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EDITORIAL NOTES

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In addition to being listed in *Cabell's Directory*, *JNABET* is also available through the EBSCO Host research database, which we expect will increase our readership and the citations of our authors.

The current acceptance rate for JNABET is roughly 35%. We have strived to accept only high-quality research, while at the same time maintaining JNABET as a realistic publishing outlet for business and economics faculty throughout the northeastern United States. Key to this process is our referees who have worked hard to help "grow" papers that have significant potential by providing authors with thorough, critical review comments. Consistent with this objective, we generally require two to three rounds of review prior to accepting articles for publication. At the same time, we are attempting to shorten the average time for each review to less than three months.

The Spring 2016 edition of the *Journal* reflects the commitment of numerous volunteers. We especially thank the officers of the Northeastern Association of Business, Economics and Technology, the Executive Board and the referees who reviewed articles for this edition.

Kurt Schimmel,
Managing Editor

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ANALYSIS OF STUDENT PERCEPTIONS IN AN INTRODUCTORY BUSINESS STATISTICS COURSE

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ABSTRACT

Over a period of five years, a total of 386 undergraduate students were surveyed on the first day of a required Introductory Business Statistics course. The response rate was 100%. Students were asked to respond to eleven questions that measured their perceptions and expectations regarding this course. Including, for example, whether they felt the course would be relevant or not to their overall business education, how much time they anticipated spending on homework assignments for the course, and what they anticipated their final grade would be, in addition to other more specific questions. The findings of this survey reveal, among other things, a generally negative attitude towards the course, an inclination to dedicate minimal study time, and an anomalous expectation of achieving a high final grade. All of these factors can have a significant impact on both pedagogy and outcomes when planning and teaching an Introductory Business Statistics course.

INTRODUCTION

For many years there has been a general recogniton of the important role that Business Statistics plays in business education (Kohli, Peng, & Mittal, 2011). Most colleges and universities recognize this, and as a consequence, require at least one course in Business Statistics for all business majors in preparation for upper-level courses. The inclusion of Business Statistics in the undergraduate business curriculum reflects its importance in improving students' business decision capabilities. Several surveys of business professionals have indicated that statistical analysis is the most frequently needed quantitative methodology (Lane, Mansour, & Harpell, 1993). Although colleges and businesses recognize that a basic knowledge of statistics is an essential building block in business education, statistics is the only discipline where it is all too often accepted and even expected that students can learn what they need to know in a single introductory course (Ramirez, Schau, & Emmioglu, 2012). As a result, effectiveness in teaching such a course is critical. Many statistics educators agree that students' attitudes toward statistics are important (Ramirez, Emmioglu, & Schau, 2010). Studies show that most students taking an introductory statistics course have preconceived notions of what is actually covered. A further complication derives from the fact that they often view required quantitative and critical thinking courses, in general, as difficult and a major hurdle to overcome. The result is that many students enter Business Statistics courses with feelings of anxiety and fear (Rochelle & Dotterweich, 2007). Indeed, studies show students view a required statistics course as a formidable obstacle (Dunn, 2000; Laher, Israel, & Pitman, 2007).

In addition to seeing such courses as extremely difficult, they also perceive statistics itself to have little value in practice. (Swanson, Meinert, & Swanson, 1994). Such negative attitudes or beliefs towards statistics, which educators generally consider non-cognitive, are likely to make the teaching and learning process even more challenging for instructors and students alike (Gal & Ginsburg, 1994). Not surprisingly because most students are apprehensive about statistics (Sciutto, 1995), math anxiety and low self-efficacy correlate with poorer performance in math classes (e.g., Benson, 1989; Feinberg & Halperin, 1978; Ma, 1999; Pajares & Kranzler, 1995; Schutz, Drogosz, White, & Distefano, 1998). These factors need to be addressed as educators take a closer look at student performance in such courses. Student misconceptions can impede the learning process and may affect the extent to which they will develop the basic statistical skills that are required throughout the business curriculum and, eventually, in the business market place. In light of all this, it is clear that students' attitudes and motivation deserve attention. Such factors not only influence the teaching/learning process, but ultimately impact the relative level of statistical literacy throughout society.

The most common approach to assessing attitudes in statistics can be found in the Statistics Attitude Survey (SAS; Roberts & Bilderback, 1980, and Roberts and Saxe, 1982), which uses Likert-type scales as well as the Attitudes Toward Statistics Scale (ATS; Wise, 1985, Zeidner, 1991). When it comes to statistics anxiety, a major concern here, it appears that Likert-type scales have limited usefulness (Gal & Ginsburg, 1994). As a result of the many surveys done, there is still not a consistent picture of students' attitudes. Some studies have shown that there is a consistently positive relationship between attitudes toward statistics and achievement in statistics (Schultz & Koshino, 1998) and that measures of anxiety and attitudes are significantly related to course outcome (Feinberg & Halperin, 1978). Other research indicates negative student attitudes toward statistics generally (Cashin & Elmore, 1997; Fullerton & Umphrey, 2001; Schultz, et al., 1998; Waters, et al., 1998), while other findings suggest that common student attitudes

toward statistics include anxiety, cynicism, fear, and contempt (Hopkins, Hopkins, & Glass, 1996). Many students feel overwhelmed and intimidated even before experiencing their first lecture in an Introductory Business Statistics course, and their feelings can negatively influence their learning experience. Because they often find a statistics course as an overwhelming learning and survival task, they experience a great deal of stress that can interfere with the learning process (Onwuegbuzie & Daley, 1999). While several studies have shown that many college students are anxious about taking a statistics course (Roberts & Bilderback, 1980; Roberts & Saxe, 1982; Benson, 1989), statistics anxiety is most common among students whose academic background includes little previous statistical or mathematical training (Onwuegbuzie, Slate, et.al, 2000). Still other studies suggest a need to encourage students to believe that they have the intellectual capacity to cope with the demands of the statistics curriculum and to provide them with the remedial math courses necessary to improve their confidence (Dempster & McCorry, 2009). Finally, it is important to note that statistics education research has largely focused on students' learning and conceptual understanding of statistics while researchers have only recently begun investigating students' perceptions of statistics. This study seeks to answer this need, at least in part. It takes a closer look at these attitudes and perceptions by making comparisons with students' previous experience with quantitative courses, their reported time spent on studying statistics, and their overall expectations regarding their final grade.

METHODOLOGY

The questionnaire for this study was distributed to students on their first day of an *Introductory Business Statistics* course. The sample for this study consisted of 386 business students enrolled in this course at a private four-year university with an enrollment of approximately five-thousand full-time undergraduate students and a business school. Of the 386 students surveyed over a period of five years, 60 percent (n = 232) were male and 40 percent (n = 154) were female. The course is normally offered in the first semester of a student's sophomore year, however, 2 percent (n = 8) were freshmen, 93 percent (n = 360) were sophomores, and 5 percent (n = 18) were juniors. Breakdown by major indicated that approximately 29 percent (n = 112) were in accounting, 25 percent (n = 97) in finance, 10 percent (n = 39) in business administration, 18 percent (n = 69) in marketing, 8 percent (n = 31) in management, 1 percent (n = 4) international business, 1 percent (n = 4) in operations management, and approximately 8 percent (n = 31) undecided. When students were asked if they felt this course would be relevant to their overall business education, seventy-two percent (n = 278) of the students answered yes, fifteen percent (n = 58) felt the course would not be relevant to their business experience, and thirteen percent (n = 50) did not know. In order to determine their feelings about quantitative courses in general, students were initially asked to select those descriptors (out of a total of twelve), which best described their attitudes and feelings toward quantitative courses. It is important to note that they were allowed to select as many descriptors as they felt appropriate. Generally, the results show that 45 percent (n = 174) felt the course would be interesting, 22 percent (n = 85) overwhelming, 28 percent (n = 108) puzzling, 9 percent (n = 35) boring, 30 percent (n = 116) confusing, 8 percent (n = 39) exciting, 4 percent (n = 15) very interesting, 15 percent (n = 58) stimulating, 24 percent (n = 93) neutral, 44 percent (n = 170) intimidating, 1 percent (n = 4) a waste of time, and 4 percent (n = 16) other. Summarizing the quantitative course descriptor responses, 286 out of 913 descriptor responses were positive or approximately 31 percent, approximately 68 percent were negative responses, and approximately .4 percent considered quantitative courses a waste of time.

Secondly, students were then asked to use the same descriptors to describe how they felt about an *Introductory* Business Statistics course. Students again were allowed to select as many descriptors as they felt appropriate out of the possibilities. The results showed that 48 percent (n = 185) felt the course would be interesting, 23 percent (n = 89) overwhelming, 24 percent (n = 93) puzzling, 8 percent (n = 31) boring, 31 percent (n = 120) confusing, 6 percent (n = 23) exciting, 3 percent (n = 12) very interesting, 13 percent (n = 50) stimulating, 23 percent (n = 89) neutral, 45 percent (n = 174) intimidating, 1 percent (n = 4) a waste of time, and 3 percent (n = 12) other. Summarizing how students felt about the Introductory Business Statistics course, 270 responses out of 882 or approximately 31 percent were positive, 616 out of 882, or approximately 70 percent were negative, and approximately .5 percent felt the statistics course was a waste of time. It is important to note that the majority of students in the Introductory Business Statistics course found this course to be relevant (72 percent), but these students still maintained negative attitudes toward the course, approximately 70 percent of the responses. (See some comparisons in Table 1).

It is important to note that only slight differences exist between the percentages of quantitative course descriptors versus the percentages of *Introductory Business Statistics* course descriptors. It appears that most students have the same impression of their quantitative courses as they do of their *Introductory Business Statistics* course. Further analysis of students' perceptions using the descriptors of quantitative courses and the *Introductory Business Statistics* course reveals a correlation of .98 indicating a very positive, direct association existing between these two variables.

When the correlation coefficient was tested, it was found to be significant at the five percent level. Earlier research by Tempelaar, van der Loeff, & Gijselaers (2007) noted that students' attitudes and beliefs in statistics courses were also related to prior knowledge and reasoning abilities. These negative attitudes and perceptions may be the reasons for the slight differences in the percentages of quantitative course descriptors versus *Introductory Business Statistics* course descriptors because students perceive the courses to be quite similar in nature. The fear and anxiety which they experience in quantitative courses appears to correlate with their fear and anxiety in an *Introductory Business Statistics* course. Previous research also showed that most students attributed positive feelings to satisfying past achievement in mathematics and negative feelings to poor teaching coupled with poor mathematics self-concept and achievement (Schau, Dauphinee, & Del Vecchio, 1992). Other studies have shown that mathematical background has a strong association with the affective responses to statistics, especially the attribute toward the statistic course, rather than with the value of statistics (Carmona & Sanchez, 2005). In addition to the selection of predictors for the Introductory Business Statistics course, students were also asked students asked to comment on their perceptions of the Introductory Business Statistics course on this questionnaire.

Some of the more common misconceptions included by students were:

- "Business Statistics is exactly like math."
- "If I did well in Math courses, I will do well in a Business Statistics course."
- "If I did poorly in Math courses, I will do poorly in a Business Statistics course."
- "If I hate/love Math courses, I will hate/love Business statistics courses."

Some student comments included:

- "I am intimidated and feel scared when I realized that I had to take Business Statistics courses for my major."
- "I think Statistics for Business is intimidating because it has a reputation for giving students trouble."
- "I think Business Statistics is intimidating because I am not terrific in math."
- "I think Business Statistics is puzzling and intimidating because I haven't had a Stat class before and don't know what to expect. I understand high-powered math is used."
- "I think Statistics for Business is not interesting because I am not sure what exactly it is."
- "I think Business Statistics is overwhelming because it seems very challenging and loaded with information."
- "My high school math classes were awful and I'm sure this one will be also."
- "I don't know what it is and I don't really care, I just know that I'm scared of it."
- "I wish these courses were never required."
- "My high school mathematic background is poor so I know I'll do poorly in Business Statistics."
- "Never liked numbers … never will."
- "I fear failing…enough said."

When students were asked if they perceived themselves as having sufficient quantitative skills, 62 % felt they did not, 23% felt they did have the appropriate skills, and 15% were not sure. The survey also asked students to indicate the amount of time they planned on studying for the *Introductory Business Statistics* course. On average, students indicated they planned on studying 1.1 hours per week *excluding* homework (SD = .2 hours), and, 2.6 hours (SD = .1 hours) per week *including* homework. Students often indicated that they perceived any course with numbers to be a math course. They often indicated that problem-solving to get the correct final answer was the only way to study and thus understand the material. Many did not understand that there was much more to an *Introductory Business Statistics* course such as chapter reading, preparing a statistical report, as well as understanding terminology and notation. Students were also asked, "Given the amount of time that you plan on studying, what do you anticipate your final grade will be?" The average anticipated grade was 3.68. Of these students, one-hundred and fifty-two or approximately 39% anticipated an **A**, one-hundred and forty-eight or approximately 38% anticipated an **A-**, sixty-seven or 17% a **B+**, nineteen or approximately 5% a **B**, and 0% below a **B** grade (see Table 2). In actuality, the average grade was **C+**. Table 2 provides a summary of these scores as well as the final grades they received. It should also be noted that approximately 100% of the students anticipated a grade of B or higher while in actuality approximately 35% scored a B grade or above. Even though students planned on studying a minimal amount of time, no one anticipated a grade of B or below. In reality, approximately 65% received a grade below a B. Summarizing, they felt that a minimal amount of studying per week would yield a very high grade. A negative correlation of -.96 existed between these two variables and was found to be significant at the five percent level of significance.

The results of this study suggest that many students have numerous misconceptions about the *Introductory Business Statistics* course and were not aware of how much time they should devote to studying and problem-solving. Analysis of the data indicates that many students were under the impression that a minimal amount of time devoted to the course would automatically yield a maximum grade in the course. Surprisingly, results showed that on the first day of the course, only 19 out of 386 students or approximately 5% anticipated a grade of B or below. In actuality, 290 out of 386 or approximately 75% had a grade of B or below. Measuring the association with these two variables resulted in a correlation of -.93. The extreme range of these values seems to suggest that students may just be accustomed to getting higher grades with little work. Additionally, results of this study also indicate that student's attitudes and misconceptions appear to have a negative effect on their overall performance in this *Introductory Business Statistics* course. Negative attitudes originating from previous quantitative courses also appears to carry over to the statistics course. This study provides further evidence that future research needs to address these attitudes and misconceptions about the *Introductory Business Statistics* course. In light of this, further research is also needed on grade inflation and student study habits as well.

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TABLE 1

Course Descriptors & Quantitative Courses versus Introductory Business Statistics Courses

Course Descriptors	**Quantitative Courses in General**		**Introductory Business Statistics**	
Interesting	45%	(n = 174)	48%	(n = 185)
Overwhelming	22%	(n = 85)	23%	(n = 89)
Puzzling	28%	(n = 108)	24%	(n = 93)
Boring	9%	(n = 35)	8%	(n = 31)
Confusing	30%	(n = 116)	31%	(n = 120)
Exciting	8%	(n = 39)	6%	(n = 23)
Very Interesting	3%	(n = 15)	3%	(n = 12)
Stimulating	15%	(n = 58)	13%	(n = 50)
Neutral	24%	(n = 93)	23%	(n = 89)
Intimidating	44%	(n = 170)	45%	(n = 174)
Waste of time	1%	(n = 4)	1%	(n = 4)
Other	4%	(n = 16)	3%	(n = 12)

TABLE 2

Student's Anticipated Grade versus Received Grade

Grades	Anticipated Grade		Received Grade	
A	152	(39%)	23	(6%)
A-	148	(38%)	50	(13%)
B+	67	(17%)	23	(6%)
B	19	(5%)	39	(10%)
B-	0	(0%)	54	(14%)
C+	0		54	(14%)
C	0		39	(10%)
C-	0		35	(9%)
D+	0		23	(6%)
D	0		19	(5%)
F	0		23	(6%)
W	0		4	(1%)

WHO OWNS WHAT LIES BENEATH? THE STATUS OF DORMANT OIL AND GAS RIGHTS IN THE MARCELLUS SHALE REGION

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ABSTRACT

With the growth of Marcellus shale natural gas drilling over the past decade, laws pertaining to mineral and oil and gas rights have been revisited. When subsurface oil and gas rights have been severed from surface ownership years ago, it is difficult to determine who owns the rights and who should benefit financially from the natural gas extraction. This paper discusses the severance of subsurface rights in property law, explains dormant mineral legislation in states involved in Marcellus shale natural gas extraction, compares Pennsylvania's current Dormant Oil and Gas Ac to legislation in neighboring states, and analyzes proposed revisions to Pennsylvania's law.

INTRODUCTION

The growth of natural gas extraction through hydraulic fracturing, or "fracking," in the Marcellus shale geologic formation has created an interesting application of laws relating to subsurface ownership rights. These laws, some of which have been in existence for hundreds of years, have caused courts and lawmakers to reconsider who owns the subsurface rights and who should profit from extraction of natural gas as a result of this growing industry. Property laws relating to subsurface rights are being revisited because it may not be possible to locate owners of subsurface rights which have been severed generations ago as the result of traditional oil drilling or coal mining.

Pennsylvania and its neighbors, Ohio and West Virginia, have taken slightly different approaches to who should own or make claim to subsurface rights severed in the past. Pennsylvania in particular has some peculiarities which create complexities for land owners and gas companies. Pennsylvania's Dormant Oil and Gas Act, revised in 2006, details the procedures for preservation of royalties when owners of oil and gas rights cannot be located. The statute does not protect the owners of the surface rights and unlike Ohio and West Virginia, provide no opportunity to make a claim for long dormant oil and gas rights.

This article explains subsurface ownership rights, describes what happens when these rights have been severed from surface ownership and not exercised for long periods of time, compares dormant mineral subsurface rights law in states lying within the Marcellus shale formation, and analyzes proposed amendments to Pennsylvania's Dormant Oil and Gas Act in order to economically benefit surface owners.

HYDRAULIC FRACTURING: A BOOMING INDUSTRY

The Marcellus shale geologic formation stretches across West Virginia, Ohio, Pennsylvania, New York, and a small portion of northwestern Virginia. The shale is normally located at a depth of 5000 to 9000 feet. The Utica Shale formation is located a few thousand feet below the Marcellus, overlaps the Marcellus Region, but is larger in area. Utica shale drilling has only recently begun to be explored, and has taken place in Eastern Ohio (King). Newer technologies such as hydraulic fracturing and horizontal drilling have accelerated natural gas extraction from the Marcellus and Utica shale over the past decade. An additional factor contributing to the rapid growth of natural gas extraction is the increasing demand for "cleaner" domestic energy (as opposed to coal). As a result, landowners may benefit financially by leasing oil and gas rights on their real estate. (Weidner, p. 3)

In 2005, in Pennsylvania, a total of six new natural gas wells were drilled in the Marcellus Shale formation. Compare this to 2009, 2010 and 2011, when 818, 1637, and 2044 new wells were drilled, respectively (Centre County Natural Gas Update, 2012). One producer alone, Chesapeake Energy, LLC, reported 666 active wells throughout Pennsylvania during the first six months of 2013 according to data collected by the Pennsylvania Department of Environmental Protection's Bureau of Oil and Gas Management (PA DEP Oil and Gas Reporting, 2013).

The economic implications of Marcellus Shale drilling to gas companies, businesses and landowners are considerable. In Pennsylvania alone it is estimated that $1.46 trillion in gross value is possible as a result of gas extraction. Landowners' estimated royalties as a result of gas extraction could reach $200 billion. The estimated value or royalty

value per well over the lifetime of the well is approximately $2.5 million. By Pennsylvania law, landowners are guaranteed a royalty of at least one-eighth, or 12.5 percent of natural gas extracted from the real estate. (Kelsey& Murphy, 2011, p. 2). Additionally, owners of oil and gas rights may negotiate a signing bonus and rental payments. (Weidner, p. 7-9.) It is because of this new wave natural gas extraction and its financial implications that the well-settled property law relating to oil and gas rights is again being revisited in the courts and legislatures of states in the Marcellus and Utica Shale regions.

SEVERANCE OF SUBSURFACE RIGHTS AND PROPERTY LAW

Generally, English and United States common law include subsurface ownership in the bundle of property ownership (The term "subsurface" used in this paper refers to oil, gas *and* mineral rights, because as discussed below, Pennsylvania makes a distinction between "mineral rights" and "oil and gas rights"). Ownership of real property normally includes airspace and subsurface rights (Clarkson et al., 2012, p. 975). However, the owner of the "fee simple estate" (owner of the entire bundle of rights associated with real estate ownership) may grant, devise (leave to heirs) or reserve subsurface rights (sell the surface but keep the subsurface rights). This is how severance of the "surface estate" from the "mineral estate" occurs.

Historically, subsurface rights began to be severed from surface ownership after the discovery of oil in western Pennsylvania in 1859 by Colonel Drake (Russell and Fromme, 2012, p. 289). "Landowners hoping to quickly realize the value of their minerals will sell portions of their mineral estates to willing buyers. Investors will hedge the risks of ownership by acquiring a fractional share. After each generation, those interests become further and further fractionalized as the estate is divided among each interest-holder's respective heirs" (Russell and Fromme, 2012, p. 289). These severed subsurface rights have become dormant because they are no longer exercised. Thus, heirs may never know that they have a fraction of subsurface ownership created long ago when oil drilling was booming in eastern states. The subsurface ownership rights are then said to be "dormant" if unexercised for many years.

Present-day surface owners may be unaware of the severance of subsurface ownership, or if they are, may be unable to locate those heirs who may have a claim to ownership. Untraceable mineral rights may affect the marketability and development of the surface estate, since surface owners are generally required to allow reasonable access to a mineral/oil and gas interest (Russell and Fromme, 2012, p. 291). This includes ingress and egress to develop the drilling (A Citizen's Guide, 2012, p. 22). Gas drilling companies may need to expend significant resources in order to locate the owner[s] of subsurface rights, and even then may be unable to do so. Who should profit when the owner of these rights is impossible to trace? This may not have been an issue once traditional oil drilling ceased in the eastern states; however, technological improvements making hydraulic fracturing a cost-effective method to extract natural gas deep below the surface has resurrected these dormant mineral rights and the issue of their ownership.

PENNSYLVANIA'S UNIQUE "DUNHAM RULE": STILL THE LAW

While many jurisdictions include oil and gas rights as part of "mineral rights," Pennsylvania does not. In 2013, in the case of *Butler v. Powers Estate*, the Pennsylvania Supreme Court upheld the 1882 case of Dunham & Short v. Kirkpatrick, which held that a reservation in a conveyance of "minerals" without the specification of "oil and/or gas" *does not* include oil and gas rights, unless clear and convincing evidence is presented to the contrary. The decision of the Supreme Court was unanimous. The court recognized that today, oil and gas would, be recognized scientifically as "minerals," but at the time of the Dunham decision, they were not, because they were not of a metallic nature. Interestingly, Appellee's raised the argument that Marcellus shale gas is different from other natural gas because it comes from a mineral, shale, and ought to be included in the mineral reservation. The Supreme Court rejected this argument: "While we recognize the hydrofracturing methods are employed to obtain both coalbed gas and Marcellus shale natural gas, the basis of the Dunham Rule lies in the common understanding of the substance itself, not the means used to bring those substances to the surface" (Butler v. Powers Estate, 1882, p. 39).

Since gas companies were relying upon the Dunham rule in tracing ownership of oil and gas rights, it settled the question and did not cause great upheaval to the current practice. In other words, if "mineral rights" had been transferred years ago, it is presumed that the surface owner retains the oil and gas rights, unless they were specifically conveyed. This allows the gas drilling companies to negotiate a lease with the surface owner. If the Pennsylvania Supreme Court had overturned the Dunham Rule and concluded oil and gas rights were included in the general descriptor "mineral rights," the legality of these leases could be questioned. The question remains, however: what happens when owners of oils and gas rights cannot be located? What happens if the owners, even if traceable, have

not exercised these rights for many years? States in the Marcellus shale region have developed three different approaches to "dormant" rights.

THREE DIFFERENT APPROACHES TO DORMANT MINERAL RIGHTS

Mineral rights legal experts have categorized dormant mineral legislation into three categories: 1) the "trusteeship approach," currently in effect in Pennsylvania; 2) the "mineral lapse" statutes utilized in Ohio, Michigan, Tennessee, and Indiana; and 3) the "hybrid" approach, utilized in Kentucky and West Virginia (Russell & Fromme, 2012, p. 293-4).

Pennsylvania's Dormant Oil and Gas Act, 58 P.S. § 701.1 *et.seq* (2006), does not transfer dormant oil and gas rights to the surface owner. Rather, the Act allows any person (or entity) owning an interest in "oil or gas underlying a tract of land" to petition the Court of Common Pleas in the county in which the tract is located to declare a trust for unknown owners of oil and gas rights. The trust is to be administered by a "financial institution authorized to do business in the Commonwealth" (§701.4). All rental and royalty payments are paid to the trustee. The trust is to remain in force "until the unknown owners of the oil and gas interests in question have been identified." What happens next is interesting: If property goes unclaimed in Pennsylvania for a period of five years, the holder must turn the proceeds over to the Pennsylvania Treasury's Bureau of Unclaimed Property. As of August 2013, approximately $3.3 million in unclaimed oil and gas royalties were held in the Pennsylvania Treasury (Spencer, 2013). The Treasury then attempts to find the property owner. Eventually most unclaimed funds are deposited by the State Treasurer in the General Fund of the Commonwealth, with an amount reserved for any claims made (Pennsylvania Unclaimed Property Law, § 1301.18). As a result, the surface owner currently has no mechanism in Pennsylvania to claim royalties for profitable drilling beneath their real estate.

In comparison, the "mineral lapse" statute approach does provide the opportunity for a surface owner to make a possible claim for ownership of dormant subsurface rights. States using this approach generally delineate a procedure for a surface owner to follow in order to establish that the mineral interests have been abandoned for the statutorily required period of time, and then establish ownership. Ohio's Dormant Mineral Act, for example, provides a procedure for the surface owner to notify the subsurface owner of his or her intent to declare the mineral interest abandoned for the required 20-year period. If the owner of the mineral interest cannot be located, the noticed may be published in a newspaper. After this notice, the owner of the mineral rights has 60 days to respond. If there is no response, the surface owner can memorialize the abandonment with the county and the mineral interest will vest with the surface owner (Ohio Rev. Code Ann., § 5301.56; Russell and Fromme, p. 303). Other states, such as Michigan and Indiana, have implemented so-called "self-executing" mineral lapse statutes, in which the surface owner is not required to locate or notify the mineral rights owner. (Russell and Fromme, p. 299-300). The constitutionality of Indiana's self-executing mineral lapse statute was upheld by the United States Supreme Court in the case of *Texaco, Inc. V. Short,* 454 U.S. 516, (1982). The case provides guidelines for legislation which would not constitute an unconstitutional "taking" of property under the Fifth Amendment. Since Indiana's statute was drafted strongly in favor of the surface owner, and provided for automatic reversion to the surface owner without notice, states are generally free to provide legislative mechanisms to address dormant subsurface rights.

The third approach for lapsed mineral rights is a hybrid of the first two. In West Virginia, for example, a trust is established for unclaimed mineral extraction royalties similar to the procedure in Pennsylvania, and after seven years, the circuit court is required to notify the surface owners, and order conveyance of the mineral interest to the owner of the surface estate (Russell & Fromme, 2102, p. 309-312, citing W. Va. Code Ann. § 55-12A-1 *et seq.*).

Pennsylvania, therefore, stands alone in the region of Marcellus shale activity as lacking a statutory mechanism for surface owners to make a claim for dormant oil and gas rights. Commentators have pointed out that traditional legal remedies such as adverse possession and quiet title actions are also unavailable to surface owners since the former requires exercising the subsurface rights (drilling) for a required period of time, and the latter requires establishing title by a "preponderance of the evidence," which cannot be proven in the case of severed estates (McManus, 2010).

PROPOSED AMENDMENTS TO PENNSYLVANIA'S DORMANT OIL AND GAS ACT

Three bills have been recently introduced in the Pennsylvania Legislature, two in the House and one in the Senate. According to Kenneth Navitsky, legislative aide to State Representative Ryan MacKenzie, "None have moved beyond committee at this time," and there is no expectation that the bills will move forward this Legislative Session (Navitsky email dated July 20, 2014).

The first proposed amendment, House Bill 97, provides "for the return of oil and gas rights to a surface owner if an interest in the oil or gas owned by a person other than the owner of the surface property is deemed abandoned following 20 years of dormancy" (Godshall, 2012). This proposal is similar to Ohio's dormant mineral rights law discussed above. The bill further allows the protection of oil and gas interests from abandonment if the owner of the interests files a notice in the county Recorder of Deeds office. If this notice is filed, the rights need not be exercised to protect them.

The second proposed amendment, House Bill 1444, "would provide surface property owners the ability to claim title to the subsurface mineral rights after a period of ten years nonuse by the subsurface mineral rights owner" by filing with the county Recorder of Deeds and would also create a cause of action for the settlement of mineral rights (White, 2013). Interestingly, the term "mineral" is used by the sponsor of this bill instead of "oil and gas."

The third proposed bill, sponsored by Senator Gene Yaw, allows the surface owner to file an action to "quiet title", and when mineral or oil and gas rights have been abandoned for a period of 50 years, creates a "rebuttable presumption" of abandonment. The surface owner would still need to prove abandonment in the action (Yaw, 2013). This third proposed bill would be the most burdensome to a surface owner in terms of litigation and establishment of ownership.

Of these three proposed amendments to Pennsylvania's Dormant Oil and Gas Law, the first appears to balance competing interests well. . The second alternative, with a period of abandonment of ten years, could be perceived as not protecting potential subsurface owners sufficiently. A required period of abandonment of 20 years in H.B. 97 mirrors the Ohio statute and would balance the interests of the surface and potential holders of subsurface interests. The simple procedure of filing a notice in the Recorder of Deeds would eliminate the expenses of a court action as proposed in the Senate bill. The first alternative above also further protects the interests of any subsurface owners who are not actively exercising their right to allow extraction, but who do not wish to abandon these rights. Unfortunately, there are many other pieces of legislation and budgetary issues occupying the Legislature and at this time, it appears unlikely these bills will leave committee.

An additional potential hurdle to amendment to allow for surface owners to claim oil and gas rights in Pennsylvania would be opposition from the gas industry. Drillers would have to renegotiate leases with surface owners, who may be unwilling to allow "fracking" to take place, or alternatively, may demand a higher price. This opposition should not prevent passage of amendment, however, since all neighboring states where drilling for natural gas is occurring provide some type of protection for surface owners.

CONCLUSION

Because property law varies from state to state, approaches to dormant oil and gas rights differ. It seems equitable to allow surface owners to profit when Marcellus shale hydraulic fracturing is occurring under their feet, especially when the true owner of the oil and gas rights is unknown. Simplification of the process through legislation provides a procedure for surface owners to "reunite" their surface estate with the mineral estate and obtain a share of the potentially large profit from the Marcellus shale gas reserves. Proposed amendments to Pennsylvania's Dormant Oil and Gas Act would align Pennsylvania law with that of its neighbors, Ohio and West Virginia, in providing a procedure for surface owners to reclaim subsurface interests and participate in the important decision whether or not to allow natural gas extraction on below their land.

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A COMPARISON OF REVENUES AND EXPENSES AT PRIVATE COLLEGES AND UNIVERSITITES IN PENNSYLVANIA

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ABSTRACT

This paper analyzes fifty private colleges and universities in Pennsylvania. These institutions are grouped into five tiers based on the size of the endowment of the institution. The 990 tax forms from the years ended June 30, 2013 and June 30, 2010 are used to create the tables within the paper. The revenue, expenses, endowment, and net assets per student are analyzed along with the change in these items from 2010 to 2013.

The paper was developed as a result of the literature discussing the changing landscape of higher education and creates benchmark data indicating revenue and expense patterns for the universities. The common size statements are presented in groups of ten colleges showing similarities and differences in the way these institutions are funded along with the financial resources available to the different tiered colleges. The return on investment is also presented with the intent of identifying how well universities are using their resources to create a sustainable budget.

INTRODUCTION

The current economic outlook for colleges and universities is being discussed by many stakeholders of the higher education industry. The book club at my university discussed William J. Bennett's book "Is College Worth it?" (Bennett, W.J. and Wilezol, D. (2013). This book questions if we should be trying to increase college access or develop other strategies to provide for our workforce development in the United States. A KPMG higher education survey found that "85 percent of officials are either very or somewhat concerned about maintaining their current enrollment levels - up 14 percent from last year, and 19 percent from 2012" (McCabe, 9/22/2014). This combination of trying to reduce the number of students going to college and the pressure of maintaining enrollment at tuition driven colleges and universities has created an environment where the survival of the bottom tier (as defined by endowment) of colleges is at risk.

The distribution of assets over the various colleges and universities creates an inequity in trying to attract students and to maintain the diversity of colleges and universities that makes the United States system of higher education the leading provider of higher education. According to the National Association of College and University Business Officers (NACUBO), "the total amount of endowment funds by 836 colleges and universities is over 448 billion dollars with 20% of the colleges owning over 80% of the funds and the bottom 18% own .4% of the total endowment dollars" (2013 NACUBO-Commonfund Study of Endowments). This paper creates a common size analysis of fifty private colleges and universities in Pennsylvania and ranks these universities by endowment. The top ten universities in terms of endowment are combined and labeled tier one, schools 11 – 20 are combined and listed as tier two, 21- 30 are labeled tier three, 31 – 40 is referred to as tier four, and tier five are colleges 41 – 50.

COMMON SIZE ANALYSIS (Revenue)

The revenue for the five tiers of institutions varies significantly. The top ten universities create approximately $173 million of revenue and the bottom ten colleges in terms of endowments created approximately $46 million dollars in revenue (see table one). The revenue per student as calculated by collegestats.org is $66,426 for the top ten universities in terms of endowment. The revenue per student drops to $21,390 for the ten schools with the lowest endowment. The common size statements indicate that except for the tier one institutions the mix of revenues are similar and the mix of expenses is also similar as a base of revenue. The major difference is the ability of a university with a higher endowment to generate additional revenue from the endowment earnings and the amount of tuition paid by the students.

The number of students does not vary significantly among the five tiers. The difference of $45,036 ($66,426 - $21,390) in revenue per student between the top ten universities in terms of endowment and the tier five schools is significant. The number of full time equivalents at colleges in the bottom three tiers is enhanced by nontraditional programs. Colleges in tier one and tier two rely on the traditional day time students and have not expanded offerings

to include night and weekend programs. The top tier schools have continued to provide more revenue per student. "The 10 priciest private universities charged $49,243 for tuition and fees on average in the 2014-2015 school year. That's nearly $18,000 more than the average private school price tag, according to data reported to U.S. News by 728 ranked private schools" (Snider, S., 9/9/2014).

TABLE ONE

Revenue per Full Time Equivalent Student For the Academic Year Ending June 30, 2013

	Average Revenue	Average Number of Students	Revenue Per Student
Tier One	$172,706,737	2,600	$66,426
Tier Two	$100,985,150	2,267	$44,537
Tier Three	$ 85,163,951	2,721	$31,295
Tier Four	$ 83,213,159	2,776	$29,981
Tier Five	$ 45,725,267	2,138	$21,390

Source: IRS Form 990 and collegestats.org

The revenue per student of $66,426 for Tier One universities as compared to $21,390 for Tier Five colleges requires the struggling colleges to meet their budget using additional adjunct professors to teach the freshman year courses. This may cause the students at these institutions to not receive the mentorship that may be available at institutions that are able to provide additional resources to facilitate college success. In addition, the Tier One colleges have increased selectivity guidelines providing these institutions with better prepared students. Table two illustrates the change in average revenue for each of the five tiers. The average revenue for all of the colleges has increased but the tier one colleges have a higher increase than the other four tiers.

The difference in revenue has increased to 3.78 ($172,706,737 - $45,725,267) times from tier one to tier five. An analysis of the 990 forms for the academic year ending June 30, 2010 illustrates a difference in revenue of 3.20 times ($132,238,010 - $41,343,613). The revenue growth for the tier one schools was 23% ($40,468,727/$172,706,737) but tier two to five experienced revenue growth of 10% or less over this period of time. The common size statements indicate that the revenue used by Tier One colleges consists of 67% of the revenue paid by the student as compared to 87% of the revenue paid by the student. This relationship results in colleges with lower endowments to be tuition dependent. These colleges pay the tuition discounts from operating funds whereas tier one and two colleges use returns on endowments to fund institutional aid. The tuition dependent institution is at risk when the demographics indicate that less students will be attending colleges and universities and more diverse methods of delivery academic content exist.

In a study published in the Journal of the Northeastern Association of Business, Economics and Technology (JNABET), the results for ten of the universities studied for the period 1997 to 2011 indicates "tuition increasing 2.60 times but the corresponding financial aid increase of 3.27 times caused an overall increase in net tuition of 2.37 times which is less than the rate of inflation in that period" (Gallagher, fall 2013). Table two shows a growth in revenue for all fifty universities analyzed but tier two through tier five are growing their revenue at a rate of about three percent per year but the tier one universities grew their revenue base at a rate of eight percent per year. Much of this increase in revenue is caused by the universities raising their tuition rates at a higher rate than the nonselective colleges and universities. The non-selective institutions are under pressure to grow their enrollment numbers because their strategic plan is dependent on tuition dollars.

TABLE TWO
Comparison of Total Revenue for the Academic Years Ending 6/30/2013 to 6/30/2010

	Average Revenue 2013	Average revenue 2010	Difference in revenue
Tier One	$172,706,737	$132,238,010	$40,468,727
Tier Two	$100,985,150	$ 97,121,973	$ 3,863,177
Tier Three	$ 85,163,951	$ 77,662,643	$ 7,501,308
Tier Four	$ 83,213,159	$ 74,437,450	$ 8,775,709
Tier Five	$ 45,725,267	$ 41,343,613	$ 4,381,654

Source: IRS Form 990

Table three looks at the expenses of the fifty universities in the study. The overall percentage of expenses at all of the colleges and universities is consistent for all fifty universities. The priorities for spending at the universities has been changing with more of the resources going towards institutional financial aid and student amenities. This reduces the amount of funds available for the educational process. "It's all part of the trend toward competing for enrollment based on student amenities, whether lazy rivers or elaborate dining facilities. As of late 2012, 92 schools had embarked on 157 recreational capital projects, at a total cost of $1.7 billion" (Lane, C., 9/24/2014). This results in colleges and universities competing on athletic facilities, student housing, recreational opportunities, and other student services. These student services are important for the college student but should not be the basis for where a high school student decides to enroll in an institution of higher learning.

Another expense area that draws funds away from the educational process is the student institutional financial aid. "Despite spending nearly 43 percent of their gross tuition revenue from first-time, full-time freshmen on institutional aid for those students, many private colleges and universities had a harder time enrolling students last year, with almost half seeing no growth or a decline in enrollment for 2011, according to survey results released today by the National Association of College and University Business Officers" (Kiley, K., 4/5/2012). This factor creates a possibility that the colleges in tier five do not have a sustainable strategic plan.

TABLE THREE
Expenses per Full Time Equivalent Student For the Academic Year Ending June 30, 2013

	Average Expenses	Average Number of Students	Expenses Per Student
Tier One	$149,087,676	2,600	$57,341
Tier Two	$ 99,001,069	2,267	$43,671
Tier Three	$ 80,771,074	2,721	$29,684
Tier Four	$ 77,575,272	2,776	$27,945
Tier Five	$ 43,306,452	2,138	$20,256

Source: IRS Form 990 and collegestats.org

Table four illustrates that the colleges and universities have increased expenses over the three year period by 12% in the tier one schools, 9% in the tier two schools, 8% in the tier three school, 12% in the tier four schools and 10% in the tier five school. This increase at most colleges and universities may be caused by increases in items other than the educational processes. The National Center for Educational Statistics has shown a trend that indicates the mix of spending has changed from the twenty year period from 1975 to 2005. "According to the analysis, student-faculty ratios have remained constant-16:1 or 15:1 while student administrative ratios have changed from 84:1 to 68:1 and student-professional staff ratios from 50:1 to 21:1" (Arum, R. and Roska, J., 2014). The period of time from 2005 to the current year shows an increased cost of tuition assistance.

The additional expenses of improved infrastructure especially student housing and recreational facilities has added to the potential problems with the higher education industry. An additional trend that has resulted from the changing structure of the expenditures in the higher education industry is the use of adjunct faculty. The 16:1 or 15:1 ratio now contains additional adjunct faculty to contain the costs of full time faculty because of the increase of administrators and student-professional staff. This creates a new paradigm within the industry that will challenge the professoriate of the future.

This may be more problematic by the colleges and universities without the resources to maintain their faculty. "Colleges and universities in resource-poor institutions are likely to feel increasingly overwhelmed and demoralized by the growing institutional demand placed on them and their inability to identify sufficient resources to maintain traditional levels of support for undergraduate education" (Arum, & Roksa, 2011). The two books by Arum and Roska paint a picture of potential academic problems with the tier five universities. It is important for these institutions to provide opportunities for students who may not qualify for the universities with higher selectivity measures. The shifting of the benchmark for colleges will be evident as tier five colleges increasingly fail and the students served by these colleges may not have access to affordable higher education.

TABLE FOUR

Expenses per Student for the Academic Year Ending 6/30/2013 to 6/30/2010

	Average Expenses June 30, 2013	Average Expenses June 30, 2010	Change in Expenses
Tier One	$149,087,676	$132,629,790	$16,457,886
Tier Two	$99,001,069	$ 90,979,823	$ 8,021,246
Tier Three	$ 80,771,074	$ 74,614,979	$ 6,156,095
Tier Four	$ 77,575,272	$ 69,366,164	$ 8,209,108
Tier Five	$ 43,306,452	$ 39,233,668	$ 4,072,784

Source: IRS Form 990

Table five indicates the net assets at the fifty universities differ among the colleges analyzed. The net assets per student ranges from a low of $17,981 net assets per student for tier five schools to $309,460 per student for the tier one students. Table six illustrates the change from 2010 to 2013 indicating that the tier one net assets grew at a rate of over forty eight percent ($266,799,075/543,795,925) as compared to tier five colleges with a growth of eighteen percent ($5,915,682/32,528,409). The net assets of the not-for-profit organization provides resources in three categories; unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets.

The unrestricted net assets may be used by the organization to provide resources for any category within the mission of the entity, the temporarily restricted net assets provide for funding for specific projects or become available on a stated date for a specific use for the college. These funds must be used for stated purposes including adding to the infrastructure, projects, programs or any other use designated by the contributor. The permanently restricted funds are held by the entity and only the earnings are used by the university to fund specific purposes designated by the donor.

The first tier colleges have the highest endowment funds of the colleges analyzed and this provides many advantages for these institutions. One of the major areas where this advantage is realized is in the funding of student scholarships. The higher the endowment the greater the ability to fund the scholarships from the earnings. Tier five colleges must fund these institutional scholarships out of current funds. This creates the tuition discounting problem that has been growing in the last twenty years. The other advantage is that the tier one universities may not need to draw as high a percentage as compared to the tier five colleges. In addition, the contributions to the tier one colleges increased by fourteen percent as compared to the eight to ten percent increase for the tier two through five institutions.

TABLE FIVE

Net Assets per Full Time Equivalent Student For the Academic Year Ending June 30, 2013

	Average Net Assets June 30, 2013	Average Number of Students	Net Assets Per Student
Tier One	$804,595,000	2,600	$309,460
Tier Two	$207,492,597	2,267	$91,527
Tier Three	$125,744,561	2,721	$46,212
Tier Four	$ 83,603,528	2,776	$30,117
Tier Five	$ 38,444,091	2,138	$17,981

Source: IRS Form 990 and collegestats.org

TABLE SIX

Net Assets per Full Time Equivalent Student for the Academic Year Ending 6/30/201
Compared to 6/30/2010

	Average Net Assets June 30, 2013	Average Net Assets June 30, 2010	Change in Net Assets
Tier One	$804,595,000	$543,795,925	$260,799,075
Tier Two	$207,492,597	$183,619,042	$ 23,873,555
Tier Three	$125,744,561	$105,313,797	$ 20,430,764
Tier Four	$ 83,603,528	$ 63,514,277	$ 20,089,251
Tier Five	$ 38,444,091	$ 32,528,409	$ 5,915,682

Source: IRS Form 990

Table six illustrates the growth in average net assets for the five tiers of universities. The growth of tier five institutions is 18% over the three year period compared but the 48% growth for tier one institutions demonstrates that these universities are retaining and increasing their resources at a higher rate than the other forty colleges in the study. Tier two and tier three grew at around the same rate as tier five but the tier four colleges grew their net assets by over 32% in the three year period. It would be interesting to compare this growth over a longer period to be able to discuss the reason the tier four grew resources faster than tier two and three.

CONCLUSION

The small tuition driven college model is being challenged by lawmakers (including President Obama), the public, parents, and potential students. "Several new educational models are appearing which potentially challenge business as usual" (Mintz, S. 9/30/2014). The tier five colleges are the institutions that have the potential to close because of lack of enrollment and a low endowment. Colleges with a student body of less than 1,000 fulltime equivalents (FTE) and an endowment of less than $20,000,000 will find it hard to compete. These colleges will be challenged by the tier four organizations and the for profit institutions. New pathways to a Bachelor's degree (Mintz, S., 9/30/2014) will trim the amount of time a student spends on a college campus by obtaining credits in high school, community college, competency based education (CBE) and online providers. "Accelerated pathways not only trim enrollment in cash cow introductory classes but also may not prepare the student for the subsequent classes at the college where they are seeking their Bachelor's degree" (Mintz, S. , 9/30/2014). Several of the other disruptive technologies will create potential problems for small colleges and universities. The innovative college could use the new educational models to create a strategic competitive advantage.

Experimental models using online courses and other ways to provide credits for students' progress towards a degree may find that they may need to recreate the infrastructure provided by these small campuses. These campuses already have many of the amenities that students expect in their educational experience (Mintz, S. (9/30/2014). This may provide opportunities for colleges to provide the student services developed on most small campuses to the new experimental models. Many college and university officials are concerned with enrollment numbers that in the past drove the strategic plan. Tier five colleges may be at a point in the higher education industry where they are able to create a strategic competitive advantage by understanding the areas of excellence and focus the strategic plan on these important functions. Colleges and universities may be providing the important student services that are needed and outsourcing the class experience to the bare bones universities (Mintz, S., 9/30/2014). The tier five colleges in this survey are experiencing many challenges but these colleges are important to the students who need this type of

institution. "College is a good investment for most students-particularly from disadvantaged backgrounds" (Arum, R. and Roska, J., 2014).

"Competition has increased in the higher education industry and the colleges and university that are creating their own niche will be successful" (Gallagher, M.J., fall 2013). The new model may create the niche of providing student services including sports, job placement, service learning opportunities, internship sites, cooperative programs, and many of the programs that attracts students to the residential college experience. The small residential college will need to examine why students chose their college and emphasize these areas of the strategic plan and find innovate ways of combining the components of a college experience in a cost effective manner.

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APPENDIX

Common Size Financial Statements
Tier One to Five Colleges and Universities

	Tier One	
	Common Size 990 Summary	
	for the year ended June 30, 2013	
	total revenue is the base	
Contributions and grants	$ 240,981,070	14%
Program service revenue	1,150,547,256	67%
Investment income	311,970,696	18%
other revenue	23,568,352	1%
Total revenue	$ 1,727,067,374	100%
Grants	352,648,351	20%
Benefits		0%
Salaries	650,044,172	38%
Professional fundraising	610,990	0%
Other expenses	487,573,247	28%
Total expenses	$ 1,490,876,760	86%
Revenue less expenses	$ 236,190,614	14%

	Tier Two	
	Common Size 990 Summary	
	for the year ended June 30, 2013	
	total revenue is the base	
Contributions and grants	$ 91,226,372	9%
Program service revenue	880,768,115	87%
Investment income	25,110,818	2%
other revenue	12,746,197	1%
Total revenue	$ 1,009,851,502	100%
Grants	289,575,675	29%
Benefits		0%
Salaries	401,303,559	40%
Professional fundraising	113,317	0%
Other expenses	299,018,136	30%
Total expenses	$ 990,010,687	98%
Revenue less expenses	$ 19,840,815	2%

	Tier Three	
	Common Size 990 Summary	
	for the year ended June 30, 2013	
	total revenue is the base	
Contributions and grants	$ 67,250,849	8%
Program service revenue	730,618,530	86%
Investment income	33,273,617	4%
other revenue	20,496,519	2%
Total revenue	$ 851,639,515	100%
Grants	223,379,887	26%
Benefits	308,713	0%
Salaries	342,191,980	40%
Professional fundraising	299,847	0%
Other expenses	241,530,414	28%
Total expenses	$ 807,710,841	95%
Revenue less expenses	$ 43,928,674	5%

	Tier Four	
	Common Size 990 Summary	
	for the year ended June 30, 2013	
	total revenue is the base	
Contributions and grants	$ 72,531,601	9%
Program service revenue	728,477,879	88%
Investment income	14,359,572	2%
other revenue	16,762,534	2%
Total revenue	$ 832,131,586	100%
Grants	223,899,367	27%
Benefits		0%
Salaries	307,065,466	37%
Professional fundraising	113,853	0%
Other expenses	244,674,034	29%
Total expenses	$ 775,752,720	93%
Revenue less expenses	$ 56,378,866	7%

	Tier Five	
	Common Size 990 Summary	
	for the year ended June 30, 2013	
	total revenue is the base	
Contributions and grants	$ 44,110,047	10%
Program service revenue	396,673,061	87%
Investment income	7,574,974	2%
other revenue	8,894,583	2%
Total revenue	$ 457,252,665	100%
Grants	107,516,484	24%
Benefits		0%
Salaries	184,770,172	40%
Professional fundraising	71,399	0%
Other expenses	140,706,467	31%
Total expenses	$ 433,064,522	95%
Revenue less expenses	$ 24,188,143	5%

A PROPOSED ECONOMIC DEVELOPMENT CAIRN MODEL DESIGNED TO ENHANCE SMALL TOWN SUCCESS: A CASE STUDY OF TWO COMMUNITIES

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ABSTRACT

A visual economic model called a Cairn model, has been developed to aid small towns across the U.S. The basic Cairn model includes economic and non-economic factors ordered from bottom of the Cairn to the top: (1) Geography/Climate, (2) Land and Physical capital, (3) Economic base, (4) Energy, (5) Workforce, (6) Community culture, (7) Research environment and education, (8) Tax structure, (9) Medical and emergency services, (10) Financial capital, and (11) Leadership. Each one of these factors is a stone in the Cairn model, and leaders and experts have a survey instrument to guide them in evaluating each of the eleven factors. The authors present the Cairn in such a way that towns across the country can replicate and apply the Cairn to their own communities. We use two small U.S. towns in two different states as examples to assist in the development and understanding of the Cairn model.

INTRODUCTION

Economic development that leads to growth is an important goal for towns of all sizes, from large urban cities to small towns far from metropolitan areas. Growth expands income levels, the tax base, brings in new people, ideas, markets, and much more. Governments can offer enhanced services, if they have the tax funding to do so.

This paper focuses on identifying themes of economic development that might aid small towns throughout the United States to redevelop by using their strengths to overcome weaknesses. More specifically, the authors propose to extend a regional economic development model to present a visual tool, a "Cairn," to aid small towns in the revitalization process. This tool can be utilized by towns of any size, however many small towns are in need of help in development and growth.

A Cairn is a man-made stack of stones that is often used for decoration and for directions, as along a road. Examples of Cairns in nature can be seen in Figure 1. In early times, the Cairn was used as a marker, or as a navigational guide. In essence, the stones marked a place where someone had been before. If one of the stones shifts, moves, or is too small to carry the weight of the other stones, the entire pile is vulnerable to topple. An example of this type of Cairn can be seen in picture 2, which has larger stones placed on top of smaller one. Picture 2 is not as stable as the Cairn seen in picture 1. There is no perfect Cairn, as each is unique, just as every town and community is unique. The Cairn is a useful tool, however, to be able to visualize factors that can be assessed to lead to economic revitalization.

The goal of this paper is to present economic development factors in such a way that can be replicated and applied to towns across the country. We use two small U. S. towns in two different states as examples. One town, Shippensburg, Pennsylvania, seems to be growing in spite of itself, primarily because of its fortuitous location. The other town, Winnsboro, South Carolina, is struggling to attract industry to aid in its revitalization. Both towns hope companies will stay beyond the expiration of economic incentives offered to companies to attract them in the first place.

ECONOMIC DEVELOPMENT THEORIES

Beginning with Adam Smith in the late 1700s, theories of economic development have been advanced. At that time, Smith's insights brought concepts to light that less government interference in the market place was preferable to allow competitive markets to offer commodities at the lowest possible prices. By pursuing one's own interests through making market decisions, and as other participants in the market did the same, then self-interest would promote the interest of the whole. Smith advocated that government should not be active in directing or controlling the economy, but should (1) only provide defense, (2) administration of justice, and (3) maintenance of public works. These roles of government would allow the private sector to flourish, leading to overall economic development.

Over the past two centuries, theories have advanced and expanded to reach a consensus that there are further roles for government than the three listed. Government was viewed as able to defend and promote the economic welfare of citizens. It is in this vein of governmental intervention in markets from which local towns can benefit most.

Kovens and Lyons (2010) developed a typology of applied economic models where models related to either Location, Export, or Innovation are identified. Of greatest relevance here is the Location Model that uses eight factors that are important to economic development from a production perspective: transportation costs, labor costs, an available supply of qualified labor, the degree on unionization, close proximity to markets for products produced, proximity to suppliers and resources, proximity to other companies in their industry chain, and quality of life of the community. According to Koven and Lyons, "Large firms no longer simply investigate the advantages of various areas; they seek to create advantages through negotiations with pubic leaders. Large businesses in particular often partner with government to alter the local environment" (p. 45).

Leadership is perhaps a ninth factor that needs to be considered. Strong, knowledgeable leadership is necessary for development. Without leaders who are interested in decision-making, development may not occur. Leadership can be both elected officials and interested, active citizens. "Leaders may be involved in many tasks: the development of strategy; the articulation of ideas and philosophy; creation of image; decision-making; management of subordinates; conflict management; and administration. In democratic societies, these processes require a high level of knowledge, analytical ability, and inter-personal skills – especially the ability to motivate and communicate." (Sorenson & Epps, 1996, p. 114.) In addition, leaders must recognize that, for development to work effectively, Briciu (2013) agrees with Kotler, et al. (1993) that "places must organize as business and promote themselves, if they are to respond adequately to the threats of global competition, technological change and urban decay" (p. 11).

An argument is made that the Location Model has declined in use and validity, as manufacturing in the US has declined, and transportation costs have decreased. Another factor causing this decline is the increase in knowledge-based industries in the U.S. Over the past two decades, this argument has been valid, for the most part, as corporations chose to send their manufacturing abroad. However, the U.S. still has a large number of industries that manufacture goods for domestic consumption and for export, as well as foreign companies that choose to manufacture in the U.S. In addition, some corporations that went off-shore are currently bringing manufacturing back to the U.S. Walmart is instrumental in leading this reversion to US production.

The Export Model asserts that community growth is tied to export production. Economic growth can occur if a community is producing products that other communities (foreign or domestic) want. This export, in turn, brings external funding into the community that can be used to further expand and prosper.

The Innovation Model leads to growth of producer companies and their communities, as new products are offered to export markets. Taken together, these three models basically say that towns grow that are able to attract firms that are innovative in product development and whose products are in demand.

DEVELOPING A VISUAL ECONOMIC DEVELOPMENT MODEL

A checklist, see Appendix A, developed by Koven and Lyons has been expanded and utilized as the inspiration for this paper's development of the Cairn visualization model. The basic Cairn model includes economic and non-economic factors ordered from bottom of the Cairn to the top: (1) geography/climate, (2) Land and Physical capital, (3) Economic base, (4) Energy, (5) Workforce, (6) Community culture, (7) Research environment and education, (8) Tax structure, (9) Medical and emergency services, (10) Financial capital, and (11) Leadership. Each one of these factors is a stone in the Cairn models presented in this paper.

The order of the stones is intentional, as determined by the authors. Town leaders can assess the town's condition from the most stable, unchanging sub-factors on the bottom, the base of the Cairn, all the way up to those that are moderately changeable in the middle, and then to the most changeable top where financial resources and leadership can be changed as opportunities and elections occur.

Each of the factors is expanded, as shown in Appendix A, to give fuller details of sub-factors being included and measured under each major factor. All of the sub-factors listed under each factor has equal weight. In addition, each sub-factor within a factor is judged to be weak, adequate, or strong, forming a stone that can be thick on one end to

represent the strong sub-factor, but can be thin out on the other end to represent the weak sub-factor. In looking at a Cairn in nature, Picture 1 in Figure 1 represents a stable, desirable Cairn.

This sizing culminates in placement of a stone that may be strong in one sub-factor, but weak in another, if some of the smaller stones are too weak, that can actually destabilize the stones, and the stack may fall over. For example, if a town's workforce is deemed or judged to be weak, then a small stone would be represented for that factor.

To demonstrate how the process works, a town develops a factor profile using the checklist of expanded development factors in Appendix A. Two examples for Shippensburg and Winnsboro are subjectively completed by the authors. For the first factor, geography and climate, sub-factors are desirability of climate, topography, proximity to economic centers, and access to global markets, all considered to be some of a town's best features to attract companies and new residents. If this factor is judged to be strong for a particular town, the Cairn will have a solid foundation, with a strong geography and climate factor represented by a large, thicker stone on the bottom. Town leaders should then decide how to build on this strength.

By contrast, a town may consider itself adequate to weak in its geography and climate. Upon assessing the sub-factors of this stone, desirability of climate, topography, proximity to economic centers, and access to global markets, leaders determine that, while the town has an attractive climate and topography, it has little to no access to economic centers or to global markets. Basically, the town is "in the middle of nowhere." This Cairn will have a foundation stone that is thick on one end, but tapers to a thin other end. Therefore, the structure of the Cairn is precarious for further development. Town leaders should then decide how they might overcome that weakness to build on the identified strengths and mitigate identified weaknesses.

As the stones are each assessed, the Cairn will be built with some stones that may be strong in some areas and weak in others. The initial result may be a Cairn with small, thin stones even on the bottom or in the middle of the structure. The task of leadership is to work to strengthen the entire structure, to build on what they can change, and mitigate issues with sub-factors they cannot change.

The order of the stones can be changed, of course, given the views of the town leaders and potential questions being asked. The authors feel that stacking from most stable/unchangeable to most changeable allows for vision as to what actions may most quickly help a town move toward development. For example, by changing the order, a town with leadership as the strongest factor may put that factor as the bottom stone, supporting all other factors. A town may grow through the sustained energies of these leaders. However, not much is gained in visualization by putting that stone on the bottom, as having a large, strong stone on the top may appear more telling. If the other stones are weaker, then leadership may overpower the other factors such that other needs, e.g. education, employment, medical, are ignored through sheer willpower. Having many festivals to bring tourists and money to a community may appear to be successful, retailers may cheer, but the rest of the population may be suffering. Thus the Cairn may topple under the weight of well-intended leadership, but incomplete assessment of all factors.

This process of assessment of factors is iterative, as well. Town leaders cannot just "fix" one factor to see real change. Many factors are interactive, so as with any planning, the process is ongoing, to be repeated as new data comes in, with emphasis put on all items, not just quick fixes. For example, as new businesses are attracted to a town, local workers may be hired. Also, new workers will be attracted to live in the town or surrounding area. Therefore, the workforce may change. Research and development may also change. The term "may change" is used, because these effects may not happen. In one town, education and drug abuse were not targeted first, so as new businesses were attracted to the town, employers could not find a sufficient local workforce to fill jobs. Many of the local people who were hired were dismissed for drug use and poor working habits. If leaders had had a visual model such as the Cairn to determine strengths and weaknesses, they could have better seen factors that needed attention, rather than the jumbled list of needs that they think new employers will solve.

DEVELOPMENT OF THE CAIRN

The authors utilized three tools to aid in the development of the Cairn: Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, the Checklist in Appendix A, and the survey instrument in Appendix B. It is recommended to use all of these tools when developing the town's Cairn. In this way, the interconnections of factors become more obvious.

SWOT ANALYSIS

A SWOT analysis can be carried out for a place, product, industry, community, or person. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to achieve that objective. The degree to which the internal environment of the organization matches with the external environment is expressed by the concept of strategic fit. The SWOT here has been modified for the purposes of this paper to be specific to towns.

Strengths: characteristics of the community that give it an advantage over others.
Weaknesses: characteristics that place the community at a disadvantage relative to others.
Opportunities: sub-factors that the community could exploit to its advantage.
Threats: sub-factors in the environment that could cause trouble for the community.

Identification of SWOT is important, because the factors can inform later steps in planning to achieve the desired objectives. First, the decision makers should consider whether the objective is attainable, given the SWOT. If the objective is *not* attainable, a different objective must be selected, and the process repeated. Users of SWOT analysis need to ask and answer questions that generate meaningful information for each category (strengths, weaknesses, opportunities, and threats) to make the analysis useful to find their competitive advantage. For purposes of this research, four questions that should be asked are as follows:

How does a community protect and enhance its strengths?
How can a community overcome its local weaknesses?
How does a community capitalize on opportunities?
How can a community minimize the threats it faces?

THE LEADERS ASSESSMENT TOOL

For leaders and experts to build a Cairn model that is representative of their community, a survey instrument was developed to assist in evaluating each of the eleven economic development factors and sub-factors discussed in the paper (see Appendices A and B). The intent of the instrument is to provide a tool that will help those individuals designated to assess each economic component in terms of size and thickness per stone. It should be emphasized that this questionnaire is not meant to produce any type of statistical analysis, but a qualitative, visual exploration of a community's economic strengthens and weaknesses.

In addition, it is the recommendation of the authors that more than one or two town leaders conduct the survey. More specifically, experts in the various areas should be included as respondents to the assessment. For example, Factors Eight (Tax Structure) and Ten (Financial Capital) would be best evaluated by local financial and bank leaders, along tax accountants with. Inclusion of those responsible for specific areas would give credibility to measurements of those factors and sub-factors in terms of size and thickness of the stones. Experts in particular fields of work should analyze all the factors that pertain to that specific area, while also weighing in on the other factors, as well.

The following are some recommendations for expert respondents*: Superintendents of Schools, Utilities Managers, Real-Estate Owners and Developers, Visitor Bureau and County Economic Development Managers, Police, Fire and EMT Chiefs, Civic Leaders—Kiwanis, Lions, Rotary Officers, City Managers and Mayors, Chamber of Commerce Presidents and Executive Directors, Manpower Managers,* and other similar types of expert leaders that fit the eleven economic factors.

Clearly, the assessment by the community will be more dependable and credible than one or two leaders of the town conducting the appraisal. Once all the experts and leaders have completed the survey, then a meeting of those respondents would gather to discuss the findings, achieve consensus, and build the Cairn economic development

model based on the results. Thus, the visual analysis would convey on which economic factors the municipality needs to place its greatest efforts and resources to build a stronger community.

APPLICATION OF THE CAIRN MODEL

The Cairn model can be applied to any town, regardless of the political structure. Observations and understandings of nuances in each town are key to the construction of the Cairn. At times, too much data and too much information can bog down leadership. Individuals with leadership roles in these towns can suffer from information overload. If provided with a simple visual model, town leaders can achieve an overview of possibilities and achieve "big picture" thinking.

Two towns, Shippensburg, Pennsylvania, and Winnsboro, South Carolina, are used as case studies. Both towns face challenges that are common in numerous towns across the United States. Both are in need of revitalization and economic rejuvenation.

Case Studies of Two Small Towns – Historical Background

Shippensburg

In Pennsylvania, each county has several Townships, and within the Township, there can exist a Borough. Shippensburg, in South-Central Pennsylvania, is represented by four municipalities, the Borough of Shippensburg, Shippensburg Township, Southampton Township, all in Cumberland County, and Southampton Township in Franklin County. The County line between Franklin and Cumberland Counties cuts through the town. Some of the population lives in one county and some in the other. Within the whole area known as "Shippensburg," the Borough is the downtown area, while Shippensburg Township is the greater area around the borough, but also part of the downtown. Hence, there are various governmental leadership bodies and influences that must be coordinated. Shippensburg restricts its industrial development to the outskirts of town.

One of the oldest communities in Pennsylvania, Shippensburg, founded in 1730, was primarily an industrial town with engine and pump works, as well as furniture making factories. Later in 1871, Shippensburg University was founded, which today is one of 14 state universities in Pennsylvania. The greater Shippensburg area's current permanent population is estimated at 15,492, and includes the borough and the three adjacent townships, according to the 2013 Census. The permanent population of the Borough of Shippensburg was 5,545.

Universities and colleges generally are the strength of many small towns, as they sustain and grow their towns. This is exemplified by Shippensburg University as a major employer in the town. "College towns best exemplify smaller areas whose economies hinge on one major employer, but schools don't typically experience the same shifts in employment as cities with industrial-based economies" (Maciag, 2013). The university swells the population during the school year and brings many cultural events to the region.

Shippensburg is situated along three major U.S. Highways, Interstate 81, traversing North and South, and Interstates I-70 30 miles to the south and I-76 (Pennsylvania Turn Pike) lies north of town, both on the East-West corridor. Shippensburg is located between Harrisburg, the capital city of Pennsylvania, and Hagerstown, Maryland, two large cities. There are also two closer cities, Chambersburg and Carlisle, all along I-81. The geographic placement has been a major part of the strength of the town and region. Shippensburg has access to a major airport in Harrisburg, as well as large-city amenities within one hour's drive. Also, many transportation distribution centers for major companies have opened facilities nearby to take advantage of the highway system. In addition, manufacturing has increased in the area, as well, with two of the largest employers being Volvo Construction Equipment and JLG.

Winnsboro

In South Carolina, there are counties and towns. The Town of Winnsboro, just north of the center of the state, is the county seat of Fairfield County, yet Winnsboro is a separate municipality from the county, although an integral part. Government leadership structures are within a town council and a county council.

Winnsboro, with a population of 3,422 and Fairfield County of 23,109 at the 2013 census, is located between Charlotte, North Carolina, and Columbia, South Caroline, the state's capital, which gives it access to two major airports, universities, and other large-city amenities within one hour's drive. The town is situated along north-south Interstate I-77, and within 25 miles of Interstates I-20 and I-26, both east-west highways, all of which go through Columbia.

Chartered in 1785 and incorporated in 1832, Winnsboro became the county seat for Fairfield County. A private school for boys, Mount Zion Institute, was established in Winnsboro in 1777. This was the first school to be established in the South Carolina Upcountry. After continual use for over 200 years, and after changes to make the school public for a boys and girls, it was closed in 1991 when new school buildings were built. Winnsboro did not benefit from the presence of Mt. Zion like Shippensburg has through its university. However, being the county seat does add stability and a base level of direct and indirect employment, much as a university does.

"The early settlers in the mid-1700's brought cotton to the County, and it remained the main crop until depletion of the soil and boll weevils called the industry to a halt in the 1920s. Granite deposits in the County led to the early development of quarrying. Winnsboro blue granite, 'The Silk of the Trade,' is used worldwide in buildings and monuments. The excellent hunting and fishing that the Indians enjoyed still exist today. Fairfield County, with an abundance of deer and wild turkeys, is a focal point for sportsmen" (Fairfield County, 2014).

Industry in Fairfield County began with agriculture, leading to the opening of the cotton mill in the late 1800s in the southern area of Winnsboro. The mill was bought by US Rubber Company, which then sold to Performance Fibers Group. Other industries have helped stimulate the local economy, with some coming and going. There is also an industrial park in Fairfield County near I-77 that is beginning to attract companies. Winnsboro itself has attracted companies to the area, several of which have been there a long time. Others have moved in recently, as the town and county are beginning to experience some revitalization.

Development of the Cairn for Shippensburg, Pennsylvania

In Figure 3, using the factors from Appendix A, in conjunction with a SWOT specific to Shippensburg, a Cairn has been drawn by stacking the stones according to the ratings: weak, adequate or strong. Notice that the placement and stone size of each factor has been arranged based on the assessment of each factor, averaging the sub-factors. Starting with the least changeable factor stones at the foundation of the Cairn, the Shippensburg Cairn is assessed to have an adequate geography and climate. The geography/climate stone represents that the colder climate in Shippensburg is not as desirable as the southern climate, but the attractiveness of the landscape is considered strong; hence an average, or adequate sized stone. The next stone represents land/physical capital, which has also been given an adequate size shape. Next is the economic base stone, which has been rated weak in the areas of retail and access to shopping. But there is a presence of multiple industries in the town, so the stone is medium sized, or adequate. The Shippensburg economic base needs to expand and become more developed. The stone that represents energy is large, again, based on the factor ratings. The workforce stone represents an adequate workforce size. The community culture could be expanded, yet it is noted that there is support for local businesses by the community. The research and educational environment is also adequate, as is the stone for tax structure. For the access to emergency services, while there is not a hospital in the immediate vicinity, access to emergency walk-in care is available, and ambulance service is available. The stone that represents financial capital is also adequate. As the economy improves, access to capital may also improve. It should be noted that town leaders cannot do much about financial capital. The leadership sub factors are mostly ranked as adequate, hence the adequate sized stone at the top of the Cairn.

Development of the Cairn for Winnsboro, South Carolina

In Figure 4, using the factors from Appendix A, in conjunction with a SWOT specific to Winnsboro, a Cairn has been developed based on the rating factors for Winnsboro. The two significant changes that make it different from the Shippensburg Cairn are that its economic base and workforce are smaller. Both the workforce in Winnsboro is small, and the economic base is less stable. The geography climate stone for Winnsboro shows a larger stone for geography/climate, as the desirability to live in warmer climate increases. The community culture is somewhat willing to accept change; and there is adequate support for businesses, although there is not a large group willing to risk personal capital. Winnsboro also needs to expand their access to financial capital.

USES OF THE CAIRNS DEVELOPMENT MODEL AND FUTURE DIRECTIONS

The proposed Cairn Economic Development Model is an attempt to help leaders visualize their situation in relationship to their competitors. As leaders work to revitalize smaller communities that face difficult challenges, especially downtown vitality, they need to be able to have a method by which they can structure responses to each weakness and threat, while enhancing and capitalizing on their strengths and weaknesses. The Cairn model should be flexible, and must be modified to fit every community.

The order, size, and placement of the stones are in some ways set, but also must be determined by community leaders who analyze their situation as objectively as possible, realizing the subjective nature of this whole process. Consultants may be brought in to help with the analysis and to increase objectivity. Analysis is then established to address the issues of the majority of constituents who want to be involved in the process of revitalizing their towns. Once the stones are as appropriately placed as possible, then the work begins to strengthen weak factors, while enhancing the stronger factors of development. Each factor stone can be used to explore steps to be taken to enhance development. The main point to this process is for all involved to be able to visualize their own situation to then plan toward development. Over time, the model should be revisited to redraw the stones and to reassess development. Imperative to this process, however, is sustained commitment to see the process through over years. As seen from the stories told above, town fortunes ebb and flow, and revitalization is an ongoing process. Any person or place must continually redevelop themselves.

All of these regions can benefit from using the Cairn model, which can lead to open discussions by many groups within the town. Even large metropolitan areas ebb and flow, just as rural areas recycle, stagnant, or decline, lessons unlearned. Many areas have not planned for sustainable development while times were good. Some regions had development and money, but lost their chances to re-industrialize when demand shifted from building materials, manufacturing plants moved away, military bases closed, or the oil, gas, and coal ran out. The regions that lost industries did not plan for sustained development in case their industries left. Work needs to begin, or better yet, be ongoing, before there is a crisis, such as a company's announcing that it is leaving an area. These problems must be foreseen as a possibility, and economies diversified. There are many cases today of towns that are allowing extraction to take place of natural resources, with no re-investment in the towns for future growth. The cycle continues. Companies leave, towns decline, due to lack of forward planning.

When industry leaves an area, there is often an outward migration of qualified workers and their families. Yet, in spite of the fact that industries leave and few well-paying jobs remain, many people choose to stay in a region where their families reside, where they grew up, and where they have sunk roots. Many start their own subsistence business to attract locals or tourists to the area. For this strategy to be successful, there needs to be a steady stream of visitors and a strong reason for anyone to go to the area, because energy for such continued attractions may wane.

County and town leaders often breathe a sigh of relief when a new plant moves in and quickly solves employment problems. Unfortunately, some leaders may rest on their laurels until the next big crisis. Discouragement and lethargy can easily creep in, especially if the same people in the town are expected to do all of the work. Assuming the majority population of a region wants growth, most of all, there needs to be sustained, long-term energy and commitment to regional development to cause any changes. Planning has to be ongoing, and implementing the Cairn Development Model, as a visual aid, can assist in resisting that complacency. Economic development can have everyone thinking that they can have more. "Maybe [communities] can have it all. It should be the goal: growth and stability, buildings and farmland, regulations and open growth, a growing tax base and preservation; all these things are what help make our communities livable and desirable" (Maddux & Pratt, 2014, p. A4).

Use of the Cairn model could be a tool used to work toward an understanding of the current economic and non-economic climate in any town. Our hope is that the proposed Economic Development Cairn Model will assist community leaders in assessing and planning the future success and vitality of their towns.

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APPENDIX A

Checklist of Factors and Sub-factors

Legend: SHIPPENSBURG (S)/WINNSBORO (W)

Least Likely to Change	Sample stone sizes based on the ratings:	Weak(1) 	Adequate(2) 	Strong (3) 
	Geography/Climate		S	W
	Desirability of weather		S	W
	Attractiveness of landscape			S,W
	Proximity to economic centers			S,W
	Access to global markets		S, W	
	Land /Physical capital		S, W	
	Availability of residential housing		W	S
	Availability of vacant land			S, W
	Availability of underused land/buildings for development		S, W	
	Lack of blighted buildings to be renovated or removed.		S, W	
	Sufficient natural resources to support growth.		S, W	
Moderately Changeable	Economic base	W	S	
	Presence of multiple industries	W		S
	Capacity and willingness to diversify			S, W
	Retail Businesses:			
	(1) Downtown	S,W		

	Shopping centers	W	S	
	Other Shopping	S,W		
	Energy			S, W
	Reliability			S,W
	Access			S,W
	Workforce	W	S	
	Workforce size – Number of people in the area who have the capacity and want to work.		S, W	
	Unemployment rate		S, W	
	Percent competent in skilled/technology fields	S, W		
	Percent competent in professional fields	W	S	
	Ability to pass drug/alcohol tests	W	S	
	Community Culture		S, W	
	Willingness to support for local businesses: retail and industrial		S,W	
	Willingness to risk personal capital	S, W		
	Willingness to accept change		S, W	
Easily Changeable	Research and Educational Environment		S, W	
	Presence of university/college/tech/ vocational schools		S,W	
	Quality of secondary education		S,W	
	Access to internet		S,W	
	Tax Structure			S, W
	Favorable to Large Businesses			S,W
	Favorable to Small Businesses	S,W		
	Favorable to retirees			S, W
	Emergency Services		S, W	
	Access to emergency Services (fire, police, medical)			S, W
	Access to Health Care		S, W	
	Financial Capital		S, W	
	Willingness of banks to lend		S, W	
	Ability to secure gap financing	S,W		
	Ability to secure venture capital	S,W		
	Access to small business development help		S,W	
	Leadership (Fill in as applicable)		S, W	
	County Board of Commissioners/ County Council/County Manager		S, W	
	Town/Borough Council/ City Manger	S, W		
	Chamber of Commerce		S, W	
	Civic Professional Organizations		S, W	
	County Economic Development Board		W	S

Adapted from Kovens & Lyons (2010) p.14

Appendix B: Survey Instrument to Assess the Eleven Community Economic Development Factors Located in Appendix A.

Directions: Please Rate each of the following Economic Development Sub-Factors based on your expertise, experience, or judgment that best describes your community from Weak (1) to Adequate (2) or Strong (3). Upon completing the Sub-factor ratings, then provide an overall rating for each of the eleven Economic Development Factors. Please Circle the Number that corresponds with each of the descriptors mentioned below.

Weak = 1 Adequate = 2 Strong = 3

Factor 1: Geography/Climate (overall rating)	1	2	3	
a. The desirability of weather in your community would be considered	1	2	3	
b. The attractiveness of landscape in your community would be considered	1	2	3	
c. The proximity to economic centers from your town is	1	2	3	
d. Access to global markets from your community is	1	2	3	
Factor 2: Land/Physical Capita (overall rating)	1	2	3	
a. The availability of residential housing in your area is considered	1	2	3	
b. The availability of vacant land in your area is	1	2	3	
c. The availability of underused land/ buildings for development in				
your geographic area is	1	2	3	
d. The lack of blighted buildings to be renovated or removed is	1	2	3	
e. How sufficient are the natural resources to support growth	1	2	3	
Factor 3: Economic Base (overall rating)	1	2	3	
a. The presence of multiple industries in your community is	1	2	3	
b. The capacity and willingness to diversify is	1	2	3	
c. Retail				
- The vitality of the downtown/central business district of your community is	1	2	3	
- The vitality of your community is	1	2	3	
- The strength of shopping centers in your area is	1	2	3	
- The strength of other shopping in the area is	1	2	3	
Factor 4: Energy (overall rating)	1	2	3	
a. The reliability of energy resources in the area is	1	2	3	
b. The access to energy is	1	2	3	
Factor 5: Workforce (overall rating)	1	2	3	
a. Workforce size (number of people in the area who have the capacity and want to work)				
Therefore, the workforce size in your area is considered	1	2	3	
b. The unemployment rate in the area is	1	2	3	
c. The percent of competent individuals in skilled/technology fields in the area is	1	2	3	
d. The percent competent individuals in professional fields in the area is	1	2	3	

e. The ability of the workforce in the area to pass drug/alcohol tests is		1	2	3
Factor 6: Community Culture	(overall rating)	1	2	3
a. The willingness of the community to support businesses (retail and industrial) is		1	2	3
b. The willingness of the community to risk personal capital is		1	2	3
c. The willingness of the community to accept change is		1	2	3
Factor 7: Research and Educational Environment	(overall rating)	1	2	3
a. The presence of university/college/tech/vocational schools in the area is		1	2	3
b. The quality of secondary education in the community is considered		1	2	3
c. The ability to have access to the internet is		1	2	3
Factor 8: Tax Structure	(overall rating)	1	2	3
a. The local and state tax structure favor large businesses		1	2	3
b. The local and state tax structure favor small businesses		1	2	3
c. The local and state taxes are favorable to retirees		1	2	3
Factor 9: Emergency Services	(overall rating)	1	2	3
a. Access to Emergency Services (fire, police, medical) in the community is considered		1	2	3
b. Access to health care (hospitals, clinics) is		1	2	3
Factor 10: Financial Capital	(overall rating)	1	2	3
a. The willingness of banks in the area to lend is considered		1	2	3
b. The ability to secure gap financing is considered		1	2	3
c. The ability to secure venture capital is considered		1	2	3
d. The access to small business development help is considered		1	2	3
Factor 11: Leadership	(overall rating)	1	2	3
a. The leadership strength of the County Council/County Manager is		1	2	3
b. The leadership strength of the Town/Borough Council/City Manager is		1	2	3
c. The leadership strength of the Chamber of Commerce is		1	2	3
d. The leadership strength of the local Civic/Professional Organization is		1	2	3
e. The leadership strength of the County Economic Development is		1	2	3

Picture 1

Picture 2

Picture 3

Picture 4

Figure 1 Examples of Cairns in nature

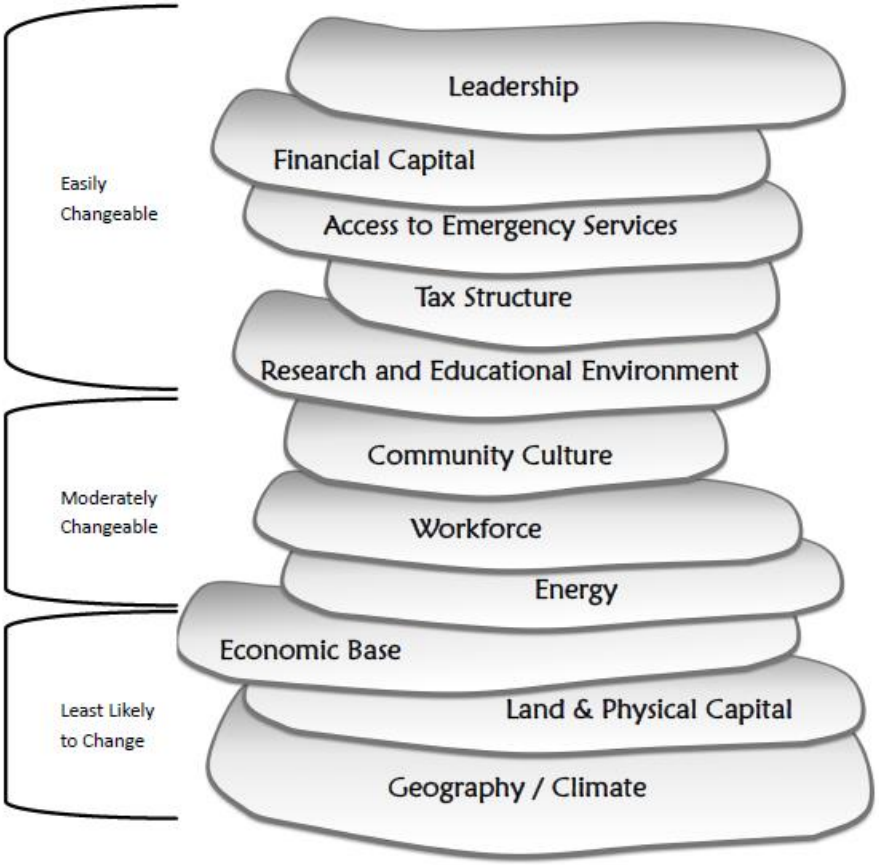

Figure 2 Sample of a good Cairn model

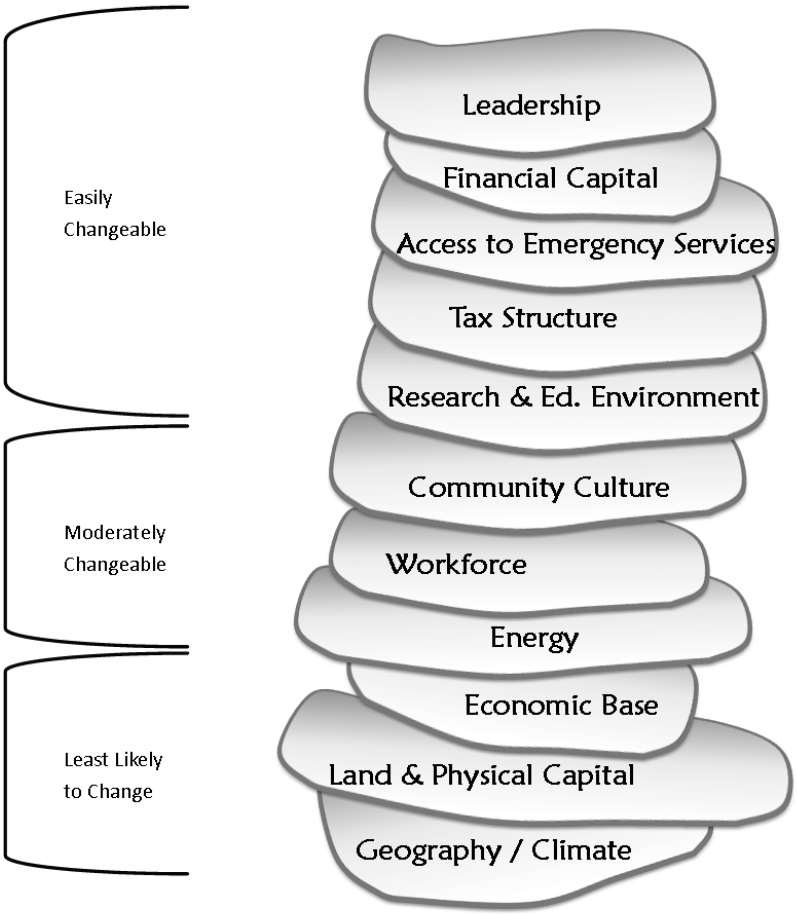

Figure 3 Cairn for Shippensburg

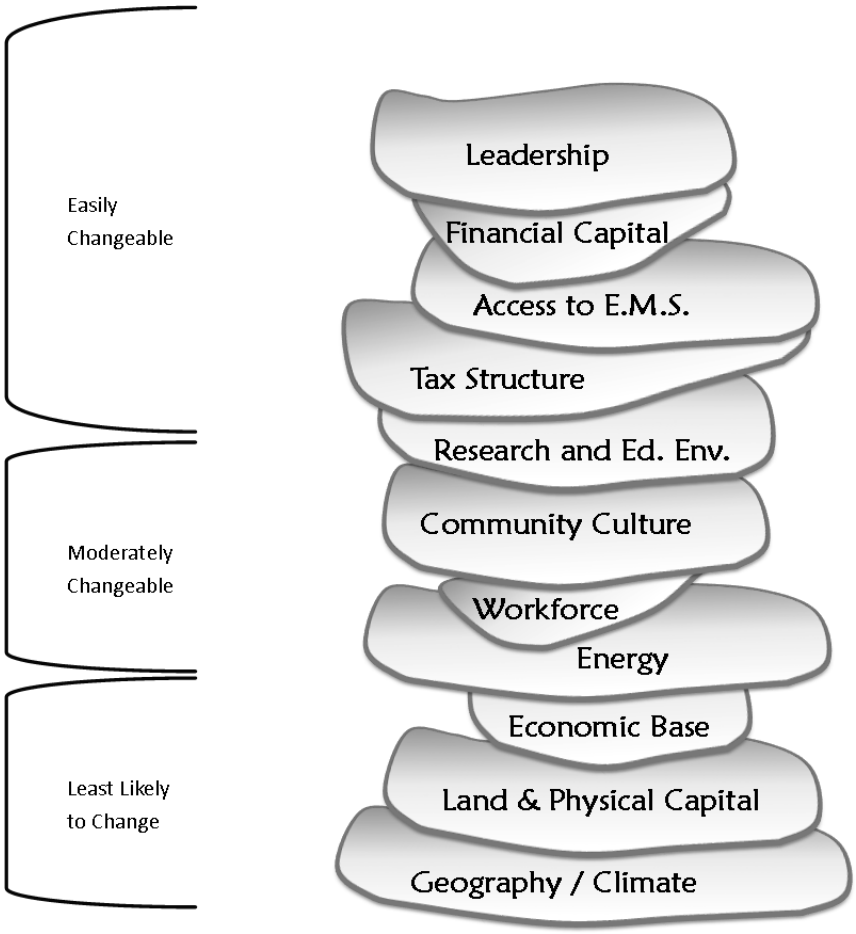

Figure 4 Cairn for Winnsboro

CONSUMER DIRECTED HEALTH PLANS AND THE ASSOCIATION BETWEEN MEDICAL SAVINGS ACCOUNTS AND PLAN CHOICE

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ABSTRACT

This study examines the association between Consumer Directed Health Plan (CDHP) medical savings accounts and the prior funding of Flexible Savings Accounts (FSAs). Medical savings accounts are integral components of CDHPs. Consumer Directed Health Plans were designed to slow the growth of escalating insurance costs for employers through high initial cost-sharing and consumer engagement via the use of Health Reimbursement Accounts (HRAs) or Health Savings Accounts (HSAs). These medical spending accounts are intended to engage consumers by requiring them to plan for and coordinate the first several thousand dollars of their health care needs. HRAs and HSAs share some characteristics with FSAs, which pre-date CDHPs. Findings suggest consumers who previously funded an FSA may not seek CDHPs due to the continued ability to plan for and coordinate initial healthcare spending, but only to seek a method to reduce their financial burden of accessing healthcare.

PURPOSE AND INTRODUCTION

This study examines the association between medical savings accounts associated with Consumer Directed Health Plans (CDHPs) and enrollees' prior funding of a Flexible Savings Account (FSA). Medical savings accounts are tax-advantaged savings accounts funded by enrollees or their employers, and require some limited enrollee planning and coordination to offset out-of-pocket medical costs. FSAs were introduced more than three decades ago as an optional medical savings account, independent of health insurance plans. CDHPs emerged in the early 2000s and incorporate two variations of medical savings accounts, Health Reimbursement Accounts (HRAs) or Health Savings Accounts (HSAs). Medical savings accounts associated with CDHPs allow for greater funding, accrual of unused funds from year to year, and represent a more robust vehicle to plan for and coordinate funds to cover out-of-pocket health care costs than do FSAs. An enrollee's prior funding of an FSA may suggest either an effort to enhance efficient healthcare spending through a tax advantaged medical spending account for out-of-pocket costs, or their propensity to plan for and coordinate financial resources used to offset out-of-pocket health care needs. Thus, when an enrollee is able to choose between a Managed Care plan and a CDHP, with more robust medical savings account features than an Flexible Spending Account, prior FSA participation may suggest a greater likelihood to choose a CDHP coupled with either an HRA or HSA.

BACKGROUND

Of the approximately 56 percent of Americans insured through Employer Sponsored Insurance (ESI), Consumer Directed Health Plan enrollment has increased from four percent in 2006 to nineteen percent in 2012 (Kaiser Family Foundation and Health Research And Educational Trust, 2012). Thirty-one percent of employers offer at least one CDHP plan, a number that is also expected to increase (Kaiser Family Foundation and Health Research And Educational Trust, 2012).

Health insurance cost to employers has nearly doubled since the late 1990s (Fronstin, 2012). CDHPs emerged approximately one and a half decades ago as an alternative to Managed Care Health Maintenance Organizations (HMOs) and Preferred Provider Organizations (PPOs) with the intent to slow the increasing cost of ESI. Economists argue that one cause of high healthcare insurance cost is attributed to moral hazard (Arrow, 2004). Moral hazard impacts health care costs when enrollees consume more healthcare services than they would if they were not partially insulated by a third party payer. CDHP designs are intended to compel health care consumers to "…steer clear of moral hazard, purchasing only the health care they need or, more precisely, only the health care that enhances their welfare more than alternative goods such as food, transportation, or movie tickets" (Kravitz, 2007). The Rand Health Insurance Experiment (HIE) that examines cost-sharing, health care utilization and health status is the seminal study on health care insurance cost-sharing (Brook, 1984). Based largely on findings from the Rand HIE, cost sharing has become the primary control incorporated in plan designs to reduce moral hazard (Newhouse, 2004). To help offset the burden of high deductibles and engage consumers in health care purchasing decisions, CDHPs are designed to include either an HRA or HSA medical savings account. Medical savings accounts allow enrollees to coordinate pre-tax

dollars to pay and plan for some health care use during the high deductible period. CDHPs also attempt to make provider cost and quality information accessible through online portals and/or telephonic member support for better health care purchasing decisions. Consumer engagement is intended to lower discretionary healthcare use, facilitate better healthcare choices, and reduce ESI costs (Greene, 2006; Robinson, 2002).

FSAs are one of the earliest efforts intended to engage consumers in more efficient health care purchasing. The Internal Revenue Service sanctioned Flexible Spending Accounts in 1978, which were the first medical savings accounts exempted from FICA, federal, state, and local income taxes (Bureau of Labor and Statistics, 2002 ;Hamilton, 2007). These accounts, which pre-date CDHPs by approximately two decades, are optional, supplemental to, and independent of an enrollee's health plan. They were created for employees to set aside pre-tax earnings to pay for out-of-pocket medical expenses in an account created and managed by their employer. FSAs provide an opportunity for enrollees to save money for planned or predictable out-of-pocket medical expenses, albeit with annual contribution caps and use-it-or-lose-it provisions. Recent regulatory changes now allow FSA participants to carry up to $500 over each year beginning in 2015 (Laufer, 2013). According to a 2007 U.S. Department of Health and Human Services National Health Survey, 14.8 percent of non-elderly persons with private insurance funded an FSA (Cohen, 2009).

Two primary health insurance models, referred to as Consumer Directed Health Plans (CDHPs), include either a Health Reimbursement Account (HRA) or Health Savings Account (HSA). HRAs and HSAs are the most recent forms of medical savings account. The term HRA became common to describe plans that emerged from the Health Insurance Portability and Accountability Act (HIPPA) of 1996. For Health Reimbursement Accounts, the employer funds the HRA with pre-tax dollars intended to offset out-of-pocket costs. HRAs are not required to be coupled with any particular type of plan, however are most commonly paired with a high deductible plan. HSAs were established as part of Medicare legislation passed in 2003. HSAs are coupled with eligible high deductible plans and include full employee ownership of the medical spending account, are portable regardless of employer affiliation, contain investment characteristics, allow funding by the employer and/or the employee and allow greater employee control. HRAs are similar to HSAs but are not owned by employees, are only portable if approved by the employer (most employers do not allow portability), include different funding limitations and are not required to be paired with a High Deductible Health Plan (HDHP), whereas an HSA must be paired with a HDHP (Buntin, 2006).

HRAs and HSAs have some similarities with FSAs. All medical savings accounts provide the opportunity to set aside funds for future health care costs, but HRAs and HSAs offer longer term planning opportunities with greater funding levels than FSAs. Enrollee characteristics, which may have led them to have previously funded an FSA, may also be associated with a desire to choose a CDHP. They may desire the greater opportunity to plan for and coordinate out-of-pocket health care costs afforded by the more robust HRA and HSA medical savings accounts as well as benefit from the pre-tax funding for out-of-pocket healthcare costs.

STUDY SETTING

This study evaluates the association between previously funding an FSA and the selection between a Managed Care PPO and two CDHPs (HRA or HSA eligible plan). Enrollees were provided a set of three plans in 2006; reduced from nine managed care plans and one high deductible plan in 2005. Of the three plans that comprise the new choice set in this study, the Managed Care PPO also requires the highest enrollee premium contributions, but has no deductible to influence initial health care cost. The Managed Care PPO does not include a medical savings account, however, as before, PPO enrollees can opt to add an optional FSA that is independent of the plan. For 2005, only 17.7% of the study population participated in an optional FSA (Appendix A: Variable Frequencies), with stricter funding limitations than HRAs and HSAs, and rollover preclusions (prior to 2015). It can be argued that PPOs require less coordination of health care funds and payment by enrollees than CDHPs. Of the two CDHPs, the plan that is eligible for enrollees to fund an HSA more closely resembles voluntary participation in an FSA, but with greater flexibility and fewer restrictions. HSA eligible plan enrollees are given the choice to fund or not fund an HSA. If enrollees choose to fund an HSA, they must fund it themselves. Those who choose an HRA plan are automatically provided an account that is not optional, is funded by the employer, yet still requires the coordination of funds for medical costs. The HRA plan in this study is coupled with a High Deductible Health Plan.

PRIOR RESEARCH

There is no research that examines prior FSA funding and CDHP choice. A study by Parente, Feldman, & Christianson, (2001) presents descriptive statistics relative to FSA funding in an analysis that incorporates prior FSA funding in a regression model while examining post CDHP choice medical expenditures . Parente et al. (2004) examined a single large employer that added a CDHP to their choices of an HMO and PPO. The Consumer Directed Health Plan incorporated an HRA medical savings account. Data was collected from health insurance claims and benefits data and employs regression analyses to estimate a model that includes health care use, health status, demographics, FSA funding and plan choice. Descriptive statistics indicate greater prior FSA funding by those who chose the CDHP. The authors also find those who funded an FSA in the prior year were more likely to have increased medical expenditures (Parente et al. 2004). Greater medical expenditures were associated with the CDHP. Parente et al. (2004) suggest the CDHP actually had the lowest cost sharing due to a generous HRA funding level by the employer for the plan examined in their study, and may have contributed to the greater expenditures (Parente et al. 2004). The authors however did not directly examine the association between FSA participation and CDHP choice.

Alternatively, a small body of research examines factors associated with funding an FSA and the cost sharing attributes of plans with which they are associated. Cardon & Showalter (2001) estimate econometric models using data from a benefits firm for 1996 to find that FSA participation increases at a decreasing rate with age and family size. They also find an association between women, who are generally higher health care uses, and higher income. A study that uses employee level benefits data in cross-sectional and random-effect two-part models by Hamilton & Marton (2008) also supports an association between increased FSA participation and age, salary and marital status. In a separate study, Jack & Rahardja (2006) find FSA participation is associated with plans that have a higher co-insurance rate. They suggest the use of an FSA may be based on an effort to enhance efficiency by covering greater out-of-pocket costs related to higher co-insurance rate plans through accessing the tax advantage of the FSA funds. This finding may suggest an association between FSA participation and high deductible CDHP choice. Consumers may seek ways to limit financial exposure as well as have greater control over their health care purchasing. The dearth of research regarding the importance of medical savings accounts, such as FSAs, HRAs and HSAs, to the selection of a CDHP indicates the need for additional study.

DATA SOURCES

This study examines employee households of an employer that operates in the East North Central, South Atlantic, East South Central, and West South Central United States. They offered ten ESI plans including six HMOs, three PPOs, and one High Deductible Health Plan (HDHP) in 2005. Table 1: Health Plan Cost Structures lists cost characteristics for plans in the new choice set employees faced in 2006. The choice set was comprised of a PPO, HRA, and HSA eligible HDHP. Plans with more generous benefits generally require the greatest enrollee premium contributions, while the lowest cost plans have higher initial cost sharing, and thus considered least generous. The Managed Care PPO represents the most generous coverage option for 2006 with no deductible (in-network), however requires the greatest enrollee premium contributions. Although the HSA has the lowest enrollee premium contributions, it represents the least generous coverage choice due to the largest deductible with no employer contributions to a medical savings account. The HRA represents a "middle" benefit generosity due to a high deductible that is coupled with an employer funded medical savings account.

Data are retrieved from the employer's human resources information system (HRIS) and claims system via a third party data management firm in de-identified form. The data contained enrollee and plan characteristics for the year prior to the 2006 plan choice decision. Data was available for those who were continuously enrolled from January 1, 2005 to December 31, 2009, and under the age of 60. The resulting sample is N = 9,617.

TABLE 1: HEALTH PLAN COST STRUCTURES

Plan	PPO [a] $	HRA $	HSA Eligible Plan [b] $
Employee Premium Contribution (per month)	77.77 S 165.24 SS 130.03 SC 217.50 F	63.07 S 134.01 SS 105.46 SC 176.39 F	0 S 0 SS 0 SC 0 F
Deductible In- Network	0	After HRA Exhausted 500/S 750/SS 750/SC 1,000/F (In & Outside Network)	2,100/per enrollee[c] up to 6,300 /F
Outside Network	300 /S 900 /F		2,500 /S 7,500 /F
Coinsurance [c] Inside Network Outside Network	15% 30%	15% 30%	0% 20%
Out-of-Pocket Maximum In- Network	2,000 /per enrollee[d] up to 6,000/F	3,000/S 4,500/SS 4,500/SC 6,000/F	2,100/per enrollee[d] up to 6,300/F
Outside Network	4,000 / SS 12,000 / F	5,500/S 8,250/SS 8,250/SC 11,000/F	5,000/SS 15,000/F
Employer Contributions to medical savings account	0	1,000/S 1,500/SS 1,500/SC 2,000/F *Used prior to deductible	0

Notes.

[a] *The PPO plan includes co-pays for Primary Care Physician Visit = $20, Specialist Visit = $25, Emergency Department Visit = $50, Chiropractic Visit = $25.*

[b] *The HSA eligible Plan has a cost structure that does not change based on funding or not funding an HSA.*

[c] *Co-insurance is applicable after deductibles are met.*

[d] *Up to the family level. The enrollee deductible is taken up to three enrollees.*

DESCRIPTIVE STATISTICS

The study population is largely male (82%), married (79%), white (86%), non-exempt (60%), non-union (71%,), and reside in the East North Central part of the United States (48%). Fifty eight percent of the 9,617 households chose the PPO, 37% the HRA, and 5% the HSA eligible plan (Appendix A: Variable Frequencies). Coverage tiers within each plan are unremarkable. PPO enrollment includes the fewest single coverage enrollees, and the HSA eligible plan includes the fewest households enrolled as employee plus children or family. Eighteen percent of the enrollees funded an FSA in 2005. The mean age for employees is nearly 50 years old and a median of 51 (Appendix B: All Enrollees' Descriptive Statistics). Mean enrollment months is 35 with a median of 36, thus the average household had

approximately 3 persons enrolled for 2005. Mean employee earnings is $69,615 with a median of $66,181; average cost sharing for 2005 were $1,470 with a median of $995.

METHODS

This study is guided by an adaptation of the Andersen Behavioral Model and includes the constructs of predisposing, enabling and choice factors. The Andersen Behavioral Model was developed to evaluate the access and use of health care. The model acknowledges the prominent role of third party insurance coverage in the access and use of healthcare, thus guides this study for Managed Care verses CDHP choice (Anderson 1995). Similar constructs are used by other CDHP plan choice research (Fowles, Kind, Braun & Bertko, 2004; Green, Hibbard, Dixon, & Tusler, 2006). Predisposing factors are comprised of enrollee household size, marital status, ethnicity, exempt status, union status and region. Enabling factors in the adapted model are employee earnings and the dependent variable of plan choice. Choice factors in the adopted model include perceived health care need and plan characteristics. Choice factors include out-of-pocket maximum, enrollee premium contributions, prior cost-sharing, enrollee health status and prior FSA participation. Health status is a ratio measure of relative health risk at the contract level. A weighted score is created using demographic categorization and Diagnostic Cost Grouping (DCG) captured from health care use. DCG is a proprietary algorithm based diagnosis cost grouping software developed by Verisk Health Inc. Flexible Spending Account (FSA) participation is operationalized as a dichotomous variable. The dependent variable is a nominal categorical measure of choice among health plans (Managed Care PPO, and HRA or HSA CDHPs). Plan choice is estimated for one of three health plan options based on model parameters. The Managed Care PPO represents the reference category. Outcomes for the non-reference plans within the choice set can be assessed for their relationship relative to the reference category.

Relative risk ratios are estimated relative to the reference category and represent the change in odds when there is a one-unit change associated with parameter coefficients. For alternatives $j_{1\text{-}3}$ in choice set J, the outcome of plan choice for each household at the contract level is represented by h (described by the set of attributes X_h comprised of the covariates for h), and the model probability vectors are $\pi_{h1,\ldots,}\ \pi_{h3}$, where π_{hj} is the probability that alternative j was chosen by h from choice set J. Estimates are generated for $J - 1$ outcomes, with the reference category odds ratio of one. The mutually exclusive and exhaustive choice set of alternatives (j_1, j_2, j_3) for h is:

Choice Set J of Alternatives

j_1) PPO,
$j_1, \ldots, j_3$ = j_2) HRA,
j_3) HSA,

and the probability that a given single household h chose alternative j, from J:

$$\frac{\exp(\alpha_j + \beta_j x)}{\sum_h \exp(\alpha_h + \beta_h x)}, \quad j = 1,\ldots, J - 1$$

where π_j is the probability that household h selected alternative j, and covariates of h are represented by x. $\beta_{1,\ldots,}\ \beta_h$ are regression vector parameters, and $\Sigma_j\ \pi_j = 1$

RESULTS

Of the 17.7% who funded an FSA in 2005, prior to the new health plan choice set; seven hundred fourteen chose a CDHP (forty chose an HSA eligible CDHP and six hundred seventy four chose the HRA CDHP), while nine hundred sixty three chose the Managed Care PPO. Parameter estimates from the multinomial logistic analysis are listed in Table 2: Parameter Estimates. Prior FSA participation is not positively associated with CDHP choice. The regression coefficient (B) for not previously participating in an FSA and enrollment in the HSA eligible CDHP versus PPO Managed Care plan is .445 with an Exp(B) of 1.560. Thus, if an enrollee didn't previously participate in an FSA, the relative risk of choosing a HSA eligible CDHP versus the PPO Managed Care plan increased by 1.560.

TABLE 2: PARAMETER ESTIMATES *(N=9,617)*

Plan Chosen 2006 (DV): HSA eligible CDHP[a]					
Independent Variable	B	Std. Error	Wald	Sig.	ExpB
Intercept	-2.096	.302	48.044	.000	.
FSA: No	*.445*	*.153*	*8.400*	*.004**	*1.560*
FSA: Yes	*0b*	.	.	.	.
Earnings	*.000*	*.000*	*2.994*	*.084*	*1.000*
Out-of-Pocket Max	.000	.000	20.099	.000**	1.000
Total Cost Sharing	*-.001*	*.000*	*263.774*	*.000***	*.999*
Health Status (RRS)	*.002*	*.001*	*8.572*	*.003***	*1.002*
Plan Chosen 2006 (DV): HRA eligible CDHP[a]					
Independent Variable	B	Std. Error	Wald	Sig.	ExpB
Intercept	-1.226	.145	71.800	.000**	.
FSA: No	.011	.062	.030	.863	1.011
FSA: Yes	0b	.	.	.	.
Employee Earnings	*.000*	*.000*	*.082*	*.774*	*1.000*
Out-of-Pocket Max	.000	.000	139.355	.000**	1.000
Total Cost Sharing	*.000*	*.000*	*28.512*	*.000***	*1.000*
Health Status (RRS)	*-.003*	*.000*	*70.305*	*.000***	*.997*

Notes:
[a]The reference category is: PPO.
[b]This parameter set to zero because it is redundant.
*Parameter is significant at the 0.05 level (2-tailed).
**Parameter is significant at the 0.01 level (2-tailed).

Therefore, if an enrollee didn't previously participate in an FSA, the relative risk of choosing a HSA eligible CDHP versus the PPO Managed Care plan increased by 1.560. Otherwise stated, holding all else constant, if an enrollee household did not previously participate in an FSA they are approximately 1.6 times more likely to choose the HSA eligible CDHP over the PPO. Prior participation in an FSA is not statistically significant for enrollment in the HRA versus the PPO Managed Care plan (p = .863). Additional findings include positive associations between lower prior cost sharing and higher household health status for those who chose the CDHPs compared to the Managed Care PPO. This suggests favorable selection for the CDHPs, with the HSA eligible CDHP benefiting most. Employee earnings are not found to be significant in the plan choice regression model.

DISCUSSION

High deductibles associated with CDHPs translate to high initial health care utilization costs for which enrollees must plan for and coordinate funding and payment. Consumer Directed health Plans incorporate a medical savings account to ease the initial cost burden through either employer funds or pre-tax dollars to use toward the high deductible or other out-of-pocket healthcare spending. The CDHP choices in this study (and generally in other programs) also represent lower enrollee premium contributions than Managed Care plans due to the lower initial benefit generosity. The characteristics of coordinating funds for out-of-pocket health care costs using an HRA or HSA medical savings account are similar to that of an FSA. These medical savings accounts provide the opportunity to set aside tax-free funds for future health care costs and offer longer term planning opportunities with greater funding levels than FSAs.

Although all medical savings accounts include planning and coordination of initial health care costs, the FSA and HSA appear more similar because they are both optional and are funded only by the insured. Thus, the finding that there is a negative association between prior FSA participation and HSA eligible CDHP choice, in conjunction with no significant association between HRA plan choice and prior FSA participation, is of particular interest. These findings may suggest that enrollees who choose a CDHP are not driven to do so because of a desire to have greater planning or coordination over the financing of their health care needs. One possible explanation could be that those who choose the HSA eligible CDHP are less interested in a medical savings account due to prior experience with an FSA, and that HRA enrollees are ambivalent. Enrollees who participate in an FSA prior to having the option to enroll in a CDHP may do so with the primary purpose to save out-of-pocket health care costs through the use of pre-tax funds, and not the enhanced ability to plan for or coordinate those resources. Further, the experience of using an FSA could be an inconvenient process they prefer to discard if the premiums of an HSA eligible CDHP are low enough, as in this study for which the HSA eligible CDHP required no premium contributions by enrollees (Table 1).

Another possible explanation for these results could relate to CDHP favorable selection suggested by this study. The findings that CDHPs enjoy favorable selection relative to the referent Managed Care PPO plan may suggest that healthier enrollees who previously did not perceive a high need for health care gravitate toward the CDHPs, and thus the medical savings account represented little advantage. The lower enrollee premium contributions and lower perceived need for care may be the primary factor of plan choice, not the ability to plan or coordinate a medical savings account.

An outgrowth of CDHPs driven by greater information technology and data analytics is the ubiquitous use of plan choice models that insurers make available to potential enrollees. Such models ask potential enrollees questions related to their health care use behaviors, risk tolerance, and overall perceived health. Past experience with FSAs may represent another factor, which could be incorporated in such models.

Future research may benefit from an experimental design to evaluate the implications of past experiences with medical savings accounts. The literature would benefit from a greater analysis of factors potentially associated with enrollees' interest to manage health care resources more actively, verses those associated with risk aversion and personal utility. As the prevalence of CDHPs continue to increase, a greater understanding of enrollees' propensity to fund and utilize medical savings accounts may help shape future plan designs.

Limitations of this study include the inability to survey enrollees due to a reliance on convenience data. Although guided by a theoretical model, not all variables are available to limit error in a more robust approach. Additionally, causation is not possible due to the ex post facto non-experimental design, however valuable insights are still gained to the association between medical savings accounts and plan choice. More research is necessary due to the lack of generalizability to other employers and various benefit program configurations.

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APPENDIX A – VARIABLE FREQUENCIES

(N=9,617)

Variable	Percent %	Frequency # N=9,617
Employee Gender		
Male	82.5	7,933
Female	17.5	1,684
Ethnicity		
White	86.4	8,309
African American	5.6	537
Asian	0.9	84
American Indian/Alaska Native	1.1	101
Hispanic	5.7	547
Native Hawaiian/Other Pac. Isles	0.0	1
Two or more	0.3	31
Not Stated	0.1	7
Hourly/Salaried		
Hourly	60.1	5,783
Salaried	39.9	3,834
Union Status		
Union	29.1	2,797
Non-Union	70.9	6,820

Region		
Region 1 – New England	0.0	0
Region 2 – Mid Atlantic	0.1	10
Region 3 – East North Central	47.9	4,609
Region 4 – West North Central	0.5	46
Region 5 – South Atlantic	19.5	1,877
Region 6 – East South Central	4.3	414
Region 7 – West South Central	27.1	2,604
Region 8 – Mountain	0.0	0
Region 9 – Pacific	0.6	57
Plan Chosen 2006		
PPO	58	5,577
HRA	37.3	3,586
HSA Eligible CDHP	4.7	454
FSA Participation 2005		
Yes	17.7	1,701
No	82.3	7,916
Marital status		
Single	12.3	1,186
Married	79.0	7,597
Separated	.0	1
Divorced	8.3	793
Widowed	.4	40

APPENDIX A – VARIABLE FREQUENCIES, CONTINUED…

Coverage Tier All Plans 2006		
Self	17.4	1,669
+ Spouse	21	2,022
+ Children	11	1,057
+ Family	50.6	4,869
Coverage Tier PPO Only		
Self	15.3	854
+ Spouse	23.2	1,294
+ Children	10.8	603
+ Family	50.7	2,826
Coverage Tier **HRA Only**		
Self	19.2	688
+ Spouse	17.2	615
+ Children	12.1	433
+ Family	51.6	1,850
Coverage Tier **HSA Eligible CDHP Only**		
Self	28	127
+ Spouse	24.9	113
+ Children	4.6	21
+ Family	42.5	193

Notes:
[a] Regions based on the U.S. Census Bureau regional division

APPENDIX B – ALL ENROLLEES' DESCRIPTIVE STATISTICS

Variable	Mean	Median	Std. Deviation	Range
Employee Age (as of 1/06)	50	51	7	42
Member Months 2005	35	36	17	143
Out-of-Pocket Maximum	$4,871	$6,000	$1,391	$4,300
Deductible	$524.30	$0	$1,056	$6,300
Employee Earnings 2005	$69,615	$66,181	$36,853	$1,026,421
Variable Cost Sharing 2005	$1,470	$995	$3,750	$332,031
Premium Fixed Cost 2005	$1,817	$2,120	$673	$4,524
Relative Risk Score 2005	78	46	101	978

THE CONTRIBUTIONS OF US FOREIGN DIRECT INVESTMENTS TO ECONOMIC GROWTH IN SUB-SAHARIN AFRICA: EVIDENCE FROM PANEL DATA

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ABSTRACT

This paper uses panel data for the period ranging from 1996 to 2013 to investigate the contribution of US foreign direct investment to economic growth in fourteen Sub-Saharan African Countries. We apply the fixed and random effects model as well as the Generalized Method of Moments model to estimate two different equations; the first equation considered the entire stock of capital including US foreign direct investments while the second equation excluded US direct investment in the sub region from capital stock variable. The results of estimations revealed that domestic capital significantly affect economic growth in these countries but found no evidence that US FDI have any direct effect on economic growth in the host countries. The results also found significant effect of political stability and openness on the growth of Sub Saharan African countries. The implication of these findings is that the region can promote economic growth by mobilizing more domestic resources, ensuring that there is political stability and opening their economies to external competition.

INTRODUCTION

Sub Saharan African (SSA) countries like most other developing countries implemented inward-looking import substituting industrialization policies immediately after gaining independence in the 1960s to protect the domestic industry and to reduce foreign dependency through the production of industrial products. Import-substitution strategy was not sustainable as it depended on imports to maintain production, export revenue from primary products to finance production and on favorable terms of trade. In a study of long-term development and sustainable growth in Sub-Saharan Africa, Elbadawi and Ndulu (1996) found that the terms of trade deteriorated between 1970 and 1990 and accounted for a loss of income estimated at 3.8 percent of GDP. The disappointing economic performance of SSA economies from the late 1970s to the mid-1990s is evidence that the import-substitution development strategy was a failure (Rodrik 1998). The strategy discouraged trade and foreign direct investments to these countries and deprived SSA countries of external resources that are critical for economic growth (Rodrik 1998).

Foreign direct investment (FDI) is an important source of growth in host countries (Blomstrom and Kokko 1998; Li and Liu, 2005). Foreign direct investment enables low income host countries to build up capital stock, acquire skills through labor training and transfer of technological know-how and managerial skills required for economic progress (Blomstrom and Kokko 1998). A majority of sub-Sahara African countries fall in the category of countries with low income and savings levels and lack access to international capital markets. Foreign direct investments can boost to domestic capital investments in these countries. Unfortunately, SSA countries have been unsuccessful in attracting foreign direct investment flows compared to other regions.

In another article, Kaplinsky and Morris (2009) analyze the impact of foreign direct investment (FDI) and domestic investment (DI) on economic growth in Sub-Saharan Africa for the period 1990–2003. The results show that direct investment is positive and significantly correlated with economic growth in both the OLS and fixed effects estimation, but FDI is positive and significant only in the OLS estimation. The study also found that FDI has an initial negative effect on direct investment and subsequent positive effect in later periods for the panel of countries studied. In another interesting article, Elmawazini and Nwankwo (2012) the technology gap effects of foreign direct investment in sub-Sahara Africa and pointed out that the technology gap between SSA and OECD countries is a major factor in the effectiveness of FDI on industrial capacity of SSA countries relative to other countries,(using OECD countries as proxy for other developed countries) Kelemli, Chanda, Ozcan and Sayek, (2004) on how local financial markets impacts the link between FDI and growth argue that the countries with only well-developed financial markets derive more benefits from FDI flows. Borensztein, Gregorio and Lee (1998), studied the effect of foreign direct investment on economic growth in a cross-country regression using data on FDI flows from developed to developing countries for over two decades. The authors found that FDI is an important channel for the transfer of technology and contributes more to growth than domestic investment. The study also found that FDI contributes to economic growth only when the country has sufficient stock of human capital that enhances the absorptive capacity of recipient countries especially in the diffusion of new technology.

The effect of FDI on the economic growth of the recipient country depends on the absorptive capacity of the recipient. Of particular importance is human capital, fundamental elements of freedom such civil rights and political rights, and political stability. In a study of the determinants of foreign direct investment on a sample of 29 SSA countries from 1980 to 2003, Suliman and Mollick (2009) found that human capital measured with literacy rates, political and civil rights have positive effects of the flow of FDI. Their results also show that civil war has a negative impact on the flow of FDI to the region. These results are consistent with results obtained by Borensztein et al., (1998) that availability of human capital enhances absorptive capacity of the recipient country of FDI. The contribution of education and FDI to economic growth in Sub-Saharan Africa has also been investigated by Anyamele (2010) with results that show a significant relationship between FDI and output growth in sub-Saharan African countries. It is important to emphasize that human capital formation is not only an input into the production process it also enhances the absorptive capacities of SSA economies.

Promoting and sustaining economic development in SSA requires the mobilization of domestic and external investments. Unfortunately, aid flows to the region has dwindled and the export share of SSA countries is low requiring an increase in foreign direct investments to finance economic development .The improvement in economic policies and the adoption of outward-looking development strategies by Sub Saharan Africa countries has rekindled economic growth and created an environment that attracts foreign direct investment to the region. There have been a large increase in foreign direct investments to sub-Sahara Africa in recent years and despite this growth, the share going to the region is only a small proportion of the total direct investment going to developing countries. In 2008, sub-Sahara Africa received a total of $64 billion compared to only $2.2 billion and $15 billion in 1980 and 2004 respectively. Foreign direct investment to sub-Sahara Africa is projected to more than double in the next few years and this growth in optimism and confidence has led to a surge in the flow of FDI to the region from the United States, China and South Africa. The growth in intra-African investment flow has also been a key driver of this growth. In addition, FDI especially in the service sector have received a boost from an emerging middle class in Africa countries while FDI to the extraction industries are also attracting huge attention.

Since 2007, foreign direct investment projects from emerging countries where SSA countries heavily rely on for their capital needs grew at a rate of 21 percent. This can be compared with investments from developed countries, which grew at only 8 percent. The top contributors to SSA direct investment from emerging countries include: India with 237 FDI projects, South Africa (235), UAE (210), China (152), Kenya (113), Nigeria (78), Saudi Arabia (56), and South Korea (57). While investments into North Africa have stagnated, foreign direct investment flows into SSA grew at a rate of 22 percent since 2007 indicating a high potential for growth in the region. Ernst and Young (2013) have reported based on IMF data that the GDP in SSA is estimated to reach 6.4 percent growth in 2014.

The pattern of the flow of USA direct investment to sub-Sahara Africa is similar to the flow of US direct investment to developing countries as a group. US direct investment to developing countries has been on the decline since the last part of the 1990s (Jackson, 2012). The share of US direct investment to developing countries declined from 37% in 1996 to 21% in 2000. By 2010, the share of total US direct investment abroad going to developed economies was estimated at 70% while Africa received barely 1.5% of the total. This pattern is consistent with the pattern of trade between the United States and African countries which accounts for only 2% of total US trade with the rest of the world despite the framework laid out in the African Growth and Opportunity Act (AGOA) enacted by the US Congress in 2000 to promote trade with African countries .Since its inception, AGOA has made remarkable contributions to African economies. However, the gain from AGOA has been quite uneven. While some countries have substantially benefited from this initiative, there has been no remarkable transformation of African economies arising from this partnership (Kimenyi 2013).

As regard US direct investment in SSA countries, a bulk of the total flow of US direct investment to Sub Sahara Africa is concentrated in mining and extractive industries and less is allocated to manufacturing. The total US stock of investments in Africa in 2011 was $57 billion while $33 billion was in the extractive industries alone. Even when the US invests in manufacturing industry, most of it is received by a few countries notably South Africa with 67 percent of total US trade with Africa. In 2011, US direct investment to SSA was only $3.4 billion and muck of these flows is concentrated in a few countries. The three major recipients are Mauritius, a tax haven with favorable financial institutions with very low taxes, South Africa and Angola. With the US selecting which SSA to invest and concentrating these investments in extraction sector, the question which remains unanswered is whether US direct investment has had any impact on economic growth in SSA countries and whether it a valuable source of funds to fill the capital-gap that exists in these countries because of their lack of access to international capital markets. The study

should also investigate why US companies are less interested in locating their businesses in SSA even when the growth prospects in the region are attractive.

International comparable data for capital stock is generally not available for all Sub-Saharan African countries and will be estimated using the perpetual inventory method as the first step in studying the impact of US foreign direct investment on Sub-Saharan Africa economics. The study utilizes panel data for the period 1996 to 2013 to investigate the effect of US direct investment on per capita income growth in Sub Saharan Africa. We estimate two separate equations in order to isolate the effect of US direct investment on real GDP growth. The first equation considers domestic stock of capital in SSA as one of the covariates in the regression while the second equation includes US foreign direct investment data to the capital stock variable. The estimations are based on the random and fixed effects models and on the generalized methods of moments (GMM).

Economic Performance and US Trade and Investment in Sub-Saharan Africa

The pattern of US trade with Sub Saharan Africa and US foreign direct investment in Sub Saharan Africa are inextricably related. With regards to trade, AGOA has provided benefits to both the United States and Sub-Saharan African countries through expanded access to markets and investment opportunities. US foreign direct investment to SSA has been on the rise since 2000 until recently when it started to slow down with US being outpaced in investments by the BRICS countries.

2.1 Economic Performance of Sub Saharan Africa

Most SSA countries experienced strong economic growth shortly after independence in 1960s, until the 1973 to 1974 oil crisis which adversely affected these countries in unprecedented proportions. The crisis originated from the decision by OPEC Arab countries to restrict oil production to raise prices. During the crisis the modest growth enjoyed by SSA countries eroded and aggregate capital growth dropped. SSA countries stagnated during the 1980s when earnings from nonoil exports plummeted combined with other structural difficulties with the impact heavily felt by nonoil exporting countries. With the decline in the terms of trade and a shrinking of markets for exports, SSA entered into a prolonged economic stagnation and decline until the mid-1990s when most countries experienced resurgence in economic performance.

Economic growth of SSA countries has been historically volatile and this tends to dampen investments and even obscure years of high performance (Langton, 2003). However, since 1995, growth rates became less volatile and evenly distributed among countries. Based on World Bank African Development Indicators, 2007 data, the average growth rate of SSA was 4 percent between 2000 and 2005 compared to less than 1 percent during the first half of the 1990s. The IMF World Economic Indicators estimates show an estimated growth rate of 5 percent between 1997 and 2006 (Table 1). Several factors account for the resurgence of growth and spectacular economic performance of the region in particular and Africa in general since the mid-1990s.

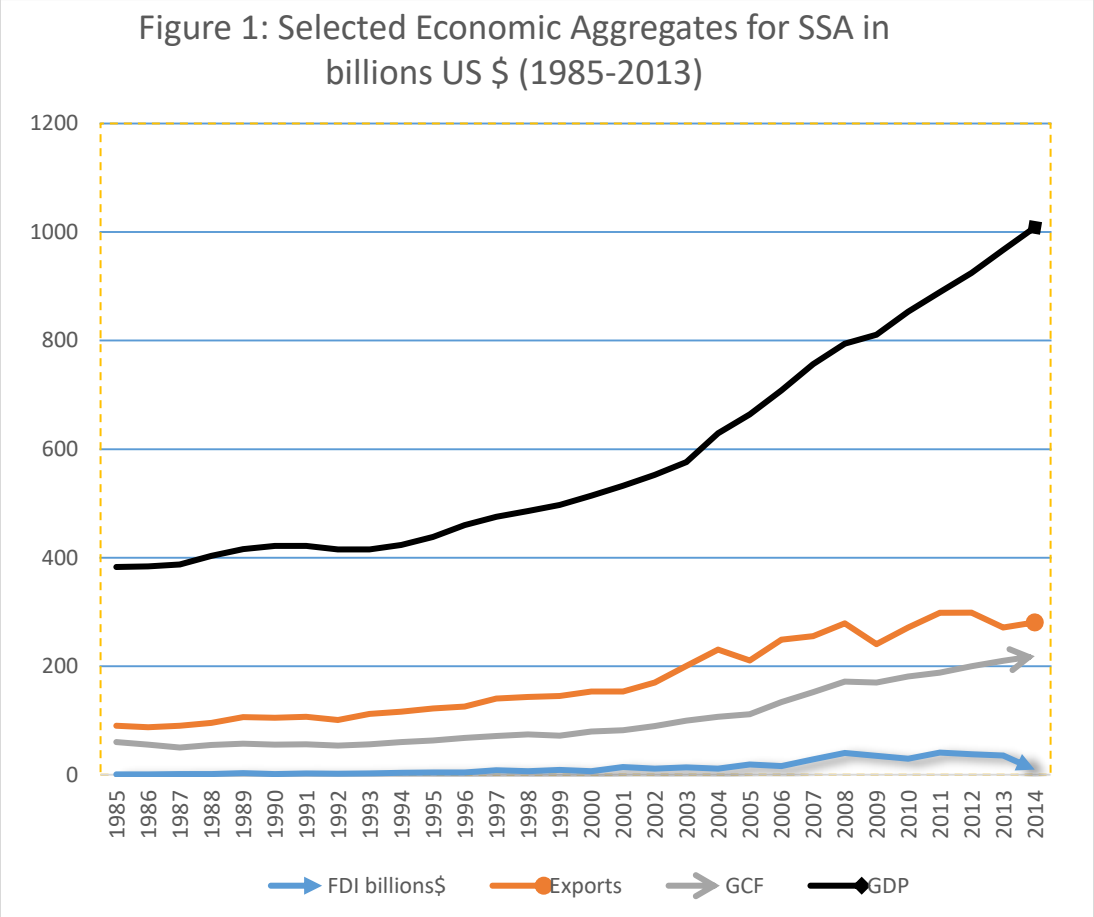
Table 1: Growth Rates of GDP by Country Economic Groups (Percentage change)

Country Groups	1997-2006	2007	2008	2009	2010	2011	2012	2013	2014
Sub-Saharan Africa	5.0	7.6	6.0	4.1	6.6	5.0	4.3	5.2	5.0
Advanced economies	2.8	2.8	0.2	-3.4	3.1	1.7	1.2	1.1	1.8
United States	3.3	1.8	-0.3	-2.8	2.5	1.6	2.2	1.5	2.4
Latin America and the Caribbean	3.1	5.7	3.9	-1.3	6.1	4.9	3.1	2.9	1.3
Low income developing countries	6.0	7.4	5.9	5.9	7.1	5.3	5.2	6.1	6.0
Middle East and North Africa	4.9	6.4	5.2	2.2	5.2	4.6	5.0	2.1	2.6

World economic growth	4.0	5.7	3.1	0.0	5.4	4.2	3.4	3.3	3.4

Source: IMF, World Economic Indicators database.

According to a report by McKinsey Global Institute (MGI) published in 2010, the key factors that explains Africa growth surge are macroeconomic stability, political and microeconomic reforms implemented across various countries of the region. SSA countries have understood that political conflicts, civil unrest and deadly hostilities impede economic progress and most countries have resolved to put an end to these. More prudent macroeconomic policies such as low inflation, lower budget deficits and lower debts can stir economic growth and most countries have doubled efforts in maintaining stable macroeconomic policies. Finally, most countries have implemented market friendly reforms as well as legal and regulatory systems that foster trade and exchange of goods and services (MGI, 2010). In addition to markets and macroeconomics reforms, many SSA and some countries have benefited from debt forgiveness under the highly indebted poor country initiatives.



Source: Constructed based on World Bank Development Indicators 2015

Sub-Saharan Africa has continued to grow despite the gloomy global economic environment according to the International Monetary Fund Regional Economic Outlook published in 2013 and World Bank Development indicators, 2012. Since the beginning of the global economic meltdown in 2008 and the weak global economic environment that persist, high commodity prices and the strong domestic demand have continued to sustain output expansion. As depicted in Table 1, the region grew at 5 percent in 2011 and exceeded that rate in 2012 and 2013 respectively was higher than the World average. The growth has been largely fueled by increases in commodity prices, new resource exploitation and improved domestic policies that ensued strong growth even in low income countries. This performance has not come without variations across the region. The sustained growth is also attributable to sound

macroeconomic policies implemented across the region (IMF, 2013). An increase in commodity prices, increase export diversification to fast growing Asian markets and stable financial markets that were more or less shielded from the global financial meltdown fueled the growth of SSA countries.

The most important source of growth for SSA was the export of natural resources which contributed significantly to exports and revenue for most of the countries. Figure 1 shows the evolution of selected economic aggregates for sub Saharan Africa from 1985 to 2013. Sound economic policies in most countries in the region are yielding results that are deemed commendable. Exports revenue is on the rise, aggregate output is also rising for most countries and foreign direct investments are also rising. Output growth in most middle income countries in Sub-Sahara Africa was adversely affected and decline as a result of the global slowdown. Exports were slightly affected by the global economic meltdown of 2008 to 2009 but have picked up again (Figure 1).

2.2 US Trade with Sub Saharan Africa

The African Growth and Opportunity Act, or AGOA is a legislation approved by the United States Congress in May 2000 to encourage export-led growth and economic development in Sub-Saharan economies and to improve economic relationship between the United States and the region. The legislation which is scheduled to expire in 2015 unless reauthorized is a non-reciprocal unilateral trade preference program that allows certain products to be imported duty-free from eligible Sub-Saharan African countries to the United States. Since its enactment, AGOA has contributed to expansion of SSA economies, increased the volume of trade, reduced poverty and created jobs (Kimenyi, 2011). In an NBER working paper titled, "Trade Growth under AGOA" Frazer and Biesebroech (2007), found that AGOA and the removal of tariff restrictions that came with it, had a significant effect on the apparel imports and other agricultural and manufactured products from SSA into the USA. This conclusion has been corroborated by other studies on the effectiveness of AGOA on trade.

Condon and Stern (2011) in a study of the effectiveness of the African Growth Opportunity Act, found that AGOA has had a positive impact on apparel exports from a small number of countries but that outside the apparel sector, there is no evidence that any other sectors benefitted from AGOA. They further argued that the inclusion of agricultural commodities to the preferences covered under AGOA could broadly improve the economic impact of AGOA on SSA economies. In a Brooking Institute report "AGOA, Looking back, Looking forward", Some studies have also provided evidence that exports under AGOA have increased more than 500 percent, from $8.15 billion in 2001 to $53.8 billion in2011. About 90 percent of these exports were from the oil sector, which underscores Africa's growing strategic importance to the U.S. Under AGOA, the volume of non-energy exports to the U.S. has increased by 275 percent, from $1.2 billion to $4.5 billion between 2001 and 2011. The number of countries exporting non-energy products under AGOA has also increased, from 13 to 22 during this period. The authors strongly advocate extending the AGOA beyond 2015 to the current 40 Sub-Saharan countries covered.

Despite the contributions of AGOA to economic growth and development in SSA countries, there are concerns over the effectiveness of this legislation, and particularly on the fact that the legislation has not contributed to any discernible transformation of the economies of the region, (Kimenyi, 2011). However, the gains from AGOA could be maximized through significant reforms that include inter-alia, reauthorize the legislation beyond the September 2015 expiration date, create certainty with regards to the duration of the AGOA preferences to avoid reauthorizations and periodic reauthorizations that hinders investments in SSA, expansion of AGOA to include agricultural products other than sugar in which SSA countries have a comparative advantage in supply, set a longer and uniform reauthorization of AGOA preferences and to include the "third-country fabric provision" which benefits SSA cotton-producing countries, and increase greater engagement and commitment by settling for a two-way trade in AGOA with US products having preferential access to SSA countries.

2.3 Pattern and composition of US foreign direct investment to SSA

The flows of US direct investment to Sub-Saharan Africa closely follow the pattern of the total world direct investment to Africa and to the region. The total amount of foreign direct investment to Africa and Sub-Saharan Africa based on UNCTAD data were respectively 9.5 and 6.2 percent respectively in 1970 corresponding to the period when the newly independent African economies recorded high but transient gains in output growth. From the mid-1970s, onwards, we see a pattern of both significant decreases with a drastic fall in 1980 when FDI to SSA represented barely 0.5 percent of world total. While there were gains in the size of FDI flows from 2000 to 2012 respectively as shown on Table 2

below, in relative terms, this was only about 2 percent and 3 percent of world total respectively compared to other regions of the world.

Table 2: Foreign Direct to Selected Regions as a Percentage of Total

YEAR	Developing economies	Developed economies	Africa	Sub-Saharan Africa
1970	28.88	71.12	9.49	6.23
1975	36.55	63.45	3.41	4.91
1980	13.81	86.14	0.74	0.48
1985	25.37	74.61	4.37	1.77
1990	16.76	83.20	1.37	0.80
1995	34.04	64.76	1.72	1.37
2000	18.72	80.78	0.68	0.48
2005	33.80	62.80	3.12	2.12
2012	52.03	41.51	3.70	3.04

Source: Authors calculations using UNCTAD database

The total amount of US overseas direct investment estimated at slightly less than 70 percent are in developed countries with Europe accounting for over half of US investments abroad. While 15 percent and 20 percent of US direct investment abroad went to Asia and Latin America respectively during 2012, investments in Africa and Middle East accounts for only 1.4 percent, and 1 percent respectively (Table 3). An earlier study of the determinants of foreign direct investment in SSA by Asiedu (2002) show that compared to Europe and Asia, U.S. direct investment to SSA has been quite small and supporting this assertion with data, the study show that the increase has been 5200 percent for Europe and Central Asia between 1980-89 and 1990-98, 942 percent for East Asia and Pacific, 740 percent for South Asia, 455 percent for Latin America and Caribbean, and 672 percent for all developing countries. However, the BEA has suppressed most data for SSA to avoid disclosure of data of individual companies; there is insufficient detail to break out SSA countries from Africa as a whole. For the latest year for which data is available, the outflows of US direct investment to Sub-Saharan Africa was estimated at $3.4 billion.

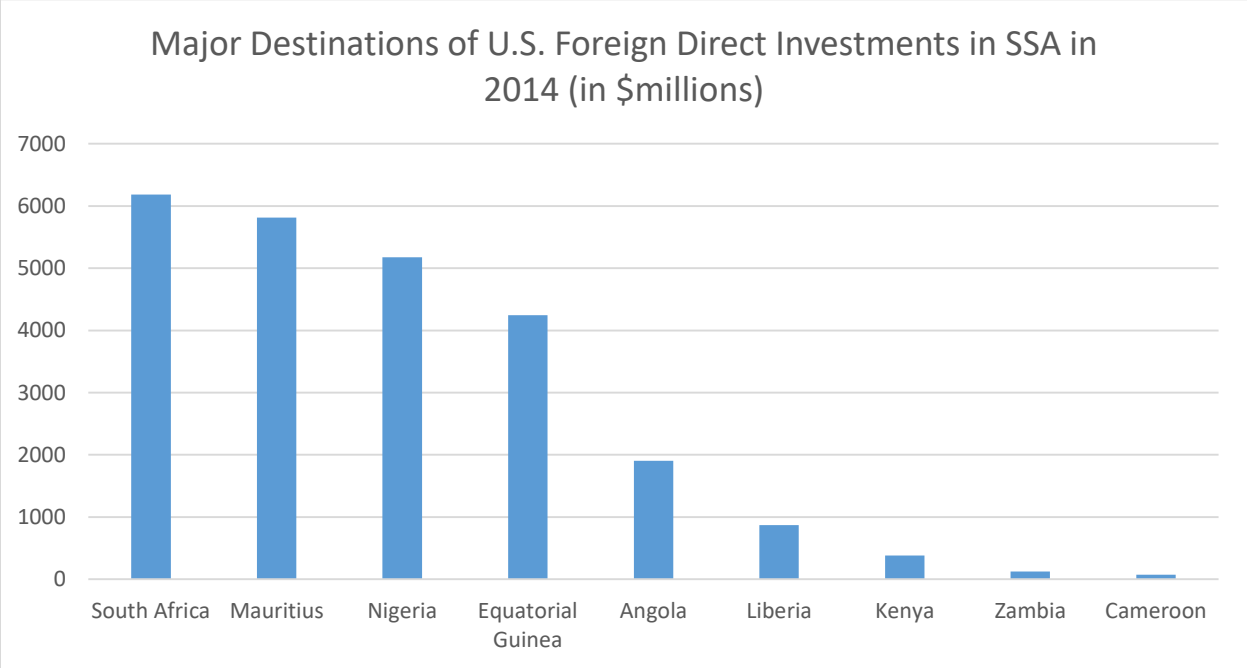
Table 3: U.S. Direct Investment to Major Regions as a percentage of total

	1985	1990	1995	2000	2005	2010	2012	2014
Canada	20.1	16.1	11.9	10.1	10.3	7.9	8.3	7.8
Europe	45.6	49.9	49.3	52.2	54.0	54.4	55.5	56.5
Latin America	11.8	10.1	11.8	12.0	7.0	6.3	5.9	5.2
Africa	**2.6**	**0.8**	**0.9**	**0.9**	**1.0**	**1.5**	**1.3**	**1.3**
Asia and Pacific	1.9	0.9	1.0	0.8	0.9	0.9	0.9	1.1
Australia	14.8	15.0	17.6	15.7	16.8	15.2	15.3	15.0
Asia and Pacific	14.8	15.0	17.6	15.7	16.8	15.2	15.3	15.0
China	3.8	3.5	3.5	2.6	3.4	3.4	3.7	3.7
Hong Kong	0.1	0.1	0.4	0.8	0.8	1.6	1.2	1.3

Source: U.S. Bureau of Economic Analysis

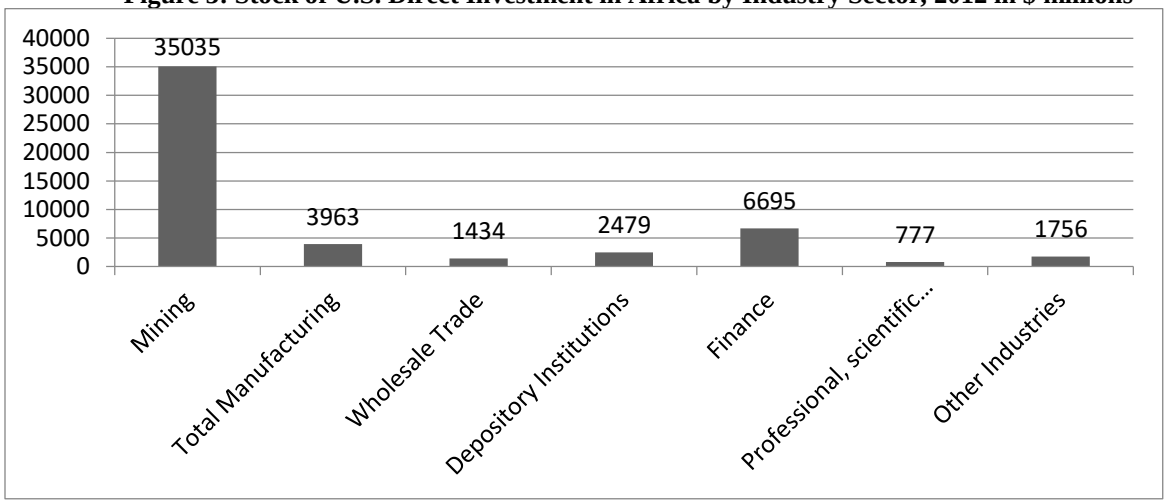
The fact that the low share of US direct investment going to SSA is minimal to have any meaningful impact in the growth of the region is further exacerbated by the concentration of the investments in mining and extraction industries, which makes up about $33 billion of the $57 billion total stock of US direct investments in Africa. Of the total US direct investments in Africa, South Africa alone received a lion share of 67 percent of the investments directed towards the manufacturing sector. A bulk of the stock of US foreign direct investment to SSA were in Mauritius, a tax-haven where US companies pay low or no taxes to do business, South Africa, and Angola. The stock of US investments actually represents accumulation of investment over time and in terms of flows, South Africa, Ghana, Angola and Liberia were the largest recipients in 2011 (Table 4).

Figure 2. Major Destinations of U.S. Foreign Direct Investment in SSA in 2014 (in $ millions)



In the past, SSA countries were characterized as countries in civil unrest, famine, disease and poverty. This characterization gave investors a negative image of Africa and discouraged the flow of foreign capital into the region. While the characterization cannot be completely denied, the truth is that not all SSA countries can be identified with these circumstances and the dynamics is fast changing with only pockets of countries trapped in conflicts. Given the perception that Africa is a risky investment environment, private investors have been quite reluctant to provide lending for foreign direct investments and this to a larger extent explains the low level of US foreign direct investments in Sub-Saharan Africa. Except additional incentives are provided to U. S. firms to invest in SSA, investments by US firms in SSA will remain low.

Figure 3: Stock of U.S. Direct Investment in Africa by Industry Sector, 2012 in $ millions



Source: Authors Calculations based on data from *U.S. Bureau of Economic Analysis*

2.4 Factors affecting flows of US FDI to SSA

The reasons for the sluggish flow of U.S. FDI to SSA has been attributed to causes which inter-alia include; political unrest, infrastructure, openness of the host country, geographical location, and lower returns on capital invested. Using a dummy variable for Africa, Asiedu (2002), found that there is a negative impact on FDI for being an African country which is a pretty interesting result. She also found that because of inherent riskiness of Africa, higher returns are not necessarily inducing bigger FDI as is evident in non-SSA countries. This higher riskiness may be coming from uncertainty of government policy in the face of frequent regime changes. She suggested that Africa has been less consistent on trade reform and this has also impacted FDI as foreign investors have been wary of many African countries sometimes using trade liberalization as a tool to secure foreign aid and then discontinuing on its path. Lack of infrastructure is also a significant driving force behind less FDI flowing into SSA. Asiedu's paper seems to suggest that Africa and especially SSA is different from the rest of the world receiving FDI.

Model Specification

This study uses panel data for the period 1996-2013 to investigate the effects of United States foreign direct investment on per capita income growth in Sub-Saharan Africa. The expectation is that United States investments in Sub-Saharan Africa add to domestic capital which is expected to raise output growth in the host countries. To achieve this objective, we specify and estimate two growth equations with the first equation with no US capital added to capital variable while the second equation has US FDI added to the capital variable. The expectation is that this addition will make a difference in the estimations. Panel data analysis unlike the traditional least squares regression analysis allows the researcher to model differences in country-specific characteristics. This study adopts a variant of growth models applied in recent studies (De Mello 1999; Tiwari and Mutascu, 2010) to specify a relationship between per capita income and capital investments as follows:

$$y_{it} = \beta_0 + \beta_1 k + \beta_2 x_{it} + \alpha_i + \varepsilon_{it} \qquad (1)$$

where Y is the logarithm of real GDP per capita, i represents cross-sectional units with $i = 1,.....N$, and t denotes time period with $t = 1,.....T$. k denotes the logarithm of capital at 2005 constant US dollars with the exclusion of US FDI and x_{it} is a vector of other variables that affect economic growth. ε_{it} is the random error with $E(\varepsilon_{it}) = 0,$ and $E(\varepsilon_{ij}\varepsilon_{js}) = \sigma_{\varepsilon}^2$ while α_i is an unobservable country specific growth determinants that account for unobservable differences across countries. α_i is also assumed to have the properties of zero mean, independent of the random term ε_{it} and the regressors, and assumed to have a constant variance. To determine the impact of US foreign direct investment, we augment equation (1) to include US FDI as follows:

$$y_{it} = \beta_0 + \beta_1 k_{with} + \beta_2 x_{it} + \alpha_i + \varepsilon_{it} \qquad (2)$$

where k_{with} is host country capital augmented with US foreign direct investment. We test for evidence of correlation between the unobservable country specific effects and the determinants of economic growth. In the absence of such correlations, the appropriate specification of the regression equation will be a fixed effect panel model. However, rejecting the null hypothesis of no correlation between unobservable country-specific effects and the determinants of growth implies that the random effect will be the most appropriate for our analysis.

The estimations based on either the random or the fixed effect may tend to be inconsistent in the presence of endogeneity of per capita income or capital including other variables. Capital for instance can determine the growth of the host economy and economic growth can also determine capital. In response to such concerns we also use a dynamic panel model particularly the generalized method of moments (GMM) which has become popular for estimating panel data with small time period and large observations. The GMM model can well handle lagged dependent variables, unobservable country-specific fixed effects, endogenous independent variables, heterosdasticity and autocorrelation across and within countries (Arellano and Bond 1991). Given the dynamic nature of panel data we can start by specifying the following dynamic panel data regression model:

$$y_{it} = \alpha + \beta_1 y_{i,t-1} + \beta_2 k_{it} + \beta_2 x_{it} + \eta_i + \varepsilon_{it} \qquad (3)$$

Arellano and Bond (1991, propose the transformation of equation (3) into first differences to eliminate country specific effects α_i as follows:

$$(y_{it} - y_{i,t-1}) = \gamma(y_{i,t-1} - y_{i,t-2}) + \beta_1(k_{it} - k_{i,t-1}) + \beta_2(x_{it} - x_{i,t-1}) + (\varepsilon_{it} - \varepsilon_{i,t-1}) \qquad (4)$$

Arellano and Bond (1991) proposed the use of lagged levels of the explanatory variables as instruments to address the possible simultaneity bias of the explanatory variables and the correlation between $y_{i,t-1} - y_{i,t-2}$ and $\varepsilon_{it} - \varepsilon_{i,t-1}$. To operationalize the above specification, we perform the Arellano and Bond tests of the null hypothesis no second order serial correlation in the error term of the difference to get rid of country specific fixed effects.

The estimation of the GMM model is done in two steps (Arellano and Bond 1991). Step one estimators applies weighting matrices that are independent of the estimated parameters while step two estimator uses the optimal weighting matrices in which the moment conditions are weighted by a consistent estimator of the covariance matrix thus making the two-step estimator asymptotically more efficient than the one-step estimator. In addition to fixed and random effect estimators, this study will also employ the one-step and the two step estimators.

3.3 Data, Variables Definitions and Estimation

The data for this study is obtained from the World Development Indicators published by the World Bank and the US Bureau of Economic Analysis. The dependent variable for this study is the log of real GDP per capita of SSA countries. We capture the effect of population growth on the flow of FDI and including RGDP per capita as the dependent

variable which allows us to control for the effect of population growth. The study also includes the following control variables: capital, openness, inflation, human capital accumulation, terms of trade, and political instability.

The data for capital is estimated based on ADI data of the World Bank using the perpetual inventory method. The key variable is the stock of capital which is calculated to include the flow of US FDI to SSA in the first equation and a second specification which excludes the flow of FDI from the US. The role of openness as a determinant of economic growth has been a debatable issue in several studies. While this role has been doubtful in some studies (Krugman, 1994; Rodrick and Rodriguez, 2001), openness has been found in other studies as a significant determinant of economic .In the current study, openness (OPEN) will be measured as the sum of exports and imports as a percentage of GDP at constant prices. The study also includes inflation (INF) as an indicator of macroeconomic stability. A stable macroeconomic environment attracts foreign direct investments and stimulates economic growth, and price stability in particular is a key measure of macroeconomic stability. Several studies have found that an increase in inflation result in the reduction of economic growth (Andres and Hernando, 1997). The variable is defined by the CPI of various countries in the sample and is obtained from the IMF World Economic Outlook database.

Human capital has been found in several studies as an important source of economic growth. While measures of human capital such as years of schooling have been used as proxy for human capital, public expenditures on education will be used for the present study based on the availability of data (Primary enrollment is considered a measure of human capital in which case higher level of primary enrollment implies higher level of human capital and this is expected to have a greater impact on economic growth.

The study also includes a set of institutional variables and these variables have been widely used in previous studies. A key institutional determinant of economic growth is political instability. There is a strong connection between economic growth and political instability. Unstable political environments create uncertainty in the economic environment which may reduce investments and economic growth. The measure of political instability used for this study is the propensity of government changes. The number of times a government changes in a year during which a new prime minister is appointed or half of the cabinet members are replaced by new members is a measure of political instability .Some studies have found that economic growth is lower than it would be in countries where there is a high propensity of government collapses.

Brambila-Macias and Massa (2010), used the bias-corrected least squares dummy (LSDV) to estimate the relationship between economic growth and four different types of capital flows into sub-Saharan Africa and arrived at the conclusion that FDI and cross-border bank lending exerted a significant impact on a sample of 15 Sub-Saharan African countries over the period 1980-2008. The results of their study found that a 10 percent fall in FDI could result in a 3 percent decrease in the growth of per-capita income in sub-Saharan Africa highlighting the role of private foreign capital flows in the development of the continent.

EMPIRICAL RESULTS AND DISCUSSION

In this section, we present the empirical findings of the study using two different estimated equations to determine whether United States Foreign direct investment has any positive impact on economic growth is Sub Sahara Africa. The study uses panel data from a sample of fourteen Sub Saharan African countries for the period ranging from 1996 to 2013. The dependent variable selected for the study is the logarithm of per capita while the covariates include capital with the absence of United States direct investment in these countries in one equation and capital including US direct investment in the second equation.

Table 5: Econometric results without US Foreign Direct Investment

Variable	**RE**	**FE**	**GMM** **One-step**	**GMM** **Two-step**
GDP(t-1)			0.7411*** (0.0792)	0.4697** (0.1638)

$K_{(\text{without US FDI flows})}$	0.3762*** (0.1122)	0.4164*** (0.1319)	0.0710* (0.0354)	0.2514*** (0.0803)
hc	0.1282 (0.1402)	0.08714 (0.1549)	0.1162** (0.0536)	0.1209* (0.0663)
Open	0.0008** (0.0004)	0.0007** (.0003)	-0.00026 (0.0002)	0.0003 (0.0004)
Inflat	-0.0016** (0.0007)	-0.0015* (0.0007)	0.00013 (0.0009)	1.41e-06 (0.0009)
Infra	0.0071** (0.0029)	0.00514 (0.0034)	-0.0015 (0.0022)	-0.0211 (0.0243)
polstab	0.3141* (0.1651)	0.35294* (0.1684)	0.0852** (0.0370)	0.3287 (0.1990)
$K_{\text{without}} * polstab$	-0.0594* (0.0360)	-0.0689* (0.0367)	-0.0167* (0.0087)	-0.0777 (0.0475)
cons	0.9704 (0.4029)	0.8790 (.4313)		
Hausman		35.79 (0.0000)		
A-B test for Ar(1)			-1.96 (0.050)	-2.19 (0.029)
A-B test for Ar(2)			2.69 (0.007)	-1.76 (0.078)
Hansen test			7.47 (.880)	5.69 (1.000)
No. of observations	210	210	154	154

Standard errors of coefficients are in brackets below the value of the coefficients.
For specification tests, the p-values are in brackets under the computed statistical tests.
The A-B tests are the Arellano-Bond test of serial autocorrelation.
*** 1% level of significance ** 5% level of significance * 10% level of significance

Table 5 presents the results of the regression including the various estimators. The random effect model was rejected in favor of the fixed effect model using the Hausman test which tests the null hypothesis of the correlation among countries in the sample against the alternate hypothesis that there is correlation between the unobservable individual effects and the determinants of growth. Columns 4 and 5 of Table 5 also present results based on one-step estimator and two-step estimator respectively. The Arellano-Bond tests also indicate no evidence of serial correlation of order 1 or 2 for both equations. Generally with the random and fixed models we have the expected sign for all the variables. Domestic capital was found to be a robust determinant of growth in these countries while human capital was not a significant factor of growth. The results from the fixed effect model also show that open economies are more likely to grow faster. Inflation was found to have a negative impact on economic growth in SSA. High level of inflation in SSA highlights the macroeconomic weaknesses of SSA countries. Also, accordingly, political stability would imply more economic growth, however, the coefficient has the expected sign and is only significant at 10 percent. The study included an interaction term ($K \times polstab$) following as suggested by Azman-Saini et al. (2010), Borensztein et al. (1998). This variable implies that the marginal effect of capital on growth depends on political stability. The variable was not found to be significant in the random nor the fixed effect model. The one-step and the two-steps estimators indicate that domestic capital had a positive and significant effect on economic growth is SSA. Both the one-step and the two-step models also found a significant and positive relationship between human capital and economic growth in SSA. Political stability was also found to have a positive and significant impact on economic growth in SSA. Although the marginal effect of capital with no foreign investments weakly depend on the extent of political stability in these countries, the coefficient of this variable is negative in the various estimators.

Table 6 below estimates the impact of US foreign direct investments on economic growth in a sample of Sub Saharan African countries. The results from the random and fixed effect models are presented in the second and third columns while four and five show the one-step and the two-step generalized methods of moment estimators. Although the Hausman test choose the random over the fixed effect model, the panel structure helps in capturing countries specific effects that are unobservable. The results obtained from the GMM are almost consistent with the results from the random and the fixed effect models with the exception of human capital. The GMM specification tests were satisfactory for the Arellano-Bond AT (2) tests for autocorrelation and the Hansen J-test was used to test whether the instruments as a group are exogenous. As the results indicate and surprisingly capital augmented with US foreign direct investment is not a significant determinant of growth in Sub Saharan Africa. However, the variable has a positive sign as expected in the fixed and random effect model but not in the GMM models. The results from the GMM models also indicate that human capital have a significant positive effect on economic growth in SSA. The coefficient attached to the logarithm of initial GDP per capita suggests evidence of growth convergence. Political stability was found to be a statistically significant determinant of economic growth in Sub Saharan Africa countries. To determine the marginal effect of political stability on capital investments including US foreign direct investments, an interaction term was include in the estimated equation. The results show that the marginal effect of capital with US foreign direct investment largely depended on political stability of these countries suggesting that an increase in political instability will negatively affect capital investment including US capital investments. Macroeconomic economic stability measured with inflation was found to be positively and statistically significant related to economic growth in SSA. Infrastructure was only found to be significant in the random effect model.

Table 6: Econometric results with US Foreign Direct Investment

Variable	RE	FE	GMM One-step	GMM Two-step
Gdp(t-1)	-	-	0.8001*** (0.0859)	0.6097*** (0.0999)
$K_{(with)}$	0.2627 (0.1917)	0.2838 (0.2518)	-0.0391 (0.0497)	-0.0983 (0.0692)

hc	0.2087 (0.2169)	0.1775 (0.2563)	0.1692* (0.0847)	0.3319*** (0.0891)
open	0.0009** (0.0004)	0.0009* (0.0004)	0.0004 (0.0004)	0.0006** (0.0003)
inflat	-0.0016*** (0.0006)	-0.0016*** (0.0005)	-0.0001 (0.0007)	-0.0009** (0.0003)
infra	0.0072** (0.0029)	0.0049 (0.0036)	-0.0012 (0.0025)	-0.0015 (0.0017)
polstab	0.0347 (0.0223)	0.0399* (0.0215)	-0.0545 (0.0316)	-0.0798*** (0.0257)
$K_{without} \times polstab$	0.0002 (0.0004)	0.0001 (0.0004)	0.0007* (0.0003)	0.0009*** (0.0002)
const	1.317425 (0.5255)	1.3008* (0.6956)		
Hausman		10.27 (0.1739)		
A-B test for Ar(1)			-2.54 (0.011)	-1.02 (0.306)
A-B test for Ar(2)			-2.36 (0.018)	-1.52 (0.128)
Hansen test of overid. restrictions			5.62 (0.71)	5.62 (0.64)
Number of observations	210	210	154	154

Standard errors of coefficients are in brackets below the value of the coefficients.
For specification tests, the p-values are in brackets under the computed statistical tests.
The A-B tests are the Arellano-Bond test of serial autocorrelation.
*** 1% level of significance
** 5% level of significance
* 10% level of significance

CONCLUSION

This principal goal of this study was to investigate the impact of United Sates foreign direct investments on economic growth in Sub Saharan Africa for the period 1986 to 2013. Panel data was used as the appropriate data structure that accounts for the heterogeneity among countries. The results found significant effect of domestic capital stock on the growth of SSA countries but found no evidence that United States direct investments have any direct effect on the growth in the per capita income in these countries. The results obtained for equation 2 for both the fixed and the random effects on one hand and on the one-step and two-step GMM models are rather mixed because of the negative sign of the "capital with" variable in the latter group of models.

In both equations, political stability was found to have a significant effect on the dependent variable. Political stable could attract more foreign direct investments and grew faster while politically unstable countries attract less investment and grew less. It's a two-way relation which could either result in a negative coefficient or positive one. The GMM models in both equations found human capital to be significantly related to output growth in SSA countries. Also, openness plays a key role in the growth of SSA countries. This is not surprise as more opened countries tend to be more competitive and more efficient in the use of resources which in turn affect output growth.

The non-significant impact of United States foreign direct investment in SSA can be explained by the concentration of US investment on mineral extractions and petroleum whose proceeds end in the pockets of the ruling elite common in most SSA countries. Investments in extractive sectors are not an effective way of transferring skills to the locals. Besides, United States companies investing in SSA often concentrate in few countries either because they have fewer taxes or simply because the procedures for doing business in these countries are more simplified. The United States is capable of doing more in SSA especially at this time that this region has the fastest growth rates and has the potential to do better. US businesses could also benefit from the cheap labor and the nearness to source of raw materials and a growing potential market for finished products.

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