motivating them. This is one of the difficulties we are having with youths. They don’t have the stay-ability with them. Some of the youths do not want to go through the training before they are given the funds. We are trying with the new program we are rolling out to give them a stipend to see if this would increase the number of youths in our program.

An IPED loan officer stated:

“From my observation persons seem to be stuck in a malaise – They have a problem plowing back profits into the business. Businesses are barely breaking even, making money in Linden. They do not have an idea of re-investing in their businesses.”

Lack of financial and general literacy. While the lack of financial and general literacy was not a complaint specific to the youth entrepreneurs in Linden it is worth noting that a few lending and other agencies working with youths in general lamented the lack of financial and other literacy of some youths aspiring to be entrepreneurs. Specifically addressing the financial literacy problem, the Advisor to the President on Youth empowerment explained:

When we developed the youth policy, we decided that there were two ways we can solve the youth unemployment problem: 1. actually creating employment and 2.

through entrepreneurship – putting young people in business ... We found that many of them were not financially literate. So, our program became Financial Literacy and Small Business Training.

Echoing a similar sentiment, one banker reported the level of literacy as one of the challenges facing youths seeking business funding. She found that some youths who approached the bank could not “*put their business ideas down on paper.*”

Some funding agencies recognize these problems and work with youths to improve financial and general literacy, along with providing entrepreneurship training before offering any form of business financing. The remedial work needed in these areas lengthen the training period before youths can access funding. Some funding agencies reported that youths may become impatient and/or despondent and may withdraw from programs aimed at empowering them.

Lack of a deep understanding of what business entails. One banker explained that youths seeking funding do not take into consideration factors that can negatively impact their bottom line. The banker stated:

I think they [youths] just look at it [business] from a face value standpoint. They do not sit down to look at it in detail. This is because of limited knowledge....For example, take poultry.... They would say I rear so many birds and sell it for so much; this is my price, my income and this is my profit. They do not take into account or make provision for losses. They would not consider that the price of feed may increase.

Lack of Collateral. Bankers in Linden explained that youths invariably lacked the requisite collateral to obtain loans. One banker explained that from a funding standpoint this lack of collateral was a main challenge. The banker said: *Because they have such a difficulty getting a land title or even getting a vehicle, the youths basically cannot get collateral to put up. The lack of assets is the biggest problem.* This sentiment was echoed by another lending agency that said youths needed access to titled land.

Poor business and management skills. The interviewee from IPED Linden explained:

Another problem you will find is that some clients [youth] are not too quick [good] with management skills to effectively function as an entrepreneur. To help solve this problem we try to offer them some training and skills to help them manage...some record keeping so that they can keep track with what's happening in the business

This loan officer also felt that youth entrepreneurs were not implementing what they learned and that poor management by youth entrepreneurs caused loans to become delinquent. He explained that “*Youths coming for loans are a poor quality of borrowers. We are trying to focus on quality rather than quantity.*”

Most of the lending agencies further explained that there were difficulties in terms of youths’ business plans and in presenting their financial statements and other documents.

Other Problems affecting Youth Entrepreneurship in Linden. The general state of the economy in Linden also impacted on the youths being granted funding. One lending officer described the lending risk in this way:

Because the economy is going down there is a very high risk giving the self-employed a loan. You will find that we only grant loans to those who have already had loans and would have proven themselves worthy customers. With the new ones it may be too risky.

Some lenders felt that the youth entrepreneurs and youths in Linden generally needed more guidance in terms of the various lending institutions and that there are not many programs introducing youths to entrepreneurship and business. Some felt that more training of youth entrepreneurs was needed. Further, there should be some evaluation to determine whether the training was being implemented. Many of the lending agencies felt that the government should be doing much more for youth entrepreneurs in the community. One banker summed it up in this way:

“This community has a lot that can be developed but I do not know where that will come from. The government isn’t doing much. This may have to come from private entities that will try to do something.”

CONCLUSION

This study is a contribution to the scholarly literature on youth entrepreneurship in Latin America and the Caribbean. Uniquely, it provides a case study on financing of youth entrepreneurship in the less developed country of Guyana, both from the standpoint of youth entrepreneurs themselves and the agencies that provide funding for them. Based on a review of research literature on financing youth entrepreneurship, we developed a six-fold typology of the sources of youth entrepreneurship financing in developing countries (See Fig 1). The utility of the typology is that it enables identification of stakeholders for youth entrepreneurship financing in a country or a community.

As depicted in the typology, the sources for financing youth entrepreneurship are governmental agencies, international and regional agencies, banks and other financial institutions, non-governmental agencies, personal savings/family and friends, and new players/new financial instruments. It is usual for two or more of these stakeholders to work in partnership with each other to provide youth entrepreneurship financing. When the typology is applied to the town of Linden, this study found that all these funding sources were operative except for new players/new financial instruments.

This study found that except for the Linden Enterprise Network (LEN) whose funding is directly for the Linden community and the broader Region Ten of Guyana, other funding agencies operated country-wide and some Linden youths benefited from their loans and grant facilities. LEN, however, does not target youths specifically but has some youth entrepreneur loans on its portfolio. Similarly, the Institute for Private Enterprise Development (IPED) sets aside a small amount of funding specifically for youth entrepreneurs. Overall, youth funding programs do not specifically target youth entrepreneurs but provide financial and other support for broader youth development causes. The SSYDR-executed programs, for example, target at-risk youths generally and youth entrepreneurship may be funded as part of these operations. The banks in Linden operate as general

commercial banks and do not have a specific funding portfolio for youths. There is therefore very little government or other agency funding specifically for youth entrepreneurship in Linden.

Similar to the findings of Kew et al. (2013) we found that 77% of youth entrepreneurs in our survey sourced financing for business start-up from their personal savings/family and friends. Twenty-one percent accessed loans from commercial banks for start-up and/or expansion. Commercial banks then, were the second source of youth entrepreneurship financing followed by loans and/or grants from nonprofit organizations and selected government programs. In sum, only one out of every three youth entrepreneurs from the survey reported receiving loans or grants to start or expand their businesses. Youth entrepreneurs who received loans and grants were more likely than non-recipients to have as role models, family members who also operated their own businesses. Further, this study found no statistically significant difference between male and female survey respondents acquiring loans and grants to start or expand their businesses. Probable reasons for this finding are that both female and male respondents had achieved similar levels of education and neither was discouraged by family members, the community, funding institutions and other youth agencies from entrepreneurial pursuits as a means of employment.

Agencies from which youth entrepreneurs derived loans and grants were in general less than sanguine about the entrepreneurial prospects of youth entrepreneurs in the town, judging them as neither business-like nor transformational. Notwithstanding the paucity in agency financing and negative judgement of the performance capabilities of youth entrepreneurs, survey data revealed that respondents were able to earn a living from their businesses and 70% of them were in business longer than two years and 21% for over ten years.

Youth entrepreneurs in the town of Linden operate in a depressed economic environment, which limits business opportunities. The bauxite industry as the mainstay of the town's economy has experienced precipitous decline, severely affecting employment opportunities and all other aspects of economic life. Linden's majority youth population are often constrained to seek employment outside of the town or gravitate to survival entrepreneurship within it. Access to financing for start-ups or business expansion remains a serious challenge. UNCTAD (2012) recommended for developing countries: improving access to financing by developing public credit guarantee schemes and facilitating collateral-free loan screening mechanisms; promoting funding for innovation; building the capacity of the financial sector to serve start-ups; providing financial literacy training to entrepreneurs; and encouraging responsible borrowing and lending. Based on the findings of this study we endorse these UNCTAD recommendations.

The Guyana government has encouraged residents in the Town of Linden to get involved in business. While the intent to promote and support the development of entrepreneurship in Guyana was affirmed by the government, there is yet no comprehensive plan in place for its actualization. Programs supporting youth entrepreneurship are not coordinated, scattered across different levels of government ministries and government agencies, do not evidence a common purpose and are inadequately advertised. These agencies invariably lack adequate funding and are not reliable nor consistent in their delivery of financial support for youth businesses. It is recommended that coordinated, targeted and financially supported policies and programs for youth entrepreneurs in Linden be specifically developed, publicized and implemented.

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CORPORATE SOCIAL RESPONSIBILITY AND LIKELIHOOD OF FINANCIAL DISTRESS

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ABSTRACT

Does doing good to society make firms less likely to have financial trouble? This paper looks at the benefit of corporate social responsibility (CSR) and examines whether firms' CSR engagement affects their chance of falling into financial distress. After analyzing a broad U.S. database spanning 25 years from 1991 to 2015, we find that CSR engagement indeed reduces the likelihood of firms falling into financial distress, and the results are statistically robust and economically significant. Further, we find the impact of CSR on the likelihood of financial distress is more pronounced in economic downturns and for firms with high levels of international involvement. Collectively, our result suggests that CSR lowers financial distress risks by improving firm-stakeholder relationships, which enhances our understanding of the stakeholder view of CSR with longitudinal approach and contextual consideration of firms.

INTRODUCTION

Over the last few decades, corporate social responsibility (CSR) has been explored extensively by both practitioners and researchers as a strategic priority for business entities. Massive corporate resources have been invested into CSR related activities, ranging from reducing pollution to cutting energy and water consumption levels. According to the Report on U.S. Sustainable, Responsible, and Impact Investing Trends (2018), the market size of CSR investment reached a historical high of \$12 trillion, an increase of 38% from 2016. Socially irresponsible firms, on the other hand, were punished by consumers as well as investors. For example, the 2010 Deepwater Horizon spill of British Petroleum brought the total costs to around \$65 billion up to 2018. Recently, Volkswagen lost 20% of its market value overnight due to its emission test cheating scandal and Facebook stock dropped roughly 20% over data privacy controversies. Doing good to society has become a common practice for business entities.

Does doing good to society benefit the business entities as well? Extensive academic research has explored the financial rewards of companies' CSR engagement. Most of the early studies investigated the direct link between CSR activities and financial performance (Feldman, Soyka, & Ameer, 1997; Jiao, 2010; Orlitzky, Schmidt, & Reynes, 2003; Nelling & Webb, 2009) with mixed empirical results. Later research further investigated the channels through which CSR influences firm value and provided various explanations (Kim, Park, & Wier, 2012; El Ghoul, Guedhami, Kwok, & Mishra, 2011; Servaes & Tamayo, 2013; Lins, Servaes, & Tamayo, 2017; Bae, El Ghoul, Guedhami, Kwok, & Zheng, 2018).

Despite the stream of publications on CSR, limited research examined how CSR activities affect firms' risk profile (e.g. Jo & Na, 2012; Hsu & Chen, 2015). The lack of attention was mostly salient concerning CSR and firms' financial risk. This omission is important because whether firms' CSR influences financial risk, especially financial distress, provides an alternative channel to examine firm value. According to the trade-off theory of capital structure (Kraus & Litzenberger, 1973; Scott, 1976; Kim, 1978), financial distress is very costly to the firm. Worrying about financial distress constrains firms' ability to raise capital and take advantage of tax shield benefits, thus lowering the total value of the firm. In other words, if more CSR engagement reduces firms' chance of falling into financial distress, then this effect indirectly increases firm performance. In addition, investigating the influence of CSR on firms' chances of falling into financial distress has significant economic implications. Firms subject to large costs of financial distress could make strategic changes for improvement by increasing CSR investments. In particular, investment institutions with relatively small risk tolerance, such as pension funds, could focus more on the CSR features of their security products.

To fill this gap in the literature, this study explores the direct impact of CSR on firms' likelihood of falling into costly financial distress. Current literature holds divided views on this question. *Shareholder expense view* argues that CSR is a diversion from maximizing shareholder value and therefore suboptimal CSR investments waste financial resources and increase firms' chances of falling into financial distress (Pagano & Volpin, 2005; Cronqvist, Heyman, Nilsson, Svaleryd, & Vlachos, 2009; Masulis & Reza, 2015). On the other hand, the *stakeholder view* gives credit to the benefit of contract maintenance by CSR and suggests CSR engagement reduces the likelihood of financial distress (Servaes & Tamayo, 2013; Lins et al., 2017; Bae et al., 2018). Similarly, benefits of CSR include ease of financing and lower litigation risk (El Ghouli et al. 2011), both of which help reduce firms' probability of falling into costly financial distress. Both shareholder expense view and stakeholder view offer valid arguments and empirical tests will reveal which one dominates the effect and receives better support from the data. We believe it important to reconcile both perspectives and suggest that CSR may exert impact on financial distress differently depending on economic conditions and firms' international market involvement.

Based on a sample of 11,840 U.S. firm-year observations from 1991 to 2015, we find that more CSR engagement significantly reduces firms' chance of falling into financial distress. After controlling the potential reverse causality and omitted variable issues, we find the main effect unaffected. Therefore, our results suggest that stakeholder view of CSR can better explain the impact of CSR on firms' financial distress when using longitudinal research designs and considering contextual evolution of firms in terms of international involvement.

This study contributes to the literature in several ways. First, our study explores a new channel through which CSR could affect firm value. By showing strong and consistent evidence on the relation between CSR and financial distress outcome, we provide a new piece of evidence supporting the positive role played by CSR (El Ghouli et al., 2011; Servaes & Tamayo, 2013; Lins et al., 2017; Bae et al., 2018). Second, consistent with prior research on CSR and firm risk (McGuire, Sundgren, & Schneeweis, 1988; El Ghouli et al., 2011; Hsu & Chen, 2015), our results add value to existing research by showing firms with high CSR score have lower financial risks especially during economic downturns and when firms engage with international stakeholders.

LITERATURE REVIEW

Financial Distress

Financial distress and its impact on firm value were introduced by Modigliani and Miller (1958, 1963), where they argue that corporate value is irrelevant to the capital structure or indebtedness in a *perfect* capital market. However, with the presence of tax advantage of debt and bankruptcy cost, capital structure significantly affects firm value in the imperfect market. The tradeoff theory (Kraus & Litzenberger, 1973; Scott, 1976; Kim, 1978) argues that firms' optimal debt ratio is reached by trading off between tax shield benefits and cost of financial distress. This theory establishes the link between financial distress and firm value: costly financial distress lowers firms' debt capacity to take advantage of the benefits of tax shield, thus reducing total firm value.

Financial distress occurs when a company cannot meet its financial obligations to its credits. Based on the tradeoff theory, it is crucial for companies to develop operational strategies to either lower the financial distress costs or, as investigated by this paper, lower the probability of falling into costly financial distress. As suggested by the existing literature, financial distress could impose dead-weight costs on firms, both directly (including legal, administrative, and advisory fees associated with bankruptcy) and indirectly (decline in business operation, lower morale in work force, etc.). Although the direct cost of financial distress might be negligible, ranging from 1% to 5% of total firm value (Warner, 1977; Weiss, 1990; Lubben, 2000), the indirect cost has been identified to be substantial. Altman (1984) documents indirect cost of financial distress to be 11% to 17% of firm value based on the decline in sales of bankruptcy companies. Opler and Titman (1994) also observe substantial loss in market share and market value of equity for highly leveraged firms. In addition, Shleifer and Vishny (1992) specify that distressed firms could be forced into selling assets at huge discounts rather than fair market value. Financial distress could also lead to undesired higher cost of financing, losses of key customers, suppliers, and trained workforce, among others. Given the catastrophic effect of financial distress, companies always put strategic priorities on reducing the likelihood of financial stress (Altman & Hotchkiss, 2005). Businesses are finding that being socially responsible can be great for the bottom line, as well as good for employee morale. It would be great if the same good behavior also reduced a firm's chance of falling into financial distress.

Shareholder Expense View of CSR

According to the definition proposed by the World Business Council for Sustainable Development in "Corporate Social Responsibility: Meeting Changing Expectations", CSR is the continuing commitment of a business to behave ethically and contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life. Socially responsible firms have higher engagement in CSR investments and devote more corporate resources into CSR activities than firms that are not responsible.

Shareholder expense view suggests that firms invest in nonproductive CSR activities to benefit stakeholders but at the expense of shareholders. For example, an opportunistic manager voluntarily pursuing stringent pollution standards can boost the manager's reputation as a socially

responsible citizen. However, such investments are not necessary and will harm the competitiveness of the firm (Deng, Kang, & Low, 2013). These CSR engagements do not financially benefit the firms, rather they waste precious resources. According to Ullmann (1985) and Aupperle, Carroll, and Hatfield (1985), derailed from the traditional financial management goal of maximizing shareholder value, CSR investments waste precious financial resources, which could have been invested into profitable projects or solved debt constraint problems. The shareholder perspective suggests firms with higher CSR are financially disadvantaged compared to others, which could potentially increase financial risks. If an exogenous shock takes place and exposes firms into potential shortage of debt payment, firms with high CSR engagement may have even less financial flexibility to make the payment, thus exposing itself to financial distress. Many empirical studies support the shareholder expense view. Di Giuli and Kostovetsky (2014) show that increase in CSR ratings is achieved at the direct expense of firm value, including negative stock returns and declines in return on assets. Bhandari and Javakhadze (2017) show that CSR distorts firm-level capital allocation efficiency and the distortion is also reflected in firm performance. Accordingly, we hypothesize a positive relationship between a firm's CSR and likelihood of falling into financial distress.

Hypothesis 1a: ceteris paribus, CSR increases firms' probability of falling into financial distress.

Stakeholder View of CSR

The shareholder expenses view has been challenged in subsequent research of stakeholder theory. According to contract theory (Coase, 1937), a firm is a nexus of contracts between shareholders and stakeholders (including suppliers, customers, investors, employees, among others). CSR represents an investment in intangible assets such as firm reputation and human capital with an expectation for return with strengthened relationships with stakeholders. Based on the stakeholder view (Jones, 1995; Donaldson & Preston, 1995; Freeman, 1984), companies should consider the interests of a broader group of stakeholders and align the interests between stakeholder and shareholders. Stakeholder view implies that CSR engagements are important in obtaining necessary resources and support from stakeholders (Jones, 1995). A growing literature has supported the benefits of CSR from the stakeholders' perspective. For instance, Sharfman and Fernando (2008) specify that CSR investments reduce the probabilities of expected financial, social, or environmental crisis that could adversely influence firm's cash flows. Godfrey, Merrill, and Hansen (2009) point out CSR investments generate moral capital or goodwill which can provide "insurance-like" protection to preserve financial performance. Lins et al. (2017) find that CSR pays off when level of trust in firms suffers a negative shock in the crisis period.

Recently, company behavior toward the community has received increasing scrutiny by the media. CSR engagement could mitigate information asymmetry problems as firms signal their social responsibility and attract coverage from news media and financial analysts. The increased disclosure coupled with firms' signal of reputation and responsibility give socially responsible firms easier access to capital market and cheaper financing. Specifically, El Ghouli et al. (2011) find that firms with better CSR scores exhibit cheaper equity financing. Hsu and Chen (2015) find socially responsible firms have better credit ratings and lower credit risk. Goss and Roberts (2011) find cheaper bank loans for socially responsible firms. Lastly, Gu, Bosworth, and Wang (2016) showed that CSR is more valuable to firms under unfavorable financial market conditions and

these firms respond with more CSR engagement.

Based on the above evidences, we argue that firms with higher CSR engagement will have less risk of encountering financial difficulty, and better financing opportunities to recover and avoid costly financial distress. Therefore, we hypothesize a negative relationship between firms' CSR and likelihood of falling into financial distress:

Hypothesis 1b: ceteris paribus, CSR reduces firms' probability of falling into financial distress.

Business Cycle and International Involvement

According to shareholder expense view, CSR investments drained precious financial resources from firms, thus making them more vulnerable during the economic downturns when external credit is harder to obtain, such as the technology bubble burst (2000-2002) and financial crisis of 2008. During these economic downturns, the liquidity tightening can threaten the viability of firms, especially firms that are financially weak because of their CSR engagements. We believe it essential to investigate the impact of CSR on firms' likelihood of financial distress under different macroeconomic situations, specifically in the economic downturns (2000-2002, 2008) and economic expansion periods (the years immediately preceding the two downturns, namely 1997-1999, 2007), to provide deeper understanding of the impact of CSR on firms' financial distress.

While shareholder expense view expects firms with higher CSR have higher likelihood of falling into financial distress in the economic downturns than in the expansion period (Pagano & Volpin, 2005; Cronqvist et al., 2009; Masulis & Reza, 2015), stakeholder view argues for the exact opposite (Servaes & Tamayo, 2013; Lins et al., 2017; Bae et al., 2018). For example, Lins et al. (2017) reports that high CSR firms earned significantly higher stock returns than low CSR firms during the 2008-2009 financial crisis, when the overall economy faced a severe crisis of confidence. This is in line with the insurance-based view of CSR (e.g., Fombrun, Gardberg, & Barnett, 2000; Godfrey, 2005; Peloza, 2006), which argues that CSR investments build up social capital and provide firms not only easier access but also a broader base of resources during challenging macroeconomic situations. Therefore, it is expected that in the economic downturn periods, CSR firms could take advantage of the resources they built up and are less likely to fall into financial distress.

Hypothesis 2: ceteris paribus, the effect of CSR on lowering firms' probability of falling into financial distress is more pronounced in economic downturn period than in expansion period.

In addition, according to stakeholder view, more international involvement of CSR firms is associated with an even broader base of available resources provided by stakeholders compared to CSR firms with less international involvement (Husted & Allen, 2006; Crilly, 2011). Therefore, we further investigate whether the impact of CSR on financial distress is subject to influence by firms' international involvement. Specifically, we explore if the effect of CSR engagement on lowering likelihood of financial distress is more pronounced for internationally involved firms. To measure international involvement, we consider both firms' assets and sales that are classified as foreign and calculate the involvement ratio of foreign to total assets and total sales. Firms are grouped into "high international involvement" and "low or no international involvement" if the

ratio is above or below the sample median.

Compared to low international involvement firms, the stakeholders of highly international involved firms come from both domestic and foreign markets and are thus subject to different systematic risks. When the financial situation worsens in the domestic market, firms with no or low foreign involvements may not get much help since domestic stakeholders themselves may also experience financial troubles. Firms with higher international involvements, on the other hand, benefit from their international stakeholders who are less likely to be affected by the domestic trouble. Additionally, from the ease of market financing perspective, international firms with CSR engagement are subject to disciplines of multiple capital markets, thus having higher levels of information transparency. As a result, these socially responsible firms can obtain easier financing from international markets. Based on these arguments, if the stakeholder view and ease of financing view of CSR dominate the empirical results, then we should observe:

Hypothesis 3: ceteris paribus, the effect of CSR on lowering firms' probability of falling into financial distress is more pronounced in firms with high international involvement than those with low or no international involvement.

METHODOLOGY

We construct the data by merging Compustat North America (industry affiliation and financial data) with MSCI ESG STATS (Corporate social responsibility data) for the time period of 1991-2015. When testing Hypothesis 3, we also merge MSCI ESG STATS with Compustat Global to get the foreign segment data. Following the common practice of empirical study, we exclude highly regulated industries: financial institutions (SIC codes 6000-6999) and utilities (SIC codes 4900-4999). All financial variables are winsorized at the 99th percentile. The final sample consists of 11,840 U.S. firm-year observations.

Financial Distress

We follow Atanassov and Kim (2009) and constructed two financial distress variables: *distress1* (=1 if the company has a positive, above-industry median EBITDA/TA in the previous year and drops more than 50% in EBITDA in the distress year; =0 otherwise); and *distress2* (=1 if the company has a positive, above-industry median EBITDA/TA in the previous year and EBITDA falls to the bottom quartile of its industry in the distress year; =0 otherwise).

Empirical research also employed other measures in defining financial distress. Besides the definition mentioned above, Hoshi, Kashyap, and Scharfstein (1990) assume a firm is approaching distress when the coverage ratio falls below one. Based on Altman (1968), Taffler (1983, 1984) develops a popular Z-score model used by banks and industrial firms in the United Kingdom. According to Taffler's model, a firm is in distress if it has a minimum of one year of negative Z score after two consecutive years of positive Z scores. We follow Atanassov and Kim's (2009) definition due to several reasons. First, this measure focuses on the financial distress that brings negative and costly consequences, especially substantial drop in operating performances. In the business world, not all financial distresses are created equal. Wruck (1990) argues that financial distress could be beneficial because it provides firms with incentives to change poor governance

structure and forces firms to restructure by refocusing on their operations and altering organizational strategies. By employing Atanassov and Kim's (2009) definition, we are able to filter out the non-costly (or beneficial) financial distress conditions. Second, unlike Z-score which is designed for specific industries, Atanassov and Kim's (2009) approach applies to all industries and is not subject to substantial losses of data (since EBITDA and total asset are widely available). Third, *distress1* and *distress2* are complementary in the sense that *distress1* focuses on the deteriorating performances within a firm and *distress2* incorporates relative performances compared to the industry. Based on the above reasoning, Atanassov and Kim's (2009) definition of financial distress fits our research purpose the best because we explore if CSR engagements could lower firms' probability of falling into costly financial distress.

Corporate Social Responsibility

Following mainstream studies on this subject, we use MSCI ESG STATS database to measure CSR. The dataset is tracked by an independent firm specializing in researching and consulting firms' CSR activities. The sources of CSR activity ratings in MSCI ESG STATS come from government agencies, non-governmental organizations, global media publications, annual reports, regulatory filings, proxy statements and company disclosures. The coverage of the database has expanded over time. For the early period before the year 2000, MSCI ESG STATS covers S&P 500 and the Domini Social Index. After 2000, more firm samples from other indexes are included in the database, including the Russell 2000 Index and the Broad Market Social Index. The broad dataset allows us to take the longitudinal approach to explore the constant efforts of firms' CSR.

There are two main categories built in MSCI ESG STATS: qualitative issue areas and controversial business issues. Qualitative issue areas cover community, diversity, employment, environment, human rights, product and corporate governance. Controversial businesses include alcohol, gaming, firearms, military, nuclear and tobacco. Within each area, a number of concerns and strengths are addressed (each concern or strength is assigned 0 or 1). The variable of interest employed in this study (CSR) compiles the netting numbers of strengths and concerns in qualitative issue areas. The same dataset and variable measurement have been employed in most of the empirical studies on corporate social responsibilities, such as in Lins et al. (2017) and Bae et al. (2018).

Control Variables

Prior studies have explored possible factors that contribute to financial distress and these factors are controlled for in our empirical study. According to the coverage shortfall criterion, three broad reasons can lead to financial distress: industry downturn, high interest payment and poor firm performance (Asquith, Gertner, & Scharfstein, 1994). Andrade and Kaplan (1998) bring forward four factors: Industry performance, firm leverage, short-term interest rate changes, and firm performance. Accordingly, control variables employed in our study incorporate characteristics of firm level (*firm leverage*, *R&D ratio*, *sales growth*, *firm size*, *firm age*), industry level (*industry performance*) and macroeconomic level (*libor volatility*, *libor change*) factors.

In this study, *firm leverage* is measured as total debt divided by total assets. In addition, we consider R&D plus advertising expenses (*R&D ratio*) as another important factor because higher

intangible assets represent less collateral available to the firm, which contribute to financial distress. *Sales growth* reflects firm's sales growth from the previous year. *Firm size* and *firm age* are controlled for because firms with larger size could enjoy stronger coinsurance benefits and older surviving firms have more experience to cope with financial distress, both of which lower financial distress risks. *Industry performance* is estimated using mean industry ratio of EBITDA over sales. Interest rate change is measured by both standard deviation of 3-month London Interbank Offered Rate (*libor volatility*) and year end change of 3-month Libor rate (*libor change*).

Empirical Model

Based on the feature of dependent variable (financial distress), we employ the following Probit model to test whether CSR engagement increases or decreases a firm's likelihood of falling into financial distress after controlling all the well-documented factors that contribute to the distress:

$$\begin{aligned} \text{distress1 (or distress2)}_{i,t} &= \alpha + \beta_1 \text{CSR}_{i,t} + \beta_2 \text{firm leverage}_{i,t} + \beta_3 \text{R\&D ratio}_{i,t} + \beta_4 \text{sales growth}_{i,t} \\ &+ \beta_5 \text{firm size}_{i,t} + \beta_6 \text{firm age}_{i,t} + \beta_7 \text{industry performance}_{i,t} + \beta_8 \text{libor volatility}_{i,t} \\ &+ \beta_9 \text{libor change}_{i,t} + \varepsilon_{i,t} \end{aligned}$$

In the model, i indexes firm and t indexes year. In all specifications, we control for the industry and year fixed effects. All control variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Reported standard errors are heteroscedasticity-consistent and allow for clustering at the firm level.

FINDINGS

Summary Statistics

Table 1 presents the sample distribution by the two-digit SIC code industry. As the table shows, the most heavily represented industry division is manufacturing (53.46%, SIC code: 20-39), followed by services division (18.12%, SIC code: 70-89). Table 2 reports the descriptive statistics of variables, including subsamples of high CSR firms (firms with positive net scores of CSR ratings) and low CSR firms (firms with zero or negative net scores of CSR ratings). The mean differences in distress between high CSR and low CSR groups are statistically significant, suggesting that high CSR firms are less likely to fall into financial distress than low CSR firms. We find no significant difference in firm leverage between the two groups. Other than that, high CSR firms show distinct firm-level and industry-level characteristics from low CSR firms. In general, we observe that high CSR firms invest less in R&D and advertising; have slower sales growth; are associated with worse performing industries; and are larger and more mature in age.

As suggested by the pairwise correlations of variables (not reported due to space limit), both distress variables (*distress1* and *distress2*) are negatively correlated with CSR variable. This result also provides preliminary support for hypothesis 1b, which predicts that high CSR firms are associated with lower likelihood of financial distress.

Table 1. Sample Distribution by Industry

Industry	Two Digit SIC	Freq.	Percent%	Cum%
Division A. - Agriculture, Forestry, & Fishing	(01-09)	48	0.4	0.97
Division B. - Mining	(10-14)	630	5.33	5.73
Division C. - Construction	(15-17)	195	1.65	7.37
Division D. - Manufacturing	(20-39)	6273	53.02	60.35
Division E. - Transportation & Pub. Utilities	(40-49)	825	6.98	67.32
Division F. - Wholesale Trade	(50-51)	441	3.72	71.05
Division G. - Retail Trade	(52-59)	1125	9.51	80.55
Division I. - Services	(70-89)	2260	19.09	99.64
Division K. – Non-classifiable Establishments	99	43	0.36	100
Total		11840	100	

Table 2. Descriptive Statistics, CSR vs. Non-CSR Firms

Variable	Full Sample			CSR Firms			Non-CSR Firms			P-value
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test
<i>Distress1</i>	11840	0.06	0.00	3934	0.05	0.00	7906	0.06	0.00	0.00
<i>Distress2</i>	11840	0.13	0.00	3934	0.11	0.00	7906	0.14	0.00	0.00
<i>CSR</i>	11840	0.18	0.00	3934	2.81	2.00	7906	-1.13	-1.00	0.00
<i>Firm leverage</i>	11840	0.50	0.49	3934	0.52	0.51	7906	0.49	0.48	0.00
<i>R&D ratio</i>	11840	0.07	0.02	3934	0.08	0.04	7906	0.06	0.01	0.00
<i>Sales growth</i>	11840	0.09	0.08	3934	0.08	0.07	7906	0.10	0.08	0.00
<i>Firm size (raw)</i>	11840	10175.33	1813.19	3934	19570.61	4842.38	7906	5500.27	1307.91	0.00
<i>Firm age (raw)</i>	11840	25.87	20.00	3934	29.80	24.00	7906	23.91	19.00	0.00
<i>Industry performance</i>	11840	0.01	0.12	3934	-0.02	0.12	7906	0.02	0.12	0.00
<i>Libor volatility</i>	11840	0.28	0.17	3934	0.28	0.19	7906	0.28	0.17	0.00
<i>Libor change</i>	11840	-0.18	0.00	3934	-0.23	-0.07	7906	-0.16	0.00	0.00

Impact of CSR on Financial Distress

Our main results on the empirical relationship between CSR and financial distress are reported in Table 3. Models 1 and 2 report the Probit regression results and highlight the impact of CSR on two financial distress variables (*distress1* and *distress2*). We find that both models show negative correlations between CSR and probability of financial distress, and Model 2 is significant at 1% level. The multivariable model results are consistent with hypothesis 1b, which indicates that CSR investments could mitigate financial distress risks when all the other factors are controlled for. Thus, out of the two competing hypotheses 1a and 1b, hypothesis 1b is supported by our data analysis. Specifically, our results support the stakeholder view and suggest CSR reduce firms' probability of financial distress.

Although CSR engagements cost firms' financial resources, such activities build up relationships with firms' stakeholders and lower the likelihood of financial distress. This reward from doing good to society is especially important to firms with higher financial distress risk. Our finding is consistent with Gu et al. (2016) and Lins et al. (2017). Our findings provide practical implications to firms that have higher tendency to fall into financial distress. For example, firms that are subject

to economic volatility (tourism industry), firms that maintain high level of debt are shown to be more likely to be financially distressed. For these firms, engaging in corporate social activities could potentially guard themselves from financial vulnerability. In contrast, for firms that are less subject to financial distress and at the same time are highly involved in corporate social activities, their supervisors should watch the potential “channeling resource” behaviors.

Robustness Tests

To address the potential issue in regression tests, we further examine whether the relationship between CSR and financial distress is driven by endogeneity problems as follows. First, reverse causality could occur because firms which are less likely to fall into financial distress are often those who have sufficient capital to invest in CSR activities in the first place. Second, CSR investments and financial distress could both be driven by unobserved firm-specific factors. For example, managers who are interested in undertaking CSR investments are risk takers (since CSR is not considered regular invested items in most firms). These managers are also more likely to take risky investment programs which could lead to financial distress. To resolve these potential problems, we employ industry median CSR score and year median CSR score as instrumental variables. We predict that these two instrumental variables have a positive impact on CSR because a firm tends to imitate industry peers' CSR practices. In addition, CSR practices tend to be sticky. These two instruments are closely correlated with the firm-specific CSR but are unlikely to impact the firm distress probability. Models 3 and 4 of Table 3 show the regression results of Instrumental Variable Probit (ivprobit) models. The main finding is shown to be even more pronounced. CSR score is negatively associated with financial distress proxies at 1% level. The results lend further support to Hypothesis 1b and show that the effect of CSR on reducing likelihood of financial distress survived the endogeneity test.

We also conduct several other robustness tests (not reported due to space limit). One is lagging financial distress variable one year to test the effect of current year CSR to the financial distress of next year. By doing this, we address the concern of current year accounting data reported in early or middle of the next year. The empirical results are qualitatively similar when using the lagging data. Second, we also experiment with new CSR variables based on ASSET4 ESG (Environmental, Social, and Governance) dataset. ASSET4 is a Thomson Reuters business which collects corporate social responsibility data. The database provides fewer observations than MSCI ESG STATS. Therefore, we use it for the robustness test instead of main study. The empirical test results are consistent with what is shown in Table 3. Overall, our main finding of CSR engagement reducing a firm's likelihood of falling into costly financial distress is robust and not affected by endogeneity, accounting report delay, or alternatively measurements of CSR. The results lend further support to the stakeholder view of CSR and supports the benefits provided by CSR to firms that tend to be financially distressed.

Table 3. Probit Model of Financial Distress and CSR

This table reports the Probit regression results regarding the impact of CSR on financial distress. The dependent variables are *distress1* and *distress2*. The independent variables are listed in the table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1)	(2)	(3)	(4)
	Probit Model <i>distress1</i>	<i>distress2</i>	Probit Model with Instruments <i>distress1</i>	<i>distress2</i>
<i>CSR</i>	-0.0150 (0.0123)	-0.0375*** (0.0079)	-0.1298*** (0.0372)	-0.0922*** (0.0223)
<i>firm leverage</i>	-0.1538* (0.0906)	0.3081*** (0.0613)	-0.1593* (0.0893)	0.2864*** (0.0610)
<i>R&D ratio</i>	2.9578*** (0.3018)	0.3074*** (0.0766)	2.9800*** (0.2927)	0.3333*** (0.0774)
<i>sales growth</i>	-4.2199*** (0.3080)	-0.5773*** (0.1184)	-4.0961*** (0.3146)	-0.6444*** (0.1187)
<i>firm size</i>	-0.2209*** (0.0202)	-0.2075*** (0.0124)	-0.1520*** (0.0313)	-0.1671*** (0.0178)
<i>firm age</i>	-0.0546 (0.0415)	0.1487*** (0.0261)	-0.0390 (0.0409)	0.1543*** (0.0259)
<i>industry performance</i>	-0.2386*** (0.0522)	0.6572*** (0.0671)	-0.2509*** (0.0510)	0.6413*** (0.0679)
<i>libor volatility</i>	-6.0483 (5.6050)	10.6814*** (3.2884)	-4.0694 (3.8919)	-4.4501* (2.4957)
<i>libor change</i>	0.9266 (1.1471)	1.6074** (0.6681)	0.6992 (1.0631)	1.4023* (0.7487)
Constant	0.0874 (0.2165)	-0.3971*** (0.1342)	-0.4011 (0.2594)	-0.4856*** (0.1532)
Observations	11,840	11,840	11,840	11,840

Impact of CSR on Financial Distress in Business Cycle

In different macroeconomic environments, CSR's impact on firms' financial distress may vary. Table 4 presents the impact of CSR on financial distress in economic downturns and expansion periods. The economic downturn periods are defined as technology bubble burst period (2000-2002) and financial crisis (2008). The expansion periods refer to the years immediately preceding the two bust periods (1997-1999, 2007). As discussed in section 2, stakeholders tend to provide various supports in the economic downturns for CSR firms, while the need for such help is not as urgent in economic expansion periods. Therefore, we would expect a more pronounced impact during the downturn periods. The results shown in Table 4 are consistent with our prediction. Models 1 and 2 suggest that high CSR firms experience less likelihood of falling into costly financial distress during the downturn periods. On the contrary, CSR does not help much to reduce financial distress in expansion periods since the coefficients are insignificant in models 3 and 4. Hence, our regression results support Hypothesis 2, which states that the effect of CSR on lowering firms'

probability of falling into financial distress is more pronounced in economic downturn period than in expansion period.

Table 4. Probit Model of Financial Distress and CSR: Economic Downturns vs. Expansions

This table reports the Probit regression results regarding the impact of CSR on financial distress in economic downturns and expansions. The dependent variables are *distress1* and *distress2*. The independent variables are listed in the table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1)	(2)	(3)	(4)
	Downturns <i>distress1</i>	<i>distress2</i>	Expansions <i>distress1</i>	<i>distress2</i>
<i>CSR</i>	-0.4014*** (0.1017)	-0.2927*** (0.0610)	-0.2269 (0.2144)	-0.0088 (0.0683)
<i>firm leverage</i>	0.0609 (0.3396)	0.2383 (0.2300)	0.7012 (0.8513)	0.5850** (0.2798)
<i>R&D ratio</i>	2.4171** (0.9849)	3.2275*** (0.6254)	-6.4892 (9.5128)	1.1931 (0.9509)
<i>sales growth</i>	-2.8333*** (0.4505)	-1.8573*** (0.2758)	-4.4639*** (1.0584)	-0.5169* (0.2864)
<i>firm size</i>	-0.1157* (0.0638)	-0.1036*** (0.0373)	-0.2132 (0.1550)	-0.1519*** (0.0481)
<i>firm age</i>	-0.2722* (0.1439)	0.0018 (0.0837)	-0.0666 (0.2860)	0.0767 (0.1014)
<i>industry performance</i>	0.0728 (0.4635)	0.7401** (0.3047)	0.5185 (1.0245)	1.0112*** (0.3825)
<i>libor volatility</i>	0.2748 (0.7863)	2.3204*** (0.4056)	16.2162 (10.3375)	1.8852*** (0.4987)
<i>libor change</i>	0.0038 (0.1555)	0.5413*** (0.0821)		
Constant	-0.8692 (0.6230)	-1.0009*** (0.3548)	-4.3415* (2.2665)	-1.4090*** (0.4530)
Observations	1,709	1,709	1,313	1,313

Impact of International Involvement on CSR and Financial Distress

Business involvement in foreign countries not only helps CSR firms to obtain a broader base of stakeholder resources but also gives firms access to international capital markets since they are subject to international supervisions. Consequently, with the same CSR engagements, firms with higher international involvement will be less likely to fall into costly financial distress, as discussed in Hypothesis 3. Table 5 presents how the impact of CSR on financial distress varies with the level of international involvement. We reported the regression results for firms with high international involvement and low or no international involvement according to their proportion of sales that comes from foreign segments. High (low or no) international involvement refers to

firms with ratio above (below) the median of the entire sample. As shown in the table, Models 1 and 2 suggest that highly international involved firms with CSR efforts exhibit a strong ability to avoid financial distress. However, there are no significant relationships shown in CSR firms with low or no international involvement as reported in Models 3 and 4. Regression results using foreign assets to separate high vs. low or no international involvement subsamples are similar but not reported due to space limit. The empirical evidences support Hypothesis 3. This part of the analysis supports the importance of incorporating contextual differences of firms (such as international involvement) into consideration when examining the impact of CSR on firms' chances of falling into financial distress.

Table 5. Probit Model of Financial Distress and CSR: International Involvement

This table reports the Probit regression results regarding the impact of CSR on financial distress for firms with high level of international involvement and firms with low or no involvement. The dependent variables are distress1 and distress2. The independent variables are listed in the table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) High Involvement distress1	(2) distress2	(3) Low or No Involvement distress1	(4) distress2
<i>CSR</i>	-0.1069*** (0.0287)	-0.0491*** (0.0157)	0.0734 (0.0802)	-0.0144 (0.0294)
<i>firm leverage</i>	0.2865 (0.1858)	0.0999 (0.1221)	0.4011 (0.3952)	0.2063 (0.1727)
<i>R&D ratio</i>	1.2751** (0.5935)	1.1669*** (0.3860)	3.1267*** (0.8486)	2.0954*** (0.5005)
<i>sales growth</i>	-3.4179*** (0.5217)	-0.9064*** (0.2519)	-4.5583*** (0.6538)	-2.8063*** (0.3397)
<i>firm size</i>	-0.0853* (0.0469)	-0.1952*** (0.0247)	-0.6555*** (0.1512)	-0.2150*** (0.0449)
<i>firm age</i>	-0.3016*** (0.0766)	-0.0632 (0.0518)	-0.2544 (0.1859)	-0.0087 (0.0721)
<i>industry performance</i>	0.2372 (0.8443)	2.0126*** (0.3923)	-2.1328 (1.6026)	3.2083*** (0.7527)
<i>libor volatility</i>	-7.4725** (3.1303)	-0.5913 (2.1368)	0.5366 (7.7669)	-6.4068** (2.9464)
<i>libor change</i>	-1.3426*** (0.4786)	-0.0814 (0.3417)	-0.3064 (1.0938)	-1.0288** (0.4704)
Constant	-0.2681 (0.5941)	-0.3011 (0.3668)	0.7514 (1.6153)	-0.0113 (0.5537)
Observations	3,816	4,226	2,252	2,607

Overall, these results provide further managerial implications to firms with high probability of falling into financial distress. If a firm is exposed to economies that constantly experience crises, this firm may get more protection by engaging in corporate social activities. In addition, our

findings lend further support to the perspective of international diversification. Specifically, multinational corporations with better landscape of diversification might be less affected by financial distress. In another word, firms with businesses mainly operated in single economies could be better protected by engaging in socially responsible activities.

CONCLUSION AND DISCUSSION

In this article, we explore whether corporate social responsibility (CSR) engagement affects firm's chances of falling into costly financial distress. Because of the potential impacts by macroeconomic, industry, and firm characteristics on firm performance, we tackled this question by assessing firms' CSR efforts over a long period of time and incorporated multi-level factors into consideration.

Our empirical tests reveal that CSR engagements reduce the likelihood of firms falling into financial distress, and the effects are more pronounced during economic downturn periods and for firms with high levels of international involvement. These results suggest that CSR plays an important role for firms to lower the chance of falling into financial distress. Our results are statistically robust by adjusting for potential reverse causality and omitted variable issues. In addition, by adopting observations from 1991 to 2015, we observe firms' behavior over different economic periods, including both downturn and expansion periods, thus providing a longitudinal view of how CSR matters to firms' financial distress. To our knowledge, no other study has used a longitudinal approach to examine the impact of CSR on firms' financial distress. Our research sheds light on the challenge proposed by Godfrey et al. (2009) about how CSR activities play a role in an economy-wide crisis. Furthermore, our research incorporates firms' level of international involvement into consideration to provide a meaningful refinement of the existing approach. Our results are supportive of the stakeholder view of CSR.

Our results add value to practitioners by looking at specific strategic tactics firms can explore to enhance shareholder value and to cope with adverse and unpredictable disturbances. Business entities always try to balance between "doing good" and "doing well" since most of the time the two won't be achieved at the same time. CSR engagement activities do drain corporate resources, but they also build social capitals for firms (Lins et al. 2017) and provide a safety net in unfavorable financial market conditions (Godfrey et al. 2009). Therefore, business entities should maintain CSR engagement, at least within their financial capability, for long-term oriented strategy. These engagement activities are especially important for firms with lower financial stability, in controversial business, and/or facing public and media scrutiny.

Our findings also suggest the importance of taking a longitudinal approach and taking firm-unique resources and capabilities into consideration when examining the impact of CSR on firm financial distress. With data permission, observing a single firm's decades of CSR activities and financial performance and risk would be interesting. Also, pairwise comparison of firms with similar financial backgrounds but opposite approaches for CSR will reveal strong evidence for CSR's effects on firm performance. We believe future research can broaden literatures and theories in this field.

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USING PYTHON FOR INTRODUCTORY BUSINESS PROGRAMMING CLASSES

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ABSTRACT

While no longer considered a core course, programming is an important part of many business school information systems (IS) programs. The choice of a language for introductory courses is an important one, and Python has become a good choice in recent years. Python is now considered the most popular programming language, largely due to its clean syntax and built-in functionality, plus it is in high demand by employers of our graduates. In this paper, we discuss the reasons for Python's rise in popularity and how those factors make it suitable for introductory IS programming classes in the business school. We also describe its use in our own introductory class within the context of the IS 2010 Curriculum Guidelines.

Keywords: Python, pedagogy, programming, business course, scripting language

INTRODUCTION

The 2010 IS Model Curriculum identifies programming as an elective for Information Systems (IS) programs. Removing programming as a core topic was intended to increase the flexibility of the curriculum guide to non-business IS programs (Topi et al., 2010). However, this does not preclude the inclusion of programming and application development as a featured component of IS programs. This appears to be a common practice since most IS programs consider programming to be an important part of their course offerings (Bell, Mills, & Fadel, 2013). Indeed, it may be argued that due to the rise of analytics and data science, the inclusion of programming is as important a skill as it ever was for IS programs.

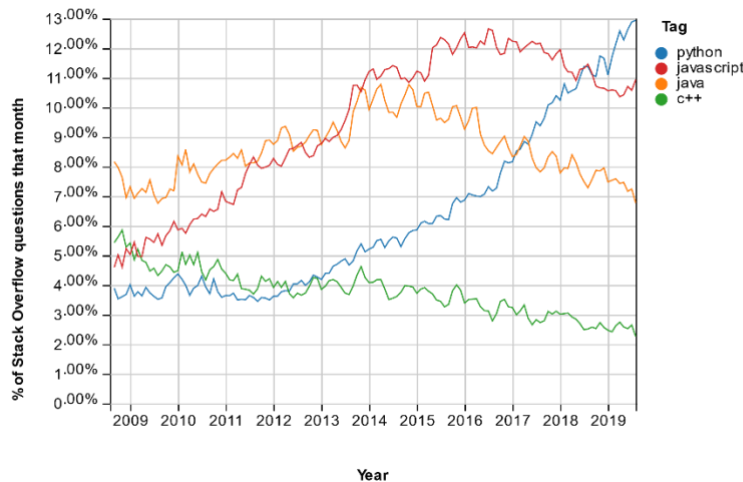
Once the choice is made to include programming in an IS program, the question of what programming language (or languages) to teach becomes an important consideration, especially for the first programming course (De Raadt, Watson, & Toleman, 2002; Gries, 1974; Kölling & Rosenberg, 1996). For a time, specific teaching-centric languages such as Basic and Pascal were used for introductory programming courses. The shift to object orientation led to the rise of Java as a popular language for introductory programming courses. However, Python has been growing in popularity as the language of choice for introductory programming courses in computer science programs, taking the top spot from Java in 2014 (Guo, 2014; Robinson, 2017).

Not only has Python seen increased usage in academic programs, but it also has experienced great success in industry. Python is ranked third on the TIOBE index as of September 2019 (TIOBE - The Software Quality Company, 2019). This index is comprised of a proprietary rating based on the number of engineers, courses, and third-party vendors as derived from popular search engine

rankings and results. Python also recently passed JavaScript as the highest-ranked language among the major programming languages (JavaScript, Java, Python, C++) in terms of keyword popularity on the Stack Overflow website (“Stack Overflow Trends,” 2019). The rapid growth in the popularity of Python on the Stack Overflow site is shown in Figure 1 below.

The combination of applicability in academic computer science and industry settings makes Python an interesting new option for adoption in business programming courses. In this paper, we discuss how Python fits the needs of business programming classes. We begin by further discussing the rise in popularity of Python in both industry and academics. We continue with a discussion emphasizing the importance of programming in IS education and the differences between Computer Science and IS programming courses. We finish the paper describing the pros and cons of the Python language within the context of the topical guidance and learning objectives provided by the IS 2010 Curriculum Guidelines (“the Guidelines,” Topi et al., 2010). Specifically, we discuss and highlight the effectiveness of Python as it applies to the seven learning objectives for the application development course identified in the Guidelines within the context of our program’s introductory programming course, while also providing examples of active learning exercises highlighting the appropriate topics.

Figure 1. Stack Overflow programming language popularity (“Stack Overflow Trends,” 2019)



THE RISE OF PYTHON

The choice of programming language for introductory programming courses in Computer Science (CS) has changed over the years. Fortran gave way to PL/I, which in turn was replaced by Pascal. Pascal was ousted by C++ in the mid-1990s and was later replaced by Java. (Siegfried, Siegfried, & Alexandro, 2016). Now, in many programs, Python has replaced Java.

The rise of Python as the language of choice for introductory programming courses in CS (commonly referred to as CS1 courses) is well documented. In July 2014, it was declared the most common language for CS1 courses because of its adoption in CS programs at top universities (Guo, 2014). The reasons for this increased use are many, but instructors often cite the language’s “clean and simple syntax” (Goldwasser & Letscher, 2008, p. 1), which allows students to concentrate on

concepts rather than the minutiae of the language. Python uses indentation and minimal punctuation to designate related blocks of code. Python also doesn't require students to declare variable data types upon initialization, end lines of code with a semi-colon (;), or use other similar syntax utilized by Java and C++. A serious concern when using Java in introductory classes, for example, is that "simple Java programs aren't simple" (Hunt, 2015, p. 173) because of the amount of overhead required for the most basic functionality.

Yet Python also has the high-level data types (Dierbach, 2014) needed to write powerful programs. Well-known applications like Instagram (McCracken, 2015) and YouTube (The Python Software Foundation, n.d.) rely on Python code to make them work. It is also robust enough to be proposed as an appropriate tool for learning object-oriented programming concepts (Goldwasser & Letscher, 2008; Miller, Settle, & Lalor, 2015). Python appears to meet most needs of an introductory programming course.

Python is not perfect, however. One concern for CS1 courses is that there is no true array support in Python. Lists and dictionaries – two of Python's often used data structures – implement most of the functionality of arrays but do not include the ability to allocate memory like a true array (Hunt, 2015). There is also concern that Python may be of little utility for CS students beyond its use in CS1 (Joint Task Force on Computing Curricula, Association for Computing Machinery (ACM), & IEEE Computer Society, 2013). Many CS programs use Java or C++ in their second programming course. But as with learning anything, each programming language has its own set of rules, and switching between them has its own learning curve. At least one program (Hunt, 2015) has returned from Python to Java in CS1 because of the amount of time necessary in the second CS course to transition from Python to Java in order to cover more advanced CS-related concepts.

TEACHING PROGRAMMING TO BUSINESS STUDENTS

While there appear to be some programs that have business school IS students take the same introductory programming classes as computer science students (Siegfried et al., 2016), in our experience that is not the case. Still, all the reasons for using Python in CS1 classes also apply to introductory business programming classes, but there are other issues to consider as well based upon their expected career trajectories. When looking toward the future of the IS field, the use of Python for introductory programming classes empowers future curriculum decisions. More advanced use of Python is usually about analyzing data or automating tasks. That is a different path for Python coders than those with expertise in languages like Java. With the growth in data analytics, there is an increasing number of tasks for which Python is used in business that can be taught in upper-division business classes.

Are you teaching students expected to graduate with in-depth knowledge of a programming language so they can be placed into full-time coding positions? That may be a normal expectation for CS majors, but with most IS students, this is simply not the goal. Programming instructors in school of business IS classes typically look for ways to impart technical knowledge to students without getting too bogged down in the details. To be sure, the details are important, and we have graduates hired as programmers; however, in our experience, the goal of business programming classes is typically to introduce broader concepts to students to allow them to be able to communicate with programmers. The in-depth technical knowledge required for the level of

expertise needed as a full-time programmer is beyond the scope of the typical business programming class. As the Guidelines state, students in these classes are expected to “learn the basic concepts of program design, data structures, programming, problem-solving, programming logic, and fundamental design techniques for event-driven programs.” (Topi et al., 2008, p. 403) They simply do not need to learn to manipulate memory blocks, for example.

That lack of machine-level control available to Python programmers can be a problem for CS students, however. The CS 2013 guidelines acknowledge that there might be issues with using one of the “more managed languages” (Joint Task Force on Computing Curricula et al., 2013, p. 43) like Python. They may help the learning process while simultaneously disconnecting the student from how their code operates at the machine level. Another concern is that the languages that make it easier for students to learn programming basics may be useless to them in subsequent CS classes. Neither is a problem in IS in our experience.

As a scripted language, Python frees students from the need to perform a variety of manual tasks (such as compiling) often regarded as tedious and unclear as to their function (Alzahrani, Vahid, Edgcomb, Nguyen, & Lysecky, 2018). Python’s syntax is clear and simple (Perkel, 2015), making it a popular choice for an educational setting. Additionally, Python includes support for a variety of graphics toolkits including the time-honored turtle graphics (Gaddis, 2017) that allows for combining visualizations with programming concepts, allowing students another avenue towards understanding.

With the focus of IS programs on those “fundamental concepts and models of application development” (Topi et al., 2010, p. 403), Python is well suited to the business IS curriculum. As a language guided by a single governing organization to maintain consistency and currency, supported and extended by a vibrant community of third-party developers, and yet syntactically easy to learn, Python provides the opportunity for business schools to provide academically and business-relevant programming experiences to their students.

Students who want (or need) to take a programming class but may not intend to write code in the future also benefit from using a language like Python. Learning programming teaches problem-solving and logical thinking skills. We also see students in a required programming class who find they enjoy writing code once they get some experience with it. They find they want to investigate topics like mobile app creation and data mining, which can require specialized programming environments of their own. Learning programming fundamentals in a simple, straightforward language like Python can provide a flexible introduction to the concepts for these students. These students receive little value from learning the intricacies of a more complex language like Java or C++. These more complex languages will often convince that type of student they have no business writing code and put an end to their exploration of programming before it really begins.

That is not to say Python is only good as a beginner’s language. Python is, after all, listed as one of the skills with high demand from employers in the United States and Canada in the 2019 Robert Half Technology Salary Guide (2018). Many of our students have heard these types of statements and wish to learn more. Positions highlighted by the Robert Half Technology 2019 Salary Guide include business intelligence analysts, database developers, and systems administrators. Students pursuing these positions can all benefit from the acquisition of programming skills.

The explosion in the amount of data available to business analysts means that more people outside software development need fundamental programming skills for tasks like acquiring, cleaning, and analyzing data. These tasks can be performed in any language, but a simple language like Python allows analysts to focus on the data rather than the code. An ecosystem has grown around Python to make these analytic tasks easier to perform. The Python Package Index (PyPI: at <https://pypi.python.org/pypi>) contains a rapidly growing collection of thousands of free to use projects containing over two million packages (as of 9/26/2019) of specialized Python code, many of which are intended for data-centric tasks. Some well-known packages and their applications are

- BeautifulSoup for Web scraping,
- SciPy for math, science, and engineering work,
- Pandas for data analysis and modeling, and
- Django for Web programming.

Table 1. Growth of Python project availability (“PyPI · The Python Package Index,” n.d.)

Date	Number of Projects Available
1/13/2017	96,550
7/26/2018	147,158
3/4/2019	170,729
9/26/2019	197,715

Some coding ability is needed to use these packages but not at the same level as the coding ability needed to create them. Learning Python at the introductory level gives business students a head start when it comes to using these more advanced applications as undergraduates, graduate students, or as they begin their careers. IS programs are increasing the number of data science and analytics programs (Aasheim, Williams, Rutner, & Gardiner, 2015; Mills, Chudoba, & Olsen, 2016; Wymbbs, 2016) to meet the demand for these skills in the workplace.

APPLICATION DEVELOPMENT COURSE LEARNING OBJECTIVES

The Guidelines include a general description of the Application Development elective course, and learning objectives the authors felt were important for the course (Topi et al., 2010). These objectives can be met using Python as with any other mainstream programming language. We will use the design of an introductory Python programming course to address how these objectives can be met.

Table 2. Application Development Course Learning Objectives (Topi et al., 2010)

LO-1	Use primitive data types and data structures offered by the development environment.
LO-2	Choose an appropriate data structure for modeling a simple problem.
LO-3	Understand basic programming concepts.
LO-4	Write simple applications that relate to a specific domain.

LO-5	Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, and the definition of functions.
LO-6	Test applications with sample data.
LO-7	Apply core program control structures.

General Structure of the Introductory Course

All programming language classes (Java, Python, Visual Basic (VB), and COBOL) previously taught in our department began with the assumption that students had not programmed before. While this is indeed true of many students, it was not true of a sizable portion. In many cases, a student was taking a second programming course in the department and seeing the same material in a different language. While repetition can be beneficial for students, we felt we had an opportunity to give our students a better programming course experience. This led to the creation of a common introductory programming class that is a prerequisite for the others.

This introductory class utilizes Python to teach business students the basics of variables, looping, decisions, and other fundamental programming concepts. This approach allows the language-specific classes that follow to do a quick review of the fundamentals, then spend more time exploring the features and characteristics that make that language so valuable. For example, after a few classes of review, the original Python class can now go further into topics like data cleansing, Web scraping, and even some basic analytics.

Classes are conducted in a computer lab classroom. Rather than lecturing on subject material, the instructor creates programs during class meetings that are projected live at the front of the room. Students simultaneously build the programs on the lab computers, or their personal laptops if they prefer. Any necessary conceptual information on the day's material can then be discussed within the context of the program being written.

Students are also given time for in-class exercises. Very short tasks covering concepts and code just completed as a class are given to students to work on briefly. These exercises give students a chance to get a first experience with writing the code before they must use it to complete a homework assignment. There are five to seven programming homework assignments in the course, depending upon the instructor, and three exams covering concepts and code interpretation.

Since the main purpose of this course is to get students on a solid footing of programming fundamentals, it assumes no programming experience. That assumption is usually but not always true, but the goal is to get everyone to the point where they are competent enough with simple programming tasks that they can be successful in other programming courses if they should decide to pursue that path or at least have the fundamental skills to continue to learn on their own after graduation. Most of these skills are embodied in the learning objectives found in the Guidelines. We describe how this course starts with basic programming concepts (LO-3 from Table 2) and increases the level of complexity as the students progress through the semester, meeting the learning objectives as they go.

The Basics: Learning Objective 3

The phrase “basic programming concepts” is used regularly, but there appears to be no specific definition of what it entails. It can refer to very general concepts or concepts that would manifest in specific programming skills. General concepts like defining what a computer program is and the logic of problem-solving with a computer are important to discuss but do not require code writing to explore. They can be demonstrated before students even turn their computers on. For example, one of the authors uses the preparation of boxed macaroni and cheese as an example of how to write instructions for a computer. It is an activity most students have performed, so they are comfortable discussing it. They are surprised, however, to discover how what they thought was a simple process is much more complicated when all the assumptions inherent with an anticipated human preparer have to be translated into the detailed instructions required by a computer.

Other basic concepts, like using variables to store values for further manipulation, are conceptual in nature but require a specific language to demonstrate how the concept works. This is an example of a concept we would expect to see manifest in specific programming skills acquired by the student. We use “basic programming concepts” to refer to those concepts related to the specific programming skills listed in Table 3. In our program, we have previously identified them as being important for students to acquire no matter the underlying language. At a conceptual level, they are all language agnostic but must be taught in a specific language to demonstrate how they are implemented.

Table 3. Basic programming concepts (as defined by the authors)

Creating and using simple variables	Simple keyboard input and screen output
Creating and using named constants	Writing comments
Basic mathematical operators	Naming standards and conventions
Performing simple calculations	Using functions
Reserved words	

The nature of Python makes it straightforward to cover all these concepts. We begin talking about reserved words, writing comments, and following all naming conventions when we first begin to write code. The in-class coding done in tandem with the instructor includes these concepts, and subsequent assignments require them for full credit. Examples used in class repeat these concepts as we progress through the semester.

The first homework assignment incorporates the remaining basic concepts. In that assignment, students are tasked to do the following:

- Assign their own first name, last name, and age to named constants.
- Collect from the user values for first name, last name, and store them in appropriately named variables.
- Calculate the difference between the two ages.
- Display greetings to the screen featuring the age difference and the user’s age in terms of the percent of the programmer’s age.

An example of the required output for this assignment using celebrity data is shown below in Figure 2.

Figure 2. Example output for basic programming concepts assignment (Note: the values “George,” “Clooney,” and “57” are input by the user.)

```
The author of this program is Taylor Swift and is 28 years old.
What is your first name? George
what is your last name? Clooney
What is your age? 57
I'm pleased to meet you, George Clooney. My author is -29 years older than you.
You are 203.57% of my author's age.
```

Getting keyboard input from users and displaying to the screen requires the use of functions. The Python functions used to accomplish these two tasks (*input* and *print*, respectively) are also examples of reserved words. The nature of reserved words, functions, and how functions should be used is covered during previous classes as part of the in-class coding and reinforced in this assignment.

The student must also write the code to perform very basic calculations using values stored in named constants and variables. When data like that of the Figure 2 example is used where the user’s age is greater than the programmer’s age, the program simply displays a negative result for the number of “years older than you” age difference. The somewhat odd nature of that portion of the output helps introduce why we need to use decision structures.

Data Modeling: Learning Objectives 1 & 2

Students use the primitive variable types built into Python, beginning with the code written during the first class meeting. Examples used to introduce students to the basics of programming must include declaring and assigning values to variables to enable further activities. Where Python differs from other languages in this area is that Python does not require the explicit declaration of variables. Variables are defined and typed based upon the value assigned to them when they are first used. Students with experience in other programming languages are often uncomfortable with not having first to declare and type a variable, but we have found that removing that step for new programmers allows them to concentrate on what they are trying to do with the variables rather than the variables themselves.

In some cases, students must convert their data from one type to another. A common example involves the difference between numeric strings and numbers. Numeric strings are made from number characters, but they are not used in calculations. A social security number or a telephone number are examples. Another example is in the first homework assignment. Python’s *input* function is used in the first homework assignment to accept keyboard input from the user. Every value returned by *input* is a string value, regardless of the characters it contains. To do the simple calculations required by the assignment, students must convert the user input numeric string values into numbers. This gives them further experience with the primitive data types and the relationship between them.

Converting numeric strings into numbers also introduces why it is important to specifically choose the appropriate data structure for the task at hand. Calculations require numbers and don’t work with strings. Common numbers used in business programming, like product prices or hourly wage,

need to be float variables because they have important decimal components. Product quantity is usually an integer value because you can't have a partial unit of product – unless, as with bulk food items and numerous other examples, you can.

The implied variable declaration and typing used by Python allows the instructor to focus on the larger issues involved in these examples. Students can learn how to determine the variable type they need for a particular problem without the added complexity of explicit declaration statements.

Control Structures: Learning Objective 7

The seventh learning objective (Topi et al., 2010) refers to teaching the application of core programmatic control structures. Python supports the expected collection of logic control structures associated with structured programmatic design, including sequencing, selection, and repetition. This support fulfills the base requirement of this stated learning objective for the inclusion of these structures within the language. The prior discussion highlighting typical IS programs' focus on applied concepts while downplaying the more technical programming aspects are well supported by Python's language implementation surrounding these fundamental control structures is of great importance to this objective. We suggest that Python's relatively simple implementation of these controls better positions itself to be the language of choice for teaching programmatic concepts in a business school.

To exemplify this, we turn to a simple example shown below in Figure 3 and Figure 4. This is the same simple program written in both Java and Python. As evidenced by the Java example, a discussion of the selection control structure must be preceded or accompanied by discussions of concepts such as classes, libraries, methods, arguments, data types, object instantiation, closing open resources, along with other non-obvious concepts. By way of contrast, the more easily understood Python equivalent code allows the beginning programming student to interpret and understand the programming code while keeping the learning focused on the selection control structure. The equivalent Python code needs to be preceded or accompanied by a much smaller list of predicate knowledge such as indentation, syntactic language requirements, and a few discrete language-specific function operations such as print(), input(), and int().

Figure 3. Java Selection Example

```
import java.util.Scanner;

public class SelectionExample {

    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Please enter your age: ");
        int age = input.nextInt();
        if (age >= 18) {
            System.out.println("You are old enough to vote in the U.S.");
        } else {
            System.out.println("You are not old enough to vote in the U.S.");
        }
        input.close();
    }
}
```

Figure 2. Python Selection Example

```
age = int(input("Please enter your age: "))
if (age >= 18):
    print("You are old enough to vote in the U.S.")
else:
    print("You are not old enough to vote in the U.S.")
```

Complete Applications: Learning Objective 5

The ability of students to successfully implement discrete programmatic concepts into holistic, multiple-concept constructs is obviously of tremendous importance to any programming related discipline. This is the focus of the fifth learning objective (Topi et al., 2010). Here too, Python is very well situated to support this learning objective through its comparatively simple language requirements of the many discrete concepts appropriate to an introductory programming course. As exemplified below in Figure 5 and Figure 6 below, the Python code is much simpler when compared to its Java counterpart. This facilitates focusing upon the concepts and how the beginning programmer can manipulate the language requirements to accomplish a comprehensive goal of a programming assignment requiring the concurrent implementation of discrete concepts such as input/output, control structures, and functional definition.

Figure 5. Java Multi-concept Example

```
import java.util.Scanner;

public class SelectionExample {

    private static boolean isEligible(int age) {
        if (age >= 18) {
            return true;
        } else {
            return false;
        }
    }

    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Please enter your age: ");
        int age = input.nextInt();
        if (isEligible(age)) {
            System.out.println("You are old enough to vote in the U.S.");
        } else {
            System.out.println("You are not old enough to vote in the U.S.");
        }
        input.close();
    }
}
```

Figure 6. Python Multi-concept Example

```
def is_eligible(age):
    if age >= 18:
        return True
    else:
        return False

age = int(input("Please enter your age: "))
if (is_eligible(age)):
    print("You are old enough to vote in the U.S.")
else:
    print("You are not old enough to vote in the U.S.")
```

Business Context: Learning Objectives 4 & 6

Many sources of introductory programming material for students use generic examples, and we do too. For example, this introductory course uses assignments from the Gaddis (2017) text that rely on the well-known turtle graphics module found in the Python standard library (“The Python Standard Library,” 2017). These problems, which require students to programmatically move the cursor around the screen to create drawings, both engage students and give them practice with conditional control, repetition, and other concepts represented in the learning objectives from the Guidelines. But beginning business programming students often do not make the connection between example programs that check a number to see if it is a prime number and business-related problems if they do not see that connection in class. We use problems featuring business-oriented calculations whenever possible.

All programs used in this course, whether short in-class examples or full homework assignments, come with test data. The reason to provide test data is twofold. First, we are trying to make students understand the importance of testing their code to ensure its accuracy. The only way to do that is with data that produces known results or by creating data that generates easy to verify results. For example, if we want to check a sales tax calculation of 8.5%, we can apply it to a \$100 purchase. That way, we know the result should be \$8.50. If the result is something else, we know we have a problem in the code and can investigate.

The second reason to provide test data is so students know when they have solved the problem. Imagine asking someone to build a table when they have never seen one. How high does it need to be? How long? How many legs? What shape? Students new to programming need to know what the target looks like so they have a chance to hit it. If they are not given test data, they tend to get frustrated and quit, or they continue to solve the problem well after it is solved. Neither is a positive outcome. With later assignments (and subsequent programming courses) it is perfectly reasonable to require students to create their own test data.

TOOLS USED

The choice of tools for the class, like textbooks or programming tools, is largely dependent upon the preferences of the instructor. We have adopted a common text for this class, but any introductory Python programming book will work if the instructor is comfortable with its pedagogical approach. The primary concerns we addressed during textbook selection were the

order in which programming concepts were covered and the depth to which they were covered. Some books were thought to go into too much detail about how code works at the CPU level, for example. These books might be perfect for a computer science course but were felt to be inappropriate for the business programming course.

As with many other programming languages, Python code can simply be typed into a text file and executed. An Integrated Development Environment (IDE), however, provides mechanisms for executing code, language syntax validation, debugging functions, plus a host of other tools that can make it easier for beginning programmers to learn new concepts. Fortunately, Python is popular enough to have many contemporary options. We have used three different IDEs for this course, depending upon the instructor, and all have been successful. Each has its strengths and weaknesses, which might best be considered within the larger context of the pedagogical purpose of this course.

The simplest IDE option is the IDLE included within the base distribution of the Python development kit. Its simplicity of being pre-installed significantly enhances its usefulness in introductory programming courses. Our experience has shown students frequently encounter difficulty installing alternative IDE software. This occurs because IDE requirements often include multiple software package downloads, complex post-installation configuration, and installation of add-ons required for use with various course modules. However, the IDLE still provides a basic set of tools that is usually enough for the level of programming done in this course. For solid functionality with minimal complexity, the IDLE is a good choice of IDE.

However, the IDLE's simplicity can be overshadowed by its dearth of features when compared to other modern IDE software. One popular alternative is Eclipse. Eclipse, although requiring a separate installation of software in addition to the required Python development kit, is a full-featured IDE in use in industry and long recognized as one of the dominant IDE packages for production-level development across many different programming languages (Geer, 2005). Eclipse does perhaps suffer a bit from a comparatively steep learning curve. But it may be argued that overcoming this learning curve in the academic environment enhances the programming student's value to potential employers in that they are also generating understanding and familiarity with professional-level tools while simultaneously learning the focal programmatic concepts. For the student who wants to be a full-time programmer, Eclipse is the better choice.

As previously discussed, advanced uses of Python typically involve data analysis tasks. A popular choice of IDE in this area is the Jupyter Notebook. Jupyter Notebook is an open-source browser-based application you can use to create and share documents that contain live code, equations, visualizations, and text (Driscoll, 2019). The Jupyter Notebook name comes from the core supported programming languages it supports, **Julia**, **Python**, and **R**, but the Notebook now supports over 40 languages (Project Jupyter, n.d.). It uses individual containers called "cells" to hold its contents. Markdown cells hold notes or other documentation, while code cells hold the Python code. These individual cells allow the code to be executed in small pieces while preserving the results of previously run code. This is a very useful feature for beginners because any new errors are limited to the last cell executed, making the debugging process much easier.

It is also a great tool to use in a lab classroom as it allows the instructor to use the Notebook's markdown cells to include notes on concepts to be covered in class. The instructor can then share the notebook with students and use it as the basis for any programming examples completed during class. Students are able to insert a cell as needed and enter the code for a particular example while following the instructor's directions. At the end of the class session, students have all the code and notes on a topic in one file in a format that resembles a completed analysis project. For the student in a data analytics or data science program, the Jupyter Notebook is a good choice of IDE.

LESSONS LEARNED

Now that we have been operating under this programming curriculum model for several semesters, we have learned a few lessons that we have used to adjust some aspects of the course. In general, these lessons fall under the categories of how students try to get help, issues with students who have previous programming experience, and group projects.

Students Getting Help

There appears to be a tendency among current students to spend an hour looking for a solution online when they could find what they need in their textbook in five minutes. Because Python is currently deployed in two major versions (2.x and 3.x), online search results can also be problematic when students locate a solution using the wrong version of Python. The course is intended to use the current 3.x version of Python. The 2.x version is still available because of legacy programs in use, but it will not be supported beyond January 1, 2020 ("PEP 373—Python 2.7 Release Schedule," n.d.). Many code snippets and help answers found online and in some books about Python use the 2.x version of Python. Students can feel like they have made an important discovery when solving a programming issue when, in fact, they have discovered commands that will soon become obsolete or may not work at all in version 3.x. They are also surprised when their working homework assignment program receives a very low score.

Another issue is that it is easy for students to discover techniques and syntax online that are well beyond the intended scope of the class. For the occasional student, that is not a problem, but for most, it only serves to increase their confusion. They may spend an inordinate amount of time trying to figure out what to do with something they find online that may seem to do what they want but instead raises more questions for them. This problem is also caused by the tendency to go online first when looking for help.

Another aspect of this tendency – and certainly not one specific to Python – is that students become distracted by trying to make their programs produce "the answer" instead of using the textbook and other class resources to work out the logic of a solution. In many cases, they can miss the entire point of the assignment. When unable to work out the logic of looping through several pieces of data, for example, students in this class have hardcoded a solution that generates output that looks like the example output they were provided but does nothing else. They got "the answer" but missed the point of the assignment entirely.

To address these issues, subsequent offerings of the class have limited students to the scope of the textbook and class materials. Online resources can still be helpful to explain and illustrate

concepts, but online content creators do not have the same motivations and goals that are embedded in the course design. Help material found online usually appears to be written *by* experienced programmers and *for* experienced programmers. Students new to programming can get lost in the complexity of an answer found online and become more frustrated. Limiting them to what is in the curated textbook helps reduce that unnecessary frustration.

Students with Programming Experience

Students with previous programming experience present challenges in a class intended for absolute beginners in any language. Many of the features of Python considered by most to be advantages can be seen by the experienced student as either simplistic or incomplete. We have found this either leads to inaccurate assumptions or frustration for these students.

The student who sees Python as simplistic begins to assume that it will take almost no effort for them to earn an “A” for the class. They are correct in thinking they have an advantage over other students, but the error is that they do not yet know what they don’t know about programming in Python. When they complete the first homework assignment in minutes, their flawed assumptions are confirmed, and they can often “check out” of the class, regularly skipping class and eventually doing poorly. This type of student can find themselves earning a “C” when they should be an “A” student.

For experienced students who get frustrated, it is helpful to point out the differences between Python and other languages whenever possible. One example is the previously mentioned Python method for variable declaration. Languages like C++ and Java require an explicit variable declaration, which involves commands associated with the intended variable name to create and type the variable. In Python, programmers provide the name and assign a value. Python handles the rest. Explaining what is going on behind the scenes with Python can often – but not always – alleviate some of the concerns of this type of student.

Group Projects

Programming can be (and is often taught as) a solitary activity, yet CS programs have acknowledged the need for programming students to get beyond the stereotype of the programmer as a loner (Heiner, 2014). The skills discussed by Heiner that students can develop in group work are plentiful: conflict resolution, general communication skills, learning to discuss technical ideas in plain English, and more. One of the common threads throughout most business school curriculums is the requirement of group projects. We regularly talk to employers who ask for their student hires to have experience working in groups.

VB is a very effective language to use for group projects. The emphasis on the “visual” with VB means there are usually several user screens that need to be created plus the code that runs behind them to manipulate data and generate the desired results. The tasks involved in creating these items can easily be split among group members and reassembled into a final product. We might also want business programming students to develop a VB program designed to solve a business problem. In our experience, most groups create a system intended to allow the user to make a sale

of some kind. Again, the need for input screens, output, and databases, in addition to the code functionality make this type of project work in that context.

Most uses of Python, however, do not typically result in an emphasis on a GUI-type program. They tend to be stand-alone programs that complete a particular task. More complex projects could be undertaken, and by using features like custom functions could become feasible in a Python course. However, those concepts are beyond the scope of our course but could be used in a subsequent course with more experienced Python programming students. So, for now, the group project does not appear to work for this course.

CONCLUSION

Python has become the leading language in practice and the language of choice for introductory CS programming classes. The traits that make it attractive in CS also make it attractive as a first language in business IS programming classes. Other characteristics that make IS programming classes different (Siegfried et al., 2016) also lend themselves to the use of Python.

It is also a relatively easy language for programming course instructors to learn. Familiarity with any major programming language will make it simple to understand how Python handles the tasks taught in any introductory programming class. A little experience (and good notes!) make it straightforward to teach with Python for the first time.

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LEGAL CONSIDERATIONS OF CRYPTOCURRENCY IN DIVORCE, MONEY LAUNDERING, AND TAX EVASION

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ABSTRACT

There are relatively few current academic resources related to the evolving issues regarding the use of cryptocurrencies to divide or hide marital assets in divorce cases, as well as for the purposes of tax evasion and money laundering. Cryptocurrencies are decentralized digital currencies that do not require transactional approval by a third party like a bank. Instead, users are assigned a random, encrypted pseudonym that allows them to store and trade currency for goods and services in an anonymous and unregulated manner. Since the introduction of the first cryptocurrency, Bitcoin, in 2009, cryptocurrencies have revolutionized online payment processing, but they have also provided a new medium for hiding assets. Hiding funds via Bitcoin and related cryptocurrencies has captured the international attention of divorce lawyers, digital forensic experts, governmental tax agencies, and law enforcement bodies including the FBI. The constantly fluctuating value, anonymity, and rapid transfer of bitcoins and other virtual currencies have posed significant problems for law enforcement as well as courts and regulatory agencies. Because the use of cryptocurrencies is a comparatively new way to finance crime, fund illicit activities, and hide assets from spouses and governments, the rules and regulations governing the use of cryptocurrencies have struggled to keep pace with the technology. The purpose of this research is to assemble and review existing literature, along with relevant, up-to-date case law related to these emerging topics in the use of cryptocurrency.

Keywords: Cryptocurrency, Bitcoin, Money Laundering, Divorce, Tax Evasion, Regulation

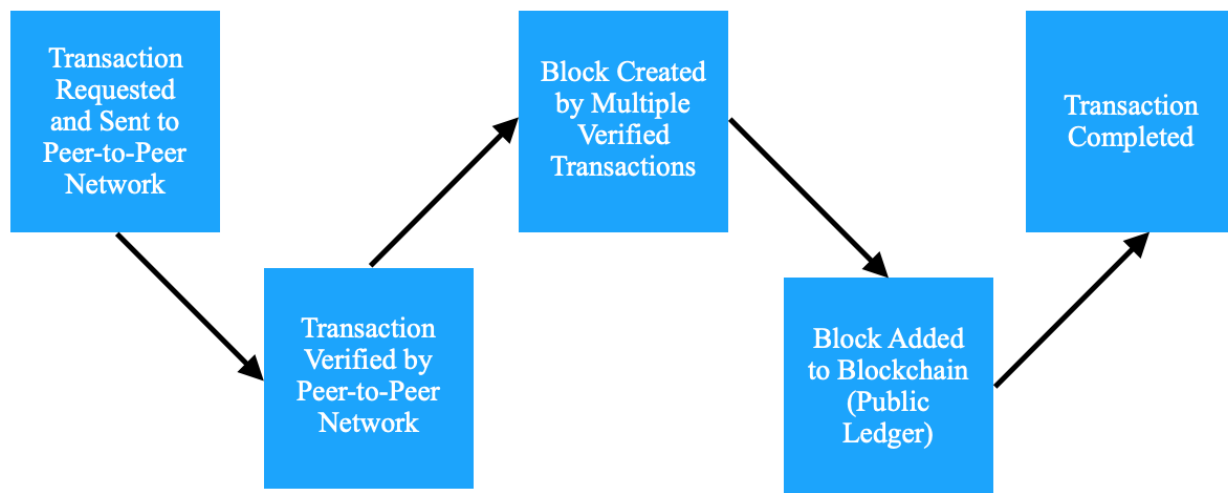
INTRODUCTION

In 2008, the revolutionary paper, “Bitcoin: A Peer-to-Peer Electronic Cash System,” was published by Satoshi Nakamoto, whose identity remains unknown and could represent an individual or a group. Nakamoto (2008) proposed a system of electronic cash in which an individual can directly send payments to another person without the use of a centralized, trusted third party like a financial institution. Examples of trusted service providers include various online vendors who send confirmations of payment and receipt. Because of the prevalence of online communication and transactions, people trust and depend on third parties for security and privacy of digital assets (Crosby, Nachiappan, Pattanayak, Verma, & Kalyanaraman, 2016). However, due to potential hacking, third parties themselves are not necessarily secure.

In order to create a currency system that eliminates the need for trust, Nakamoto’s electronic payment system relies on cryptographic proof (Nakamoto, 2008). The proof derives from cryptography, which is the science of making and breaking codes. Following the publication of “Bitcoin: A Peer-to-Peer Electronic Cash System,” the concept of cryptocurrency was brought to life when Nakamoto mined the first Genesis Block, which contained 50 coins, in the Bitcoin blockchain in 2009 (“Genesis Block,” 2018). Today, hundreds of other cryptocurrencies, including Ethereum, Ripple, Litecoin, and Monero, exist (K.A. Smith, 2018). Although this paper primarily focuses on Bitcoin, the concepts discussed generally apply to other forms of cryptocurrency.

Cryptocurrencies cannot exist without the concept of the blockchain. A blockchain is a database that permanently stores every transaction and digital event that takes place between involved parties (Crosby et al., 2016). Blockchain technology was originally created for Bitcoin to store digital transactions, but it is no longer specific to cryptocurrency. Lawyers utilize blockchain technology to record deeds, while banks and other financial institutions express interest in blockchain technology for the purpose of storing financial transactions and records. In terms of cryptocurrency, the blockchain is often referred to as a public ledger. The ledger uses a peer-to-peer system to maintain records of where individual pieces of bitcoin are stored. Thus, the entire network of peers, identified only by their usernames, can see every transaction that has been confirmed by miners. A graphic outlining this verification process is given in Figure 1.

Figure 1. A brief depiction of how blockchain technology works



According to West and Kainen (2018), there are three steps to any transaction: the input, the output, and the amount of currency exchanged. The input consists of a user’s private address, and the output consists of the public address of the money’s projected location. For cryptocurrency transactions, miners can confirm more than one input and output. To add a block to the blockchain, miners use computers to solve an algorithm that authenticates the transaction (“What is cryptocurrency,” 2018). Thus, mining is the process by which individuals or companies provide their computer power “to verify and record payments into the public ledger” (Jafari, Vo-Huu, Jabiyeve, Mera, & Farkhani, 2018, pg.2). The process requires “specialized hardware that has a

certain amount of computational power, measured in hashes per second” (Jafari et al., p. 2). Miners are rewarded for their work and resources with bitcoin payments. As the quantity of miners attempting to solve the algorithm increases, the algorithm becomes more complex, and “the odds of the average miner getting the reward decrease” (Slattery, 2018, p. 839). Additionally, a fixed amount of bitcoins circulates within the system, so mining is the only way new bitcoins are released (Brown, 2016).

There is considerable debate as to whether the reward is profitable due to the offset costs of heat and electricity for the mining hardware. Unfortunately, this constraint has spawned a collateral illegal enterprise, cryptocurrency-mining malware, in which malicious software infects victim computers and uses their processing power to mine cryptocurrency on behalf of the attacker. In one such case, up to 50,000 servers were infected with a crypto-miner virus over the course of two months in a coordinated attack dubbed the Nanshou campaign (Harpaz and Goldberg, 2019).

Cryptocurrency transactions on the blockchain are possible because of the peer-to-peer network previously mentioned. The idea behind this network is that centralized authorities do not approve transactions. In contrast to standard financial systems, the decentralized Bitcoin network contains no single authority, so every user has access to a list of every transaction. The problem of double-spending ceases to exist within cryptocurrencies because members of the network hold each other accountable and “check if future transactions are valid or an attempt to double spend” (“What is cryptocurrency,” 2018). Network users make pseudo-anonymous transactions using a randomly assigned public address that typically consists of a string of around 30 characters (“What is cryptocurrency,” 2018). Users can analyze other anonymous transactions; however, the transactions and usernames cannot be traced back to someone’s real identity.

Besides anonymity and decentralization, Bitcoin attracts users because of desirable properties like security and speedy, global transactions. In contrast to traditional bank accounts that can contain “pending” transactions for hours or even days, confirmation of crypto-transactions takes minutes or even seconds. Additionally, cryptocurrency transactions can occur anywhere in the world—as long as both users have access to a computer or phone and internet. Because the creation of a Bitcoin account requires no approval from a financial institution, anyone can set up an account in any location at any time. Users with reservations of traditional banks are attracted to the ease and unregulated manner of Bitcoin. Finally, according to blockgeeks.com (2018), “cryptocurrency funds are locked in a public key cryptography system [and] only the owner of the private key can send cryptocurrency.” Thus, Bitcoin offers an additional layer of security.

The volatility of bitcoin’s value stems from the supply and demand of the 21 million bitcoins in regulation (Brown, 2016, p. 332). Every time a miner provides his or her services, he or she is paid in an increasingly small, fractional portion of a coin due to the fixed number of coins circulating the system. However, just like investments with fiat currencies, there is potential for economic profit if the purchaser buys the cryptocurrency at a low price and later sells it for a higher price. For example, the steady trading and mining of bitcoin caused the price to rise from \$2,000 to almost \$20,000 in 2017 (Sharma, 2017). Just like with the Stock Market, users should expect a crash after a substantial increase in value.

Buying and Cashing Out Bitcoin

Compared to the complexity of the science behind cryptocurrency, the processes of buying, selling, and cashing out bitcoin are relatively simple and straightforward. Numerous companies have digital wallets through which the purchaser is directly connected to the Bitcoin exchange. Of these exchange companies, Coinbase is popular within the crypto-community due to its convenience and phone app (Fiorillo, 2018). Once the purchaser owns a wallet, which consists of the public and private key, he connects a credit or debit card to fund purchases. Since third parties operate the credit and debit cards that enable bitcoin purchases, the crypto-transactions will also appear on monthly credit and debit card statements. If a purchaser wishes to exchange bitcoins for cash, he can utilize worldwide bitcoin ATMs or websites like LocalBitcoin that facilitate in-person cash exchanges (Fiorillo, 2018). Using fake emails or a false identity when submitting requested information on LocalBitcoin and purchasing prepaid credit cards at stores help users remain completely anonymous. If purchasers, especially those with criminal intentions, wish to go one step further to conceal their identities when buying bitcoins, they can buy an untraceable burner phone with a prepaid SIM card and use the phone's number to validate an alias email address (Brown, 2016, p. 333).

Some people choose to keep their investments in the Bitcoin exchange, while others wish to exchange the cryptocurrency for real money. Cashing out bitcoins occurs via a third-party broker exchange or an in-person interaction. For third party broker exchanges, the owner requests a fiat currency withdrawal, typically via a bank or wire transfer, after the exchange receives the bitcoin (King, 2018). Websites like LocalBitcoin let people buy and sell bitcoin. LocalBitcoin allows flexible payment methods, but sellers typically prefer cash deposits, bank transfers, or meeting in person (King, 2018). Anonymously cashing out bitcoin can also take place by purchasing gift cards or physical goods from select retailers and then selling the gift cards or items for government-issued money (David, 2018). For example, a user can purchase an expensive item from Amazon with bitcoins and turn around and sell the item for cash.

DIVORCE

Divorce is messy, time-consuming, and emotionally tolling for both parties. Depending on the state in which the divorce is filed and the circumstances of the particular case, the full process can take several months or even years. During the early stages of divorce, the discovery process begins. The purpose of discovery is for each party to exchange financial and personal information to determine the most appropriate and fair way of dividing property and to determine spousal and child support ("Exchange of documents," n.d.). According to O.C.G.A. §9-11-26 (2010), discovery can occur informally or via depositions upon oral exam or written questions, written interrogatories, production of documents, physical and mental exams, and requests for admission. "Parties may obtain discovery regarding any matter, not privileged, which is relevant to the subject matter involved in the pending action, whether it relates to the claim or defense of the party seeking discovery or to the claim or defense of any other party, including the existence, description, nature, custody, condition, and location of any books, documents, or other tangible things and the identity and location of persons having knowledge of any discoverable matter" (O.C.G.A. §9-11-26(b)(1)). It is essential for each party to disclose his or her properties and assets during the discovery stage.

Each state has its own statute regarding how assets are divided during divorce. If spouses cannot agree on how to divide their property, the court falls back on the concepts of community property and equitable distribution (Stim, 2018). In the nine existing states that utilize community property, each spouse gets to keep his or her individual property, and the community property, which is owned by both spouses, is generally divided equally (Stim, 2018). Other community property jurisdictions, “using various terms, call for equitable distribution of the community assets” (Ratner, 2011, p. 21). The remaining states utilize equitable distribution in which property is divided fairly but not necessarily equally. When contemplating how to divide the property fairly, courts examine a number of factors including, but not limited to, the value of each spouse’s separate property, future financial needs of each spouse, and the ages and health of each spouse (“Equitable distribution,” 2018).

Issues arise when one spouse wants to keep a particular asset after the divorce and the other spouse disagrees. He or she may take part in illicit behaviors to impede the court from dividing such assets (Hou, 2015, p. 82). There are multiple methods in which divorcing spouses attempt to hide assets. Spouses can “transfer funds to family or friends, . . . falsify documents to make the record appear as though he or she has already sold the asset” (Hou, 2015, p. 82), invest in company holdings, or, in extreme cases, transfer money to offshore accounts. No matter how the spouse chooses to hide assets, the action is immoral (and even illegal in some jurisdictions) and can ultimately lead to significant punishment. One example of this is the Canadian case where a husband went to jail instead of paying \$10 million to his ex-wife (Humphreys, 2017). A much more severe case involved a Philadelphia man who served 14 years in jail for contempt of court rather than pay his ex-wife money the court ordered him to pay (Avila & Ruppel, 2009).

Cryptocurrency Complications in Divorce

Since the introduction of Bitcoin, family lawyers who deal with divorce have seen a rise in cases involving cryptocurrencies. In divorce cases, cryptocurrencies are similar to any other type of property or asset. Therefore, ownership of cryptocurrencies should be revealed during discovery. The involvement of cryptocurrencies in divorce cases is changing the way in which lawyers currently conduct their cases. For example, New York divorce lawyer David Centeno (2017) explains that “in contested divorces, we now go through emails and hard drives more than we examine actual hard copies of the mail.” Complications with cryptocurrency in divorce cases suggest one of two problems. The first problem addresses spouses attempting to hide marital assets in Bitcoin accounts. The second problem addresses how to value and divide any cryptocurrency that was disclosed in discovery.

Spouses investing in Bitcoin for the purpose of hiding assets appear to be less prevalent than spouses who simply disagree on how to divide Bitcoin holdings. Peter Walzer of the American Academy of Matrimonial Lawyers expresses that cryptocurrencies are a desirable alternative for hiding assets because of their supposed privacy and anonymity (as cited in Bloomberg, 2017). Interestingly, it has been suggested by Kieran Smith (2018b) that most Bitcoin holders are males under the age of 30, which just so happens to be similar to the age of the average divorcing couple in America. Furthermore, it is the husband who generally owns the cryptocurrency (Smith, 2018b). Ed Kainen, a divorce attorney in Florida, explains that investing in cryptocurrencies is “definitely more prevalent among younger folks because of the way they do business . . . [due to] a

generational difference” (E. Kainen, personal communication, October 2, 2018). Males may hide assets in Bitcoin because of the large potential for financial growth. For example, Vananda Chitroda, a partner at Royds Withy King in England, has a high-profile case in which the divorcing spouse’s original investment of £80,000 in November 2016 was valued at £1 million in December 2017 (Peachey, 2018). The volatility of cryptocurrency can either be beneficial or catastrophic depending on the circumstances.

In order to discover hidden assets in divorce, the other party must first have a hunch that his or her spouse is concealing funds. Two ways of storing bitcoin exist. The first is by the use of an E-Wallet, which is the app that contains the account and the account’s transactional history. The other way is via an offline “Cold Storage” method in which a jump drive or personal word file stores the number or identity used to access the account (E. Kainen, personal communication, October 2, 2018). In Cold Storage cases, the opposing spouse has no way to access the private address, which is essential to discover crypto-information. According to Richard West, account information stored on a jump drive is “virtually untraceable” (West & Kainen, 2018). If this is the case, forensic accountants can investigate the matter through a timely and costly process.

The more desirable case would be for the spouse to have an app like Coinbase, which stores purchased bitcoins along with transactional information. Bitcoins are typically purchased from the Coinbase app using a credit card or a bank transfer. At this point, lawyers can analyze the opposing party’s bank statements that may be required in discovery. The complication arises when spouses have separate, private bank accounts. If lawyers or investigators find withdrawals for Bitcoin or large sum transfers, and the bitcoins were not clearly identified in the discovery process, it is inferred that the spouse attempted to hide assets. Divorce attorney David Badanes predicts that a divorcing spouse often attempts to hide assets in cryptocurrency to avoid paying alimony (as cited in “Men’s rights activists,” 2017). However, if the hidden assets are discovered after the divorce, the spouse can go back to court where alimony and child support are typically reassigned (McAfee, 2017).

As technology advances, the situation of hiding assets with cryptocurrencies will likely only get worse. This is why it is important for both spouses to be honest and for divorce lawyers to be thorough during initial discoveries. It is essential for state statutes to “add standard interrogatories and requests for production with the right language aimed at obtaining information and documentation regarding the opposing party’s potential cryptocurrencies” (Wright, 2018). Until then, divorce attorneys must be “diligent” (Hochberg, 2018) when asking questions regarding bitcoins and the associated transactions and values.

The greater, more prevalent issue revolving around cryptocurrency and divorce is determining how to divide the cryptocurrency when both parties are aware of the virtual currency’s existence. Because of the constantly fluctuating value of bitcoin, agreeing on how to split the assets can create difficulties. During a divorce, cryptocurrencies can be valued and split in one of many ways (E. Kainen, personal communication, October 2, 2018). Divorcing couples can choose to split the value at a certain point in time, split the cryptocurrency in-kind (each party takes half), split the initial investment value, or declare a bad-faith investment (E. Kainen, personal communication, October 2, 2018). Kainen has personally dealt with cryptocurrency issues in divorce at his practice, and he states that the easiest way to split cryptocurrency is “to give the party who is not engaging

in misconduct the option of how to do it” (E. Kainen, personal communication, October 2, 2018). If parties choose to split the bitcoin in-kind, one party may still have to pay an equalization payment to the other (Wright, 2018). Nonetheless, each party must come to an agreement on the division of bitcoin before the divorce can proceed.

Cryptocurrency issues in divorce are relatively new, so many of the cases are currently in court. Therefore, there is not a significant amount of available data regarding the topic. Until more laws regarding the specificities of bitcoin in divorce are enacted and enforced, the problem will continue to prevail.

MONEY LAUNDERING

Introduction to Money Laundering

According to Jason Bloomberg (2017), tax evasion, money laundering, contraband transactions, and extortion are sectors of criminal activity that readily benefit from cryptocurrencies. The characteristics of cryptocurrencies that appeal to the average investor, including anonymity, rapidity, and lack of regulation, are concurrently the same characteristics that attract criminals. For example, cryptocurrency technology can be advantageous by easing the process of international purchases, but perpetrators can just as easily commit illegal cybercrimes including blackmail, fraud, dark-web purchases, and money laundering (Heaven, 2018).

By definition, money laundering is a “financial transaction scheme that aims to conceal the identity, sources and destination of illicitly-obtained money” (“Money laundering,” n.d. a). The process of money laundering consists of three stages: placement, layering, and integration (“Money laundering: A three-stage process,” 2017). As its name suggests, the placement stage is when the laundered money first enters the economy. The purposes of placement are to diminish the criminal’s physical possession of large amounts of cash and to place the money into the “legitimate financial system” (“Money laundering: A three-stage process,” 2017). In order for so-called “dirty” money to enter an economic network, criminals turn to institutions like banks and casinos that readily deal with cash. During the layering stage, various secondary transactions occur throughout multiple locations in order to further disguise the money trail (Burke, 2018). As more transactions take place, the laundered funds become further separated and dissociated from their origins. Finally, during integration, the money is reincorporated into society and disguised as lawful funds that are consequently used to pay employees’ salaries, support business ventures, and purchase expensive goods, services, and properties (Burke, 2018).

Traditional Beneficiaries of Money Laundering

Drug traffickers, embezzlers, and terrorists are among the criminals who most commonly engage in activities that require money laundering to conceal the crimes (Layton & Curran, n.d.). Because significant bulks of cash or large sum transfers have a high potential to attract law enforcement agencies (Layton & Curran, n.d.), money launderers traditionally attempt to mask their illicit transactions by funneling the cash into multiple, seemingly legitimate businesses and accounts. The original dirty money then appears cleansed after going through various transactions and being deposited. Popular money laundering techniques include smuggling cash into other countries and

accounts, structuring by making smaller purchases, trading to alter invoices, and operating cash-intensive businesses and shell companies to disguise the launderer (“Money laundering,” n.d. b). Furthermore, bank captures help relieve stress on money launderers who own banks, real estate allows for buying property with dirty money and selling it for legitimate money, and, finally, casinos help claim illicitly gambled money as winnings (“Money laundering,” n.d. b).

Prevention of Money Laundering

In order to combat the international money laundering dilemma, many governments have developed anti-money laundering (AML) efforts that financial institutions must abide by. AML laws consist of confirming the legitimacy of large transactions and reporting any suspicious transfers of funds. In the United States, the Bank Secrecy Act of 1970, the Money Laundering Control Act of 1986, and the Patriot Act are among core AML efforts (“Money laundering,” n.d. b). “The Currency and Foreign Transactions Reporting Act of 1970 (the legislative framework commonly referred to as the “Bank Secrecy Act” or “BSA”) requires U.S. financial institutions to assist U.S. government agencies to detect and prevent money laundering. Specifically, the act requires financial institutions to keep records of cash purchases of negotiable instruments, to file reports of cash transactions exceeding \$10,000 (daily aggregate amount), and to report suspicious activity that might signify money laundering, tax evasion, or other criminal activities” (Financial Crimes Enforcement Network). Further, the Money Laundering Control Act of 1986 declares money laundering to be a federal crime (“Money laundering,” n.d. a). If money laundering occurs, certain banks have developed watch lists to monitor the transactions of clients who have been flagged as suspicious in the past (Burke, 2018).

Additionally, organizations such as the Financial Action Task Force, or FATF, unite to help countries prevent money laundering on an international level. The primary goal of the FATF is to create a standard by which its 33 members can unite to uniformly combat international money laundering and the financing of terrorism (“Anti-money laundering,” n.d.). In each country that is a member, the FATF analyzes money laundering techniques, identifies money laundering patterns, and encourages further AML efforts (“Anti-money laundering,” n.d.). According to Edgar Sánchez (2017), the most significant penalties for money laundering range from the greater of a fine of \$500,000 or twice the value of the property that fulfilled the transaction, up to twenty years in prison, or a combination of both.

Cryptocurrency Complications in Money Laundering

Although the behaviors of criminals remain largely unchanged, the methodology behind committing crimes adapts to the evolving technology. Anonymity, rapidity, and lack of regulation of cryptocurrencies attract money launderers. Cryptocurrency exchanges often offer low exchange rates and can “act as a substitute for bank accounts in countries with immature financial systems” (Brenig, Accorsi, & Müller, 2015, p. 2). Cash helps money launderers disguise their transaction trails and thus conceal their identities; however, Bitcoin’s random, untraceable pseudonyms take anonymous money laundering to a new level.

According to a recent Bloomberg Businessweek article, bitcoin ATMs (BTMs) are increasingly being used to launder money (Bloomberg Businessweek, 2018). According to Bloomberg, there

are more than 4000 of these machines worldwide and 2389 in the U.S. alone as of 2018. And, the authors add, “to date, U.S. regulators haven’t had the interest or resources to investigate BTMs, so it’s more or less an open secret that they’re used by drug dealers and other criminals” (Bloomberg Businessweek, 2018).

As criminals become more aware and knowledgeable of the technology behind cryptocurrencies, the amount of money laundered through Bitcoin continues to increase. A company called CipherTrace noted that criminals illicitly gained a total of \$1.2 billion via cryptocurrency exchanges between 2017 and 2018 (Malwa, 2018). Furthermore, a report published in American Banker estimates that approximately \$761 million has been laundered using cryptocurrency thus far in 2018 (Crosman, 2018, p. 128). Since the year is not over, this number is predicted to increase.

Because of the transactional information listed on the public ledger, law enforcement agencies, like the FBI, can diligently analyze the flow of transactions. The primary issue revolves around tracing the money back to a specific identity. After the Financial Crimes Enforcement Network stated that cryptocurrencies are not classified as money service businesses, tracking the money has been especially difficult because cryptocurrency investors are not subject to the Bank Secrecy Act (Sánchez, 2017, p. 185).

Cryptocurrency money launderers facilitate a condensed version of traditional money laundering. The two-step process includes layering and integration in which the launderers must deposit and withdrawal the cash and cryptocurrency anonymously. The layering step consists of investing the dirty money in cryptocurrency via mixers or tumblers (Malwa, 2018). In summary, mixers and tumblers are money laundering services that charge a 1-3% transaction fee in order to mix various funds together and then output the funds to obscure the cryptocurrency’s origin (CipherTrace, 2018, p. 7). To optimize anonymity during mixing, services spread the pay-outs over time and randomly divide the amount of bitcoin being mixed (Van Wegberg, Oerlemans, & Van Deventer, 2018). The services continually transfer cryptocurrencies within the network in order to steadily complicate the ability to track them. Once the trail is unclear enough to trace, integration takes place, and the funds are moved into the mainstream financial system (CipherTrace, 2018, p. 6).

Christian Brenig, Rafael Accorsi, and Günter Müller (2015) write that administration, flexibility, irrevocability, portability, and rapidity are among a few of the characteristics that entice money launderers to use cryptocurrencies instead of cash. As previously mentioned, Bitcoin operates on a decentralized peer-to-peer network. The nature of this network means that law enforcement agencies have no ability to delete accounts that they suspect are involved with money laundering. Furthermore, because of the network’s pseudo-anonymity, individuals have the ability to own and operate more than one account, which progressively complicates the process of finding the origin.

Flexibility derives from the convenience that cryptocurrencies offer since transactions can be made internationally in a matter of minutes and from behind a computer. Instead of hiring outside help and purchasing plane tickets to invest in offshore accounts, crypto money launderers can commit the crime with the click of a button. Irrevocability decreases the risk of payment fraud and helps launderers profit because “no rational criminal would take legal action against [another criminal] . . . due to the risk of being prosecuted likewise” (Brenig et. al, 2015, p. 9). Since cryptocurrency accounts are accessed via the internet, criminals no longer feel apprehension when attempting to

smuggle bulk amounts of cash into other countries. Finally, the rapidness of transactions frees up time, money, and other resources and gives criminals ample time to engage in other illegal activities.

TAX EVASION

Introduction to the American Tax System

In the United States, citizens pay federal taxes to help provide government services and to help encourage economic growth. The U.S. utilizes a progressive tax system in which the proportion of taxes an individual or household pays directly correlates to income (Roach, 2010, p. 2). In other words, the greater the income, the higher the taxes (up to a maximum tax rate). It is the responsibility of taxpayers to voluntarily report their taxable gains or losses.

Capital gains and losses are determined by calculating how much the cost of the assets, like stocks and bonds, has increased or decreased from the time of the initial purchase to the time of the final sale (Erb, 2018). Capital gains occur when a profit exists, and capital losses occur when yearly losses exceed yearly gains. At the end of the year, the gains or losses from sales or exchanges are taxed as personal assets (“Tax tips for Bitcoin,” 2018).

Taxing Cryptocurrencies

It has been argued that cryptocurrencies like Bitcoin can act as both a property and a currency (Roman, 2015, p. 451). Cryptocurrencies parallel properties like stocks and bonds in the sense that they are both subjected to capital gains and losses at the end of the fiscal year. Similarly, cryptocurrencies mirror government-backed currencies because some people use Bitcoin as a platform to buy or trade certain goods and services. However, the Internal Revenue Service released Notice 2014-21 to address the debate by declaring that virtual currencies are treated as property for the purpose of federal taxes (2014, p. 2). Notice 2014-21 clarifies how tax laws apply to virtual currencies by answering multiple questions from the public. Because of the newness and large scope of virtual currencies, the notice further acknowledges that additional questions will arise and encourages the public to submit such questions for clarification. Prior to the release of Notice 2014-21, it was predicted that the IRS would classify Bitcoin as either a security, a foreign currency, or a commodity (Slattery, 2014, p. 855).

Sánchez (2017, p. 187) further supports the IRS’s categorization of virtual currencies by stating that cryptocurrencies will be regarded as “capital assets taxed at capital gains and losses.” According to Kelly Phillips Erb (2018), taxable events occur when receiving or sending cryptocurrency in exchange for goods, services, cash, or even other types of cryptocurrencies. Erb’s explanation can be simplified to say that general transactions consist of using currency to buy, sell, send, or receive goods, services, or other currencies. Any profits made from cryptocurrencies can be cashed out and considered income. If the taxpayer owns the cryptocurrency for at least one full year, the property is considered a long-term capital asset, and if the taxpayer owns the cryptocurrency for less than a year, the property is categorized as a short-term gain at a regular income tax rate (Roman, 2015, p. 453). Nonetheless, the owner must ensure that any cryptocurrency-related transactions are reported to the IRS.

When filing taxes, individuals, including cryptocurrency miners, must report all taxable cryptocurrency exchanges in U.S. dollars (“Notice 2014-21,” 2014, p. 3). To make the conversion, the individual must evaluate the cryptocurrency’s fair market value on the day of the transaction. Recording the date on which the cryptocurrency was bought and sold, the amount that was originally paid for it, and the amount received for the sale of the cryptocurrency provides fundamental information to the IRS (Bahney, 2018). In order to make the bookkeeping process easier, websites like Bitcoin.tax help determine crypto-taxes. Specifically, Coinbase generates individualized Cost Basis for Taxes reports that show the purchase prices of cryptocurrency-to-cryptocurrency trades and the resulting profits (“Taxes FAQ,” n.d.).

Traditional Tax Evasion

Each individual or household has the responsibility of filing taxes and returns (or filing for an extension) with the Internal Revenue Service by April 15th of each year. Failure to file taxes by this date could be a result of negligence or, in the worst case, tax evasion. By definition, tax evasion is the illegal act in which one fails to pay taxes, underpays taxes owed, provides false information regarding income, or understates taxes by a significant amount (Murray, 2018). Failure to abide by tax laws results in federal or state penalties ranging from fines to imprisonment. According to the IRS, those who evade taxes are at risk of a maximum of five years in prison and a fine up to \$250,000 (“IRS reminds taxpayers,” 2018).

Similar to money laundering, offshore accounts serve as a popular strategy for those trying to evade taxes. A common misconception is that all offshore accounts are used for shady or illegitimate business. However, owning an offshore account is not illegal and is especially common for people who lived in another country before moving to the United States. Illegality arises when a person owns an offshore account for the purpose of evading taxes and knowingly fails to report the account’s holdings. In order for the government to prove tax evasion, it must show that the subject under review intentionally withheld account information to avoid reports for tax requirements (“Tax evasion of offshore accounts,” 2018). Regardless of the country in which the account is held, if the cryptocurrencies remain unreported, they remain untaxed.

Cryptocurrency Complications in Tax Evasion

Just like with divorce and money laundering, cryptocurrencies have created new complications regarding tax evasion. As in the previous two cases, pseudo-anonymity appeals to those who wish to hide their taxable incomes. Despite federal law and the potential to be criminally prosecuted, significant numbers of cryptocurrency owners still fail to report their holdings. A tax preparation service reported that approximately 7% of Americans own cryptocurrency and that 0.04% of tax filers in the U.S. declared their cryptocurrency gains and losses to the IRS in 2018 (Wieczner, 2018). Furthermore, in January 2018, 57% of the 2,000 American cryptocurrency owners surveyed by Credit Karma Tax and Qualtrics said they were aware of the taxable gains from their cryptocurrency investments (Wieczner, 2018). The first step to fight tax evasion via cryptocurrencies is to educate the public on the rules and regulations set forth by the IRS.

Multiple savings accounts, transaction divisions, tax-exempt agents, and foreign transactions all help facilitate cryptocurrency tax evasion by further obscuring the exchange trails (Jafari et. al, pp.

7-8). As with money laundering, an easy way to muddy the trail of transactions is to open multiple digital savings accounts. In order to successfully operate these accounts and divide transactions, one must own multiple digital wallets that only receive—and cannot send—cryptocurrencies. Again, a person can use multiple burner phones to confirm alias email addresses for various accounts that each contain a different username.

The fork and merge method is a popular distribution tactic in which the cryptocurrency owner divides the cryptocurrency into smaller portions, transfers the portions to several accounts, and finally transfers the smaller portions back to a different, singular account (Jafari et. al, p. 7). Tax-exempt agents are third parties that account for the most complex way to evade cryptocurrency taxes (Jafari et. al, p. 7). Briefly, this type of transaction involves three steps: 1) a person using cryptocurrency to pay an agent for stock, 2) the agent purchasing the stock using the dollar value, and 3) the agent returning the cryptocurrency value of the company's dividends back to the original investor (Marian, 2013, p. 43). The value of the depreciation or appreciation of the stock determines if the investor pays the agent or vice versa.

Finally, foreign transactions for the purpose of evading taxes consist of investing foreign currency into cryptocurrency accounts since bank secrecy laws prevent third-party institutions from sharing account information with other governments ("Foreign account," 2018). In an attempt to impede foreign accounts used for tax evasion, the IRS implemented the Foreign Account Tax Compliance Act (FATCA), which "generally requires that foreign financial institutions and certain other non-financial foreign entities report on the foreign assets held by their U.S. account holders" ("Foreign account," 2018).

Summary of U.S. v. Coinbase, Inc.

The use of cryptocurrencies for tax evasion gained international attention when the IRS requested personal records from the virtual currency exchange, Coinbase ("U.S. v. Coinbase," 2017). The IRS filed a "John Doe" summons, which categorizes individuals by activities as opposed to specific identities, on all U.S. Coinbase customers who made cryptocurrency exchanges between 2013 and 2015 (Erb, 2017). "Under 26 U.S.C. § 7602(a), the IRS may issue a summons for 'ascertaining the correctness of any return, making a return where none has been made, determining the liability of any person for any internal revenue tax or ... collecting any such liability....'" 26 U.S.C. § 7602(a) (U.S. v. Coinbase," 2017). The reasoning behind the initial summons was that Coinbase had roughly 5.9 million customers who exchanged \$6 billion (in total) in Bitcoin, while only 800 or 900 people made potentially Bitcoin-related claims on Form 8949 (Dechert LLP, 2017). After much contemplation, the court decided that Coinbase would only have to release the records of users who spent at least \$20,000 on a single transaction at any given time between 2013 and 2015 (Erb, 2017). This revolutionary case helped the IRS shed light on the importance of taxation of virtual currencies, while allowing Coinbase to protect the guaranteed anonymity and privacy of the majority of its users.

CONCLUSION

Since the time of its launch in 2009, Bitcoin has increasingly become a popular, controversial topic that frequently initiates debates between lawyers, government agencies, computer scientists,

investors, and even the general public. Aspects like anonymity and transaction processing speed are portrayed in both positive and negative ways. For example, while rapidity is beneficial for facilitating international purchases and for sending money to long-distance relatives, this speed also enables and eases the process of global money laundering and tax evasion. Even though law enforcement agencies know about these issues, only so much can be done due to the platform's original conditions and features. Even highly qualified and trained digital forensic scientists struggle to find a solution to the issues revolving around Bitcoin and other cryptocurrencies. Despite progressive advancements in both cybersecurity and the technology behind cryptocurrencies, illicit uses of cryptocurrencies still persist. As long as the technology continues to advance, so will the minds of criminals.

Bitcoin and other cryptocurrencies have introduced social, legal, and economic problems that were unimaginable twenty years ago. Although law enforcement agencies and governmental tax entities like the IRS have issued rules concerning legal reporting for cryptocurrencies, the decentralization and anonymity of the peer-to-peer network make it difficult to fully regulate and enforce such laws. Douglas Heaven (2018) declares that “even if regulation were stricter, . . . it's not clear that it would make a difference” (p. 62). Heaven (2018) also mentions that the U.S. government is in the process of creating a law that would make it illegal to deal with blacklisted cryptocurrency addresses of criminal groups like drug traffickers and terrorists. While regulations regarding illicit uses of cryptocurrencies are gaining traction around the globe, the criminal problems stemming from the nature of these virtual currencies may never truly be resolved.

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THE EFFECTS OF CHARTER SCHOOLS ON DISCIPLINARY INFRACTIONS IN TRADITIONAL PUBLIC SCHOOLS: EVIDENCE FROM ARKANSAS

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ABSTRACT

Charter school enrollment is increasing across the United States. One unexplored question is the effect charter schools have on student behavior in traditional public schools. Our study focuses on Arkansas, where we have access to data on charter school enrollment by school district. A two-way fixed-effects analysis finds that an increase in charter school enrollment is associated with fewer disciplinary infractions in traditional public schools. School districts with increased charter competition experience an increase in the percentage of gifted and talented students. We also find no relationship between charter enrollment and the percentage of African-American students in traditional public schools, which contradicts a common critique that charter schools are causing segregation.

Keywords: Charter Schools, School Choice, Disciplinary Infractions

INTRODUCTION

Public charter schools' popularity has increased in the U.S. The number of public charter schools has increased from 2,000 to 7,000 since the year 2000, and enrollment has increased from 0.4 million to 3 million students (Public Charter School Enrollment). Charters are taxpayer-funded like traditional public schools, but they offer greater flexibility. They can have different learning environments, school schedules, procedures, and curriculums. Supporters claim that school choice creates a more innovative environment. Others argue that the charter schools harm traditional public schools by competing for resources. Our research focuses on one relatively unexplored impact: how increased charter school enrollment affects the number of disciplinary infractions committed by students at traditional public schools.

Economists tend to view competition favorably. A successful new restaurant puts pressure on existing restaurants to innovate or shut down. The winner of the competition is the consumer. Competition provides a low price for a quality meal. The same situation occurs in the market for cell phones, computers, cars, etc. The quality of K-12 education has not made great progress over the years relative to other sectors of the economy. 12th graders have not significantly improved their test scores since the 1990s. For instance, the ACT score of 20.8 in 2018 is lower than the average score of 21.0 twenty years earlier (ACT Profile Report - National). K-12 education is also a field that has relatively little competition.

Unlike the choice a consumer has for a cell phone, a student has few choices for K-12 education. Public schools do not charge tuition. Some private schools exist, but it is difficult for them to compete against a seller that charges a price of zero. The first public charter school opened in 1992 in Minnesota (Evaluation of the Public Charter Schools Program, 2004). Students can attend public charter schools without cost. If the traditional public schools provide a poor service, students can enroll in the charter school if available. Charter schools can put pressure on traditional public schools to innovate or shut down.

An argument against the charter schools is the effect they have on traditional public schools. Opponents argue that charters take tax money away from traditional public schools. Valerie Strauss (2017) persistently writes Washington Post articles outlining examples of traditional public schools losing money to charter schools. A traditional public school that lacks funds can be less equipped to provide a quality education. One can also note that charters are less equipped to provide a quality education if the traditional public school takes money away from them.

Our study focuses on the effect charter schools have on disciplinary infractions in traditional public schools. A study by the Bill and Melinda Gates Foundation (2012) surveyed teachers and found classroom behavior to be of high concern. More than 70% of teachers in the survey said that they are not equipped to deal with behavioral issues. That percentage of teachers is higher than with any other question about classroom problems. Teachers will tell you that behavior is a major problem, and evidence shows that academic performance suffers from it (Cortes, Moussa, & Weinstein, 2012; Kremer, Flower, Huang, & Vaughn, 2016).

This study examines data from Arkansas's school districts. Arkansas has been expanding its number of charter schools and has data available on district-wide enrollment. We use this data to determine if there is a relationship between the number of disciplinary infractions in a district and the number of students enrolled in a charter school from that district. Economic reasoning suggests the relationship can go either way. Charters can be enrolling the high-achieving students and leaving the traditional public schools with fewer resources to deal with disciplinary infractions. Conversely, charters can offer an alternative for students who have disciplinary problems in traditional public schools. The evidence we provide supports the latter possibility. We find a negative relationship between charter school enrollment and disciplinary infractions in school districts.

Our evidence suggest that charters are enrolling a disproportionately high number of low-achieving students. We find that charter enrollment leads to a greater percentage of gifted in talented students in the school district. Existing literature finds that the low-achieving students in Arkansas do better in charters than traditional public schools (Ritter, Wolf, Anderson, Foreman, Rhinesmith, & Swanson, 2016). Combined with our finding, charters appear to be beneficial to students in both types of schools.

LITERATURE ON CHARTER SCHOOLS' EFFECTS ON TRADITIONAL PUBLIC SCHOOLS

Studies on the effects of charters on traditional public schools have yielded mostly positive, but some mixed results. Competition in the market can influence a firm so that it improves or be forced

to shut down. Two studies focused on North Carolina schools. Holmes, Desimone, and Rupp (2006) found that students in traditional public schools performed better when students had a chance to go to a nearby charter school. The authors discovered that result even though charter schools were enrolling above-average performers. Bifulco and Ladd (2006) conducted a similar study in North Carolina but found inconclusive effects of charter schools on traditional public school performance.

Most studies in other locations found that charters had a positive effect on traditional public schools. A study by Winters (2012) revealed higher reading test scores in New York City's traditional public schools when a higher percentage of students enrolled in a charter school. Both math and reading scores increased for the lowest-performing students under greater charter-school competition. Booker, et al. (2008) found higher test scores for traditional public school students in Texas when there was an increase in charter school enrollment. Cebula, Hall, and Tackett (2016) established a positive relationship between public school test scores and non-public school enrollment in West Virginia. Linick (2016) discovered that traditional public schools in Ohio changed their resource allocation under the competitive pressure of charter schools. Kalulu, Snyder and Ouattara (2017) studied elementary schools in Arkansas and found a positive relationship between charter school competition and public school test scores in math, reading, and language.

Nationwide studies have discovered either positive or inconclusive effects of school choice on traditional public schools. Hoxby (2003) found that cities with more school choice had higher math and reading scores. Davis (2013) used a national longitudinal dataset and found no strong relationship between charter school enrollment and traditional public school performance.

Relatively few studies consider the effects charter schools have on disciplinary infractions in traditional public schools. One such study by Imberman (2011) examined how charter enrollment affected infractions based on geographic distance within a large southwestern city. His results indicated that a 10 percentage-point increase in charter schools' share of students reduces disciplinary infractions by 45 infractions per 100 students. A study by Cordes (2017) discovered that nearby charter schools reduce grade retention and attendance in traditional public schools. Her study also revealed that parents found the school significantly safer and teachers said that academic expectations, respect, and cleanliness of the students increased with charter school competition.

Our study contributes to the literature by examining student behavior in Arkansas's school districts. No published study to our knowledge has examined the effects of charter schools on student behavior in traditional public schools in Arkansas. A few studies have looked at the effectiveness of charter schools. Ritter, et al. (2016) found that Arkansas students enrolled in open charter schools performed better in math benchmark exams (grades 3 through 8) than similar students enrolled in a traditional public school. A study on how charters affect student achievement by Mills (2013) found that charters have negative performance impacts on average; however, poor performance typically diminishes as schools mature. This may be evidence of a functioning market – bad charter schools are closing, while good ones are persisting. A parent satisfaction survey in fall 2015 by Ritter et al. (2016) found that most parents of students in open charter schools indicated many areas that were stronger in the charter school than their prior school, including “1. What is taught in school; 2. Amount child has learned; 3. Teacher performance; 4. Student

engagement; 5. School communication about academics and discipline; 6. Discipline in school; 7. Principal performance; and 8. Parental involvement.”

The positive performance of charter schools in Arkansas can be offsetting if they are causing harm to students in traditional public schools. One can argue that charters do not accept the challenging students and leave them to the traditional public schools. Ritter, et al. (2016) did not find that to be the case. They found charters in Arkansas enroll a significant higher percentage of minority students who disproportionately achieve lower scores. We then hypothesize in our study that disciplinary infractions would decrease in traditional public schools if more students are going to charter schools. Given the struggle teachers have with classroom behavior, this result has important implications on student performance.

DATA AND METHODS

Our data is at the Arkansas school district level for three school years: 2014-2015, 2015-2016, and 2016-2017. We collected our data from the Arkansas Department of Education, the University of Arkansas’s Office of Education Policy, and the National Center for Education Statistics. The main dependent variable of interest is the nondrug disciplinary infractions. These infractions include insubordination, disorderly conduct, fighting, etc. Our study investigates whether incidents of misbehavior increased or decreased in the traditional public schools as more students entered charter schools. The disciplinary infractions are per 100 students.

Our main independent variable is charter school competition. We obtained charter school enrollment from each district from the Arkansas Department of Education. We used the total enrollment in each district to calculate the percentage of students in the district that went to a charter school. The more charter enrollment, the more competition facing the traditional public school. We controlled for demographic variables, including the percentage of the Black, Hispanic, free-and-reduced lunch, gifted-and-talented, and male students. We also considered the student-teacher ratio, instructional spending per pupil, and total enrollment. Charter school enrollment can affect disciplinary infractions through its effect on enrollment, so we do not control for the student-teacher ratio and total enrollment in all specifications. The appendix provides a description and the source of the data.

After testing the relationship between charter school enrollment and disciplinary actions, we also wanted to address the possibility of demographic changes from charter school enrollment. One critique of finding fewer disciplinary actions in traditional public schools is that schools are simply segregating and dumping the low-achieving students in other schools. Of course, charter enrollment is a choice for students, and the demand for seats sometimes exceed the supply. Some of these students may be from disadvantaged families. We considered the effect of charter school enrollment on the percentage of gifted and talented enrollment in traditional public schools. We also investigated the possibility of segregations by examining the relationship between African-American students and charter school enrollment.

We use a fixed-effects model with yearly time effects. We use this model so we can control for time-invariant factors in the school districts that may influence disciplinary infractions besides charter enrollment. Controlling for total enrollment and time effects help reduce, though at a cost,

the possibility of simultaneous endogeneity problems. Charter school enrollment and disciplinary infractions may move together because of changing total enrollment. However, charter school enrollment may affect disciplinary infractions through enrollment because it may reduce class size, which means controlling for total enrollment may understate the effects of charter enrollment on disciplinary infractions. We run both models.

RESULTS

Table 1 displays the summary statistics. Table 2 displays the fixed-effects estimates. We display three specifications. Each model displays a negative and statistically-significant coefficient on the charter school enrollment variable. An increase in charter school enrollment results in fewer disciplinary infractions with or without controlling for other factors. Model 3 estimates that a one percentage-point increase in charter school enrollment as a fraction of total enrollment leads to 4.9 fewer disciplinary infractions per 100 students in the school district.

Table 1. Summary Statistics. Panel Data for Arkansas School Districts.
School years 2014-2015, 2015-2016, and 2016-2017.

Variable	Obs	Mean	Std. Dev.	Min	Max
Disciplinary Infractions	660	1.28	1.08	0	7.81
Charter Enrollment	662	1.13	3.98	0	51.02
Black	662	15.77	24.32	0	98.51
Hispanic	662	7.49	9.47	0	61.74
Gifted and Talented	662	9.65	3.15	3.31	25.46
Male	662	51.50	1.69	45.05	58.03
Instructional Spending	658	5825.57	710.71	4567.74	11941.65
Student-Teacher Ratio	660	11.99	11.24	4.83	292
Total Enrollment	662	2066.61	3121.51	318	23363

Table 2. Disciplinary Infractions and Charter School Enrollment. Fixed-effect regressions.
Dependent variable: nondrug disciplinary infractions per 100 students
in an Arkansas school district.

Variable	Infractions	Infractions	Infractions
Charter Enrollment	-5.39*** 1.44	-5.50*** 1.71	-4.90** 2.33
Black		3.71** 1.81	3.82** 1.85
Hispanic		0.21	-0.06

		<i>2.14</i>	<i>2.15</i>
Free Lunch		-0.22	-0.21
		<i>0.16</i>	<i>0.17</i>
Gifted and Talented		0.94	1.08
		<i>1.21</i>	<i>1.24</i>
Male		-2.32	-2.24
		<i>1.60</i>	<i>1.56</i>
Instructional Spending			-0.0022
			<i>0.0054</i>
Student-Teacher Ratio			-0.0020
			<i>0.0091</i>
Total Enrollment			0.0046
			<i>0.0031</i>
Constant	66.25***	131.27	128.44
	<i>1.77</i>	<i>98.91</i>	<i>11.76</i>
2015	4.52***	5.05***	4.81***
	<i>1.68</i>	<i>1.80</i>	<i>1.87</i>
2016	6.33***	7.26***	7.49***
	<i>2.14</i>	<i>2.48</i>	<i>2.95</i>
N	660	660	653
F	6.93	4.33	8.74

*Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level.*

Model 1 only controls for the year effects. Model 2 controls for the demographic variables. Model 3 includes the student-teacher ratio. We calculate this ratio as the number of students per certified teacher. A student-teacher ratio may be a channel through which charter school enrollment affects disciplinary infractions, so we do not include it in all models. More teachers can theoretically lead to lower infractions because the teacher has more time per student to monitor behavior. The regression results indicate no statistical relationship between the student-teacher ratio and disciplinary infractions. The third model also includes total enrollment and instructional spending. A high enrollment could lead to more opportunity for disciplinary infractions. Including this variable may also be inappropriate because it can be a channel through which charter enrollment affects disciplinary infractions. We see that the coefficient on charter enrollment is smaller when we control for total enrollment. The coefficient on the total enrollment is positive but not statistically significant.

Another variable that has a statistically-significant coefficient is the percentage of black students in the school district. School districts that experience an increase in the number of black students have an increase in disciplinary infractions on average. This result is robust over all specifications, including when we control for poverty (free and reduced lunch).

The negative relationship between charter school enrollment and disciplinary actions provides evidence to support the idea that competition changes the way traditional public schools operate. One critique of our result can be that it is possible charter schools are changing the demographics, not improving behavior. Table 2 isolates the effect of charter competition on disciplinary actions from demographic changes because it controls for gender, race, and the high-achieving students. However, it is still possible that charter schools are taking away the low-achieving or high-achieving students. To investigate this possibility, table 3 examines the relationship between gifted and talented students and charter enrollment, and table 4 examines the relationship between the percentage of Black students and Hispanic students and charter enrollment.

Table 3 displays three fixed-effects specifications to see if a change in charter school enrollment affects the percentage of gifted and talented students in a school district. Gifted and talented programs allows the high-performing students to participate in a more accelerated or enriching curriculum, such as advanced-placement classes. These regressions allows us to see who is leaving the traditional public schools. All three models demonstrate a positive and statistically-significant relationship between charter enrollment and the percentage of gifted and talented students in traditional public schools. With and without controlling for demographics and school district characteristics, when more students leave a district to attend a charter school, the traditional public schools experience an increase in their percentage of gifted and talented students. For instance, model 3 predicts that an increase in charter school enrollment of 10 percentage points as a percent of total enrollment will increase the number of gifted in talented students by 1.85 students per 100 students. The relationship and statistical significance holds with and without controlling for other demographic variables and school characteristics. Note that in table 2, charter school enrollment predicts disciplinary actions with or without controlling for the number of gifted and talented students. Since model 3 in table 3 controls for enrollment, the result may indicate that a few students in traditional public schools perform better when there is charter school competition.

Table 3. Gifted and Talented Students and Charter School Enrollment. Fixed-effect regressions.

Dependent variable: the percentage of students enrolled in a gifted and talented program in an Arkansas school district.

Variable	Gifted	Gifted	Gifted
Charter Enrollment	0.16*** <i>0.061</i>	0.14** <i>0.064</i>	0.19** <i>0.077</i>
Black		-0.10* <i>0.057</i>	-0.11* <i>0.057</i>
Hispanic		0.28*** <i>0.084</i>	0.28 <i>0.082</i>
Free Lunch		-0.00085 <i>0.0073</i>	-0.0043 <i>0.0071</i>

Male		-0.0051	-0.011
		<i>0.062</i>	<i>0.062</i>
Instructional Spending			0.00045**
			<i>0.00019</i>
Student- Teacher Ratio			0.00070
			<i>0.00043</i>
Total Enrollment			0.000069
			<i>0.00014</i>
Constant	9.64***	9.55***	7.41*
	<i>0.07</i>	<i>3.72</i>	<i>4.06</i>
2015	-0.19***	-0.25***	-0.28***
	<i>0.076</i>	<i>0.079</i>	<i>0.080</i>
2016	-0.31***	-0.43***	-0.52***
	<i>0.10</i>	<i>0.11</i>	<i>0.12</i>
N	662	662	655
F	4.00	3.79	5.39

*Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level.*

Another possible critique of charter schools is that they are discriminating based on race. Table 4 examines the relationship between a change in charter enrollment and a change in the percentage of Black or Hispanic students in the school district. The regressions find no clear relationship. The coefficient on charter enrollment is slightly positive but not statistically significant. The evidence in table 4 provides no evidence that the charter schools are discriminating based on race.

Table 4. Race and Charter School Competition.

Two-way panel regressions at the district level for 2014-2016.

Dependent variable: percentage of students that identify as black in the Arkansas district level.

Variable	Black	Hispanic
Charter Enrollment	0.0027	0.0151
	<i>0.13</i>	<i>0.0459</i>
Gifted and Talented	-0.072*	0.13***
	<i>0.041</i>	<i>0.048</i>
Free Lunch	-0.0062	0.011
	<i>0.0059</i>	<i>0.0078</i>
Male	-0.083*	-0.016
	<i>0.048</i>	<i>0.043</i>

Instructional Spending	0.000088 0.00019	-0.000026 <i>0.00012</i>
Student-Teacher Ratio	0.00043 <i>0.00042</i>	-0.00040** <i>0.00021</i>
Total Enrollment	0.00035* <i>0.00018</i>	-0.00010 <i>0.00008</i>
Constant	19.74*** 2.81	6.47*** 2.45
2015	0.061 <i>0.082</i>	0.23*** <i>0.054</i>
2016	0.032 <i>0.11</i>	0.50*** <i>0.084</i>
N	655	655
F	4.82	12.01

*Robust Standard Errors are in italics. *** 1% significance level, ** 5% significance level, * 10% significance level.*

To address endogeneity concerns, other regressions were run (not shown) to see if lagged charter enrollment is associated with disciplinary infractions. The relationship holds, but those regressions force us to eliminate a year of observations. We did not use instrumental variables, such as geographic distance, because those are time-invariant, and they will not be appropriate in our fixed-effects model. We see no rationale for reverse-causality, where fewer disciplinary infractions in public schools cause more students to leave the traditional public schools. If fewer disciplinary infractions caused fewer students to leave the traditional public schools, which seems more plausible, then our result is stronger.

DISCUSSION

Charter schools provide an alternative to traditional public schools. Enrollment in charter schools has the potential to steer resources from the traditional public schools. Teachers have argued that they do not have enough resources to deal with classroom behavioral issues. Our study examines whether classroom behavior improves or declines when charter school enrollment changes. We find that disciplinary infractions decline in school districts that experience an increase in charter school enrollment. Less effort and fewer resources devoted to school discipline in traditional public schools means the teachers can use more effort and resources for teaching. Some students struggling in traditional public schools may find charters to be a better fit.

In Arkansas, charter enrollment appears to be a win-win for students in both types of schools. Existing Arkansas studies have shown that students perform well in charter schools compared to traditional public schools, and that student performance improves under competition. Our study shows that charter schools also reduces the disciplinary infractions at traditional public schools.

Teachers have listed classroom behavior as a major obstacle. Charter schools can provide alternative approaches and competition that can benefit traditional public schools. State and local governments can look to charter schools to help alleviate the disciplinary issues in the traditional public schools and improve student performance.

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APPENDIX

Key. All data are at the school district level and for years 2014-2015, 2015-2016, and 2016-2017.

Variable	Description	Source
Disciplinary Infractions	The number of nondrug disciplinary infractions in a school district per 100 students.	Data is from the Arkansas Department of Education. Retrieved from https://adedata.arkansas.gov/statewide/
Charter Enrollment	The percentage of students in the school district that went to a charter school.	Data requested from the Arkansas Department of Education.
Black	The percentage of students in the school district that identify as black.	Data is from the Office for Education Policy, University of Arkansas. Data retrieved from http://www.officeforeducationpolicy.org
Hispanic	The percentage of students in the school district that identify as Hispanic.	Data is from the Office for Education Policy, University of Arkansas. Data retrieved from http://www.officeforeducationpolicy.org
Gifted and Talented	The percentage of students in the school district that are in gifted and talented programs.	Data is from the Office for Education Policy, University of Arkansas. Data retrieved from http://www.officeforeducationpolicy.org
Male	The percentage of students in the school district that identify as male.	Data is from the Arkansas Department of Education. Retrieved from https://adedata.arkansas.gov/statewide/
Instructional Spending	Dollars per pupil spent on instruction in the school district.	Data is from the Office for Education Policy, University of Arkansas. Data retrieved from http://www.officeforeducationpolicy.org
Student-Teacher Ratio	The number of students per certified teacher.	Data is from the Arkansas Department of Education. Retrieved from https://adedata.arkansas.gov/statewide/
Total Enrollment	Total enrollment in the school district.	Data is from the Office for Education Policy, University of Arkansas. Data retrieved from http://www.officeforeducationpolicy.org

The entire dataset is available at the Figshare DOI identifier: 10.6084/m9.figshare.6328958

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