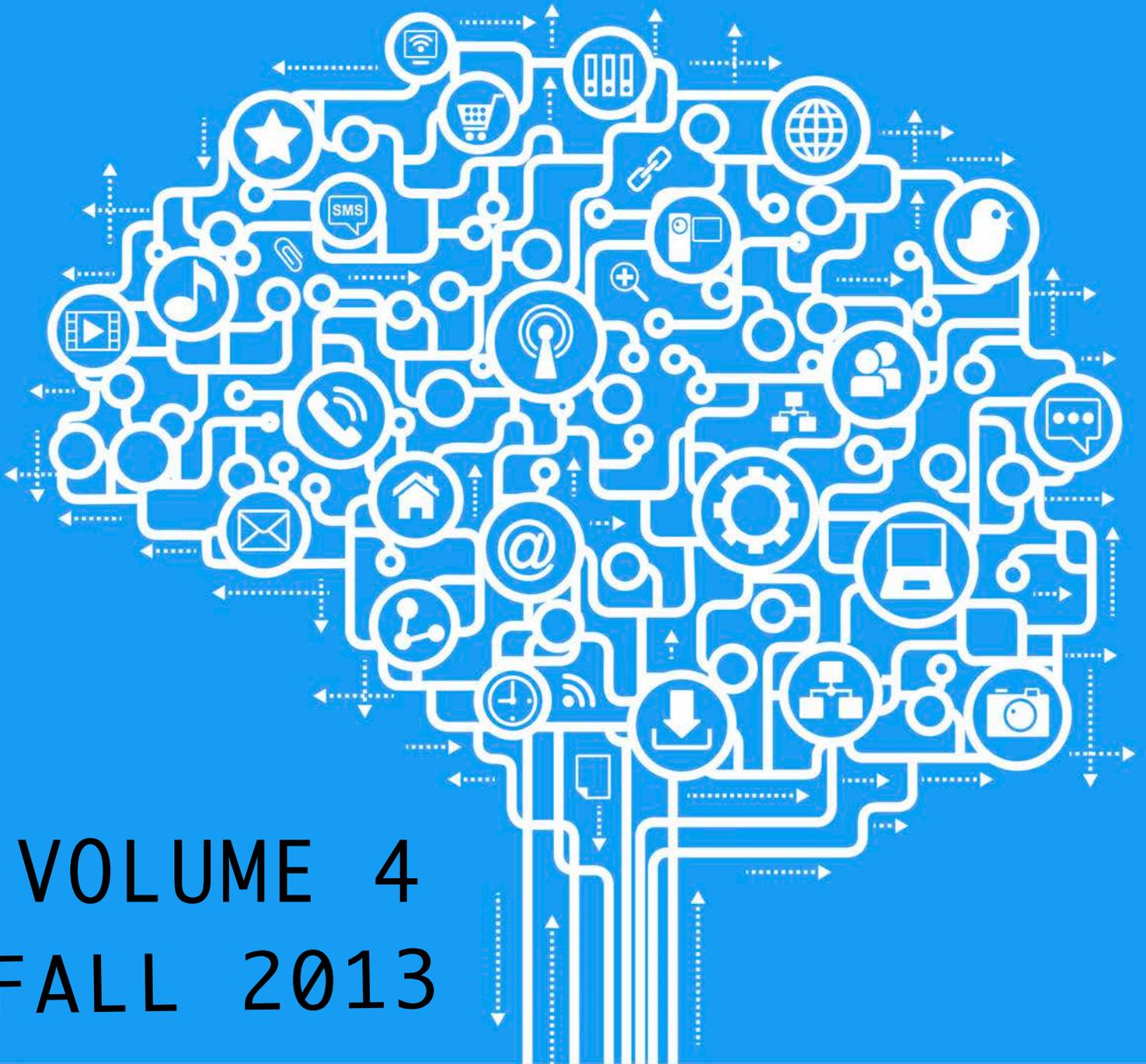


# THE RICE CULTIVATOR

An Undergraduate Public Policy Research Journal



VOLUME 4  
FALL 2013



Rice University's Baker Institute  
**STUDENT FORUM**



## Table of Contents

Editor's Note.....	5
A Case Study on India's Liberalization in the Early 1990s.....	7
<i>Julian Yao and Connor Hoppe</i>	
A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil Bangladesh, and Mali.....	15
<i>Rohini Sigireddi</i>	
Comprehensive Sex Education for Today's Youths.....	25
<i>Irene Eunjung Oh</i>	
Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies.....	28
<i>Daniel Cohen</i>	
Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits.....	45
<i>Neeraj Salhotra</i>	
Integrity in Elections: Modern U.S. Policies Concerning Voter Fraud.....	57
<i>Clara Roberts</i>	
Marijuana: An Opportunity to End an Unwinnable War.....	62
<i>James Dargan</i>	
Medical Education Reform.....	73
<i>Sophia TonNu</i>	
Muslims in the West: Sharia and Multicultural Citizenship in the United Kingdom and Canada.....	84
<i>Sabrina Toppa</i>	
When Food Attacks: A Review of the Food Availability Disparity in Houston.....	94
<i>Krystal Lau</i>	



**THE RICE CULTIVATOR: A STUDENT JOURNAL OF PUBLIC POLICY RESEARCH**  
**VOLUME 4**  
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A PUBLICATION OF THE BAKER INSTITUTE STUDENT FORUM  
RICE UNIVERSITY

The Baker Institute Student Forum 2012-2013 Research Committee is pleased to present you with the fourth edition of *The Rice Cultivator: A Student Journal of Public Policy Research*.

*The Rice Cultivator* is a one of only a handful of undergraduate public policy journals that is entirely undergraduate student written, edited, and published. As an arm of the James A. Baker Institute for Public Policy, the Baker Institute Student Forum publishes *The Rice Cultivator* in hopes of engaging undergraduate students in public policy research, showcasing the innovative public policy research projects conducted by Rice University undergraduates, and promoting thoughtful, reasoned dialogue about public policy within the Rice community.

This edition of *The Rice Cultivator* will be the last that includes article submissions exclusively from Rice University undergraduates. We are pleased to announce that next year's edition of *The Rice Cultivator* will feature the winning submissions from the Baker Institute Student Forum's Inaugural Undergraduate Public Policy Competition. The competition's theme for 2013 will be health care policy, and featured submissions will address domestic health care policy concerns.

We would like to thank all of the authors who submitted excellent public policy papers to *The Cultivator*. Your articles will inform, enlighten, and challenge *The Cultivator* readers. We also extend many thanks to the Baker Institute Student's Forum faculty advisor, Joe Barnes, Bonner Means Baker Fellow, without whose unwavering support for undergraduate engagement in public policy, this journal would not be possible.

Please note that all views expressed herein reflect solely the opinions and perspectives of the authors and do not necessarily represent the views of the James A. Baker III Institute, Rice University, or the Baker Institute Student Forum.

As always, we hope that *The Rice Cultivator* will spread the message that public policy exists in many forms, and is accessible to all audiences.

The 2012-2013 Baker Institute Student Forum Research Committee

Rohini Sigireddi  
Sophia TonNu  
Kira Clingen



A Case Study on India's Liberalization in the Early 1990s  
*Julian Yao and Connor Hoppe*

### **Introduction**

In the past few decades, there has been much rhetoric regarding economic liberalization as a necessity for economic growth, especially in developing countries. The term “economic liberalization” encompasses the processes that promote a system of free trade, deregulation, elimination of subsidies, price controls and rationing systems, and the downsizing or privatization of public services. Economic liberalization has been essential to adjustment policies introduced in developing countries starting in the late 1970s, mostly in the context of conditions set forth by international financial institutions such as the International Monetary Fund (IMF hereafter) or World Bank in exchange for loans. Thus, the policies in many countries receiving loans from international financial institutions were shifted in the direction of a non-interventionist, laissez-faire approach to economic activity, an approach that many economists argued would spur growth and reduce poverty.

One of the countries that witnessed dramatic economic liberalization was India, in the wake of the economic crisis that precipitated from the late 1970s up to the early 1990s. During the 1991 economic crisis, caused by significant overvaluation of the Rupee, India experienced high fiscal and current account deficits, external borrowing to finance the deficits, rising debt obligations, rising inflation, and an inadequate exchange rate adjustment. Faced with an economic fiasco and with international communities pressuring India to reform towards economic liberalization, India accepted a reform package from the IMF and the World Bank with conditionality agreements focused towards economic liberalization. In this paper, we are mainly interested in whether economic liberalization policies enacted by the Indian government starting in the 1980s and into the 1990s served as a signaling device to make India a more attractive destination for foreign direct investment (FDI hereafter).

This paper is split into two sections: part I analyzes the theories behind how economic liberalization and FDI contribute to economic development, as well as how economic liberalization leads to changes in FDI through the context of signaling. Having established this framework, we then examine how the economic liberalization policies inherent in India's economic reforms since 1980 have contributed to the effect of FDI in Part II. To anticipate our results, we observe that the economic liberalization policies in the 1990s did

serve as a significant signal to foreign investors, as evident in the significantly increased FDI.

### **Part I: Theories of Economic Development, Liberalization and FDI**

#### **Economic liberalization and economic development**

A country that pursues policies of lowered economic barriers and more openness to the rest of the world is said to be enacting economic liberalization. These liberalization policies have many results in varied sectors of the economy. In this paper, we will focus on the effect that they have on the economic development of the country in which they are enacted. It has been empirically proven that economic liberalizations result in the increased economic development of a country. As Alessandra Bonfiglioli discusses in her paper that examines 93 countries from the period beginning in 1975 and ending in 1999, two manners in which liberalization increases economic development are through productivity growth and capital accumulation. Because productivity growth has a direct positive effect on marginal returns of labor, this liberalization allows the country to employ the resources it possesses in a more efficient manner, which is especially important in developing countries around the world. Equally important is capital accumulation, which allows developing countries to prepare for the future and ensure that the country will have the resources necessary to evolve and develop. Economic liberalization allows for a country to grow economically both in the short run as well as the long run, which is a necessary condition for sustained economic growth and development. As FDI levels are largely dependent on the level of economic liberalization in a country, FDI varies directly with economic liberalization and even have effects on the economic development of a country, both of which will be discussed in the following sections.

#### **FDI and economic development**

Economic development is dependent upon many factors, including governmental policies, cultural phenomena, and the way in which resources are allocated. Furthermore, due to the fact that economic development is partly dependent on FDI, economic development is also dependent upon the conditions that affect FDI. These conditions include lowered trade barriers, free markets, and free capital mobility, among others. Some of these must be met in order to allow economic development. For the purposes of this paper, we will discuss more specifically how FDI affects economic development in terms of the theories presented by some economists. It is

generally accepted that increased levels of FDI have a positive effect on economic development and growth by contributing to the resources that the country has to work with. Basu, Chakraborty and Reagle (2003) mention that FDI has the potential to increase the total factor productivity of the country through increases in capital stock, thereby leading to economic growth both in the short run as well as the long run. This conclusion is supported and expanded upon in a paper by Borensztein, Gregorio, and Lee (1998), which examines the effect of FDI on economic growth during the twenty year period preceding 1998 in 69 developing countries. Borensztein, Gregorio, and Lee (1998) emphasize the importance of technological advances as causes of economic growth rather than side effects of it. If FDI is an integral mechanism through which these technological advances are enacted, then we must come to the conclusion that at least some portion of the technological strides caused by increased FDI result in this increased economic growth and development. In addition, one must take into account the role of human capital in this relationship. If a country has a very limited percentage of the population that can be affected by investments in human capital from FDI, then it cannot fully utilize some of the developments that result from investments of FDI in technology. However, as the two are intimately related, it is also integral to ensure that human and technological capital grow together in order to take advantage of the fact that these two forms of capital cannot be fully utilized except when used contemporaneously. Increases in FDI can also have differing effects on the economic development of a country depending on whether increased FDI will facilitate or hinder further domestic investment. While increased FDI may allow companies to expand and create more opportunities for domestic investment to be put to use in the development of the economy, it may also "crowd out" domestic investment. All of the factors mentioned above contribute in part to how FDI affects economic growth and development and are heavily dependent on the country in which they are being examined and its distinct characteristics.

### **Economic liberalization as a signal for FDI**

When a country takes measures towards economic liberalization, the effect of the reforms on FDI inflows can be studied from two perspectives: 1) specific liberalization FDI policies enacted by the government, (ie. policies including loosening regulatory restrictions and providing promotions for FDI), and 2) economic liberalization as a whole serving as a "signal" to investors that the country is fostering an environment that is more friendly to foreign investment. In this section, we focus more on

the latter view of how economic liberalization can serve as a signaling device for investors to invest in a country. Our interpretation of the signaling device is similar to that of Bartolini and Drazen in their paper "Capital Account Liberalization as a Signal". Bartolini and Drazen's signaling model views the adoption of liberal capital controls as potential signals of future government behavior. The authors suggest that a government that promotes economic liberalism (free capital mobility), can signal that the future policies of the government are more likely to promote a more investment-friendly environment. Bartolini and Drazen ultimately present a model in which governments can use policies heading towards free capital mobility to signal a favorable future fiscal situation in which foreign investors can interpret a signal of credibility of the country as a host for foreign investment. According to the signaling theory, one would expect to see a positive correlation between economic liberalization and FDI, and this result is evident in multiple sources, including two papers that analyze the effect of economic liberalization and its impact on FDI. Saeed Raeskhi and Zeinab Seyedi analyzed data for developing countries in the world from the period 1995-2004 and found that the degree of freedom in a country is a crucial determinant of FDI decisions, and economic liberalization has a positive and significant effect on FDI. Similarly, Marta Bengoa and Blanca Sanchez-Robles examined 18 Latin American countries in the period of 1970-1990, and found that economic freedom in a host country is a positive determinant of FDI inflows. The results from these studies are hardly surprising, as economic liberalization promotes a market economy system that is focused on efficient allocation and optimum utilization of resources. Thus, based on existing literature, we develop an understanding that as a country shifts its policies towards economic liberalism, it signals to investors that the host country is promoting an investment-friendly environment that ultimately serves as a signal of credibility to investors to invest in the country. This theory is supported by much literature that finds correlations between economic liberalization policies and increased FDI.

### **Part II: A Case Study on India's Economic Liberalization and its Effect on FDI**

Even though much literature focuses on the liberalization policies post-1991, the Indian government took steps towards economic liberalization as early as the late 70s and early 80s that served as a benchmark for later reforms. Part II will first review some of the historical developments of liberalization reforms in India, and then analyze how these policy changes have affected FDI.

After India's independence in 1947, the government of India pursued an inward oriented development agenda that fostered a restrictive investment climate. The government introduced protective acts such as the Monopolies and Restrictive Trade Practices Act (MRTPA) in 1969 aimed to prevent the concentration of economic power into monopolistic practices to maintain efficiency in the industrial structure, and also the Industrial Policy Statement in 1973, which made licensing compulsory for all firms above a certain size. During the 70s with these policies, the external balance was unfavorable and FDI outflows through transfer payment further exacerbated the problem. In response, the Indian government attempted to control outflows of foreign exchange by formulating the Foreign Exchange Regulatory Act (FERA) in 1973, which ultimately forced many multinational companies such as IBM and Coca Cola to close their businesses in India. By the early 80s, there was a growing concern over a slowdown in industrial growth, and the government decided that economic reform was necessary.

In the wake of this economic stagnation, the Indian government came to the realization that Indian goods lost significant international competitiveness due to technological obsolescence, inferior product quality, limited range, and high cost, problems that were directly due to the highly protected local market. Furthermore, India lacked the multinational corporations that developed industries were dominated by. The Indian government tackled these two problems in the 1980s by putting an emphasis on modernizing the industry with liberalized imports of capital goods and technology, exposing the Indian industry to foreign competition through a gradually liberalizing trade regime, and giving multinational corporations a greater role in the proportion of manufacturing of exports. With these two strategies as a framework, the Indian government gradually introduced liberalization policies throughout 1980s. These policies included exemption from foreign equity restrictions under FERA to 100% export-oriented units, development of four more export processing zones to attract multinational corporations

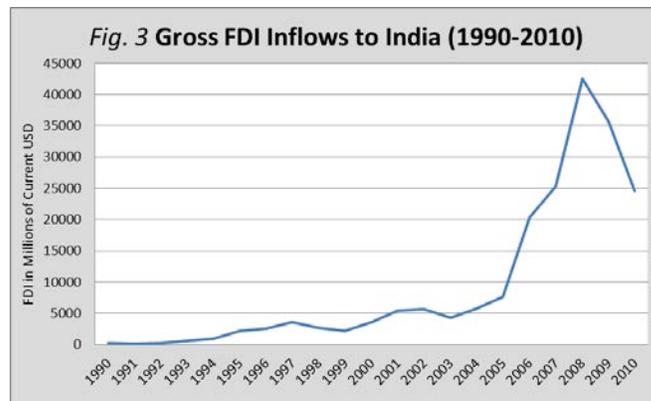
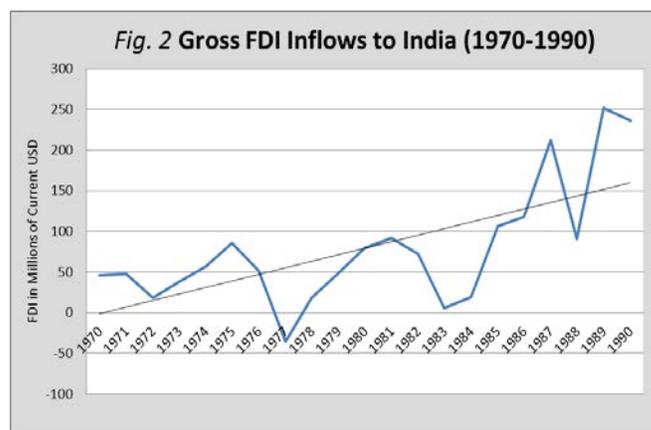
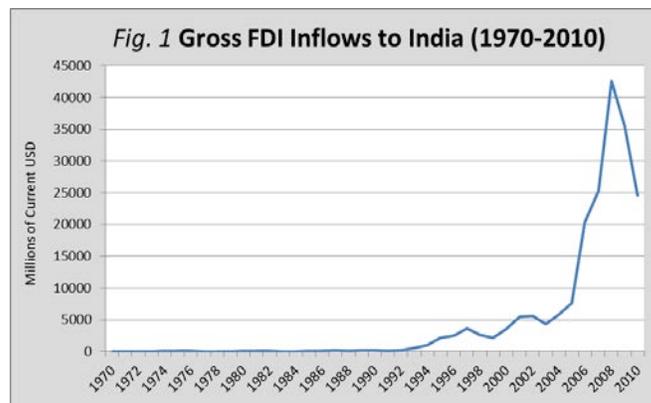
to set up export-oriented units, expanding the list of raw materials and capital goods on the Open General License (OGL), a higher degree of freedom regarding foreign ownership and the removal of tariffs on imports of capital goods.

While the reforms in the 80s did take a step towards liberalism and did see economic growth [see *Fig. 4*], India was faced by a serious economic crisis in 1991 caused by the large and growing fiscal imbalance from high government expenditures, especially in the latter half the 1980s. The deficits led to heavy borrowing by the government, which ultimately led to an expansionary impact on money supply and high rates of inflation. This also directly led to a large current account deficit in the balance-of-payments, leading to the rise of a gross fiscal deficit from 9% in 1980-81 to 10.4% in 1985-86 and to 12.7% in 1990-91. The current account deficit doubled from an annual average of \$2.3 billion or 1.3% of GDP from 1980-85, to \$5.5 billion or 2.2% of GDP during the second half of the 1980s. The steady overvaluation of the rupee also contributed to the crisis by affecting export competitiveness, as it witnessed a 20% appreciation during the period between 1969 and 1986. Furthermore, India was also suffering from internal political instability; in the summer of 1990, the delicate National Front coalition faced a nationwide crisis over its affirmative action policies, and by autumn, disputes over the BJP (a coalition partner) building a Hindu temple at the site of a 16<sup>th</sup> century mosque resulted in widespread communal violence, resulting in the BJP pulling out of the coalition and the collapse of the government. Domestic instability only worsened the economic condition to a point where, by the time the new government took over in June of 1991, India's reserves could only cover two weeks of its imports. Desperate for help, India pledged for emergency loans from the IMF and World Bank, loans that were granted with conditionality agreements that India was subject to. Eventually, India procured a \$1.8 billion IMF loan, which significantly wounded the dignity of the country that had prided itself in its self-sufficiency since its independence in 1947.

## A Case Study on India's Liberalization in the Early 1990s

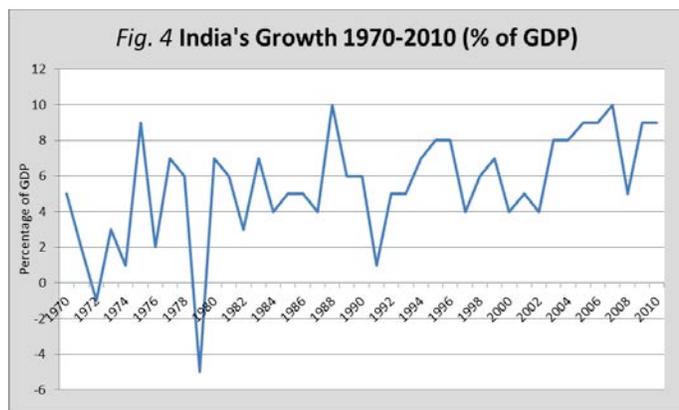
The fundamental objectives of the 1991 industrial policy in response to the economic crisis were to “build on the gains already made, correct the distortions or weaknesses that might have crept in, maintain a sustained growth in productivities and gain employment, and attain international competitiveness”. The newly elected Congress government under P.V. Narasimha Rao quickly introduced stabilizations to reduce the fiscal deficit, including devaluation of the rupee by around 25%, which adequately reduced the current account deficit. The IMF was approached to write the economic policy reforms, a program known as the New Industrial Policy (NIP), which started the process of full-scale liberalization and furthered the integration of India into the global economy. These policies included the relaxation of licensing procedures and regulation of foreign financial capital, the reduction of tariffs (the average tariff rate was reduced from 150% to 50%), and the introduction of current account convertibility, among others. With regard to policies on FDI, significant changes have been enacted based on earlier reforms. In 1991, approval for FDI was shifted toward an automatic route; a 51% stake was allowed in 34 priority industries, mainly intermediate and capital goods. International firms were allowed to use their own trademarks and brand names for goods manufactured by domestic industry, and India ratified and joined the Multilateral Investment Guarantee Agency (MIGA), an agency that serves as a protection mechanism of foreign investment. New sectors in industry, including mining, banking, telecommunications, highway construction and management have been privatized, even to foreign-owned companies.

Several studies have probed into the effects of the economic reform policies in the 1990s and whether they have served as a signal to make India a more attractive host for FDI. Nagesh Kumar's paper published in 1998 studies whether or not the liberalization policies enacted by the Indian government have played a role in the emerging trends and patterns in FDI inflows to India. While it may seem upon first glance that the policy reforms led to increases in FDI [see Fig. 1], Kumar contends that these increases were consistent with waves of increases of FDI throughout the world at the particular times in question. In his paper, Kumar compiles data on geographical distribution of FDI outflows from major OECD countries (major investors to India) between 1985-95, and suggests that the liberalization of policies enacted by the Indian government since 1991 to 1998 (when the paper was published), had not yet led to a significant



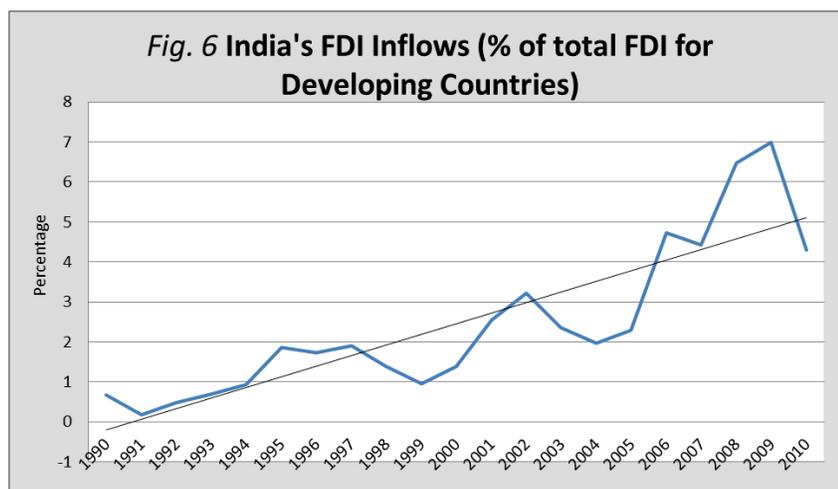
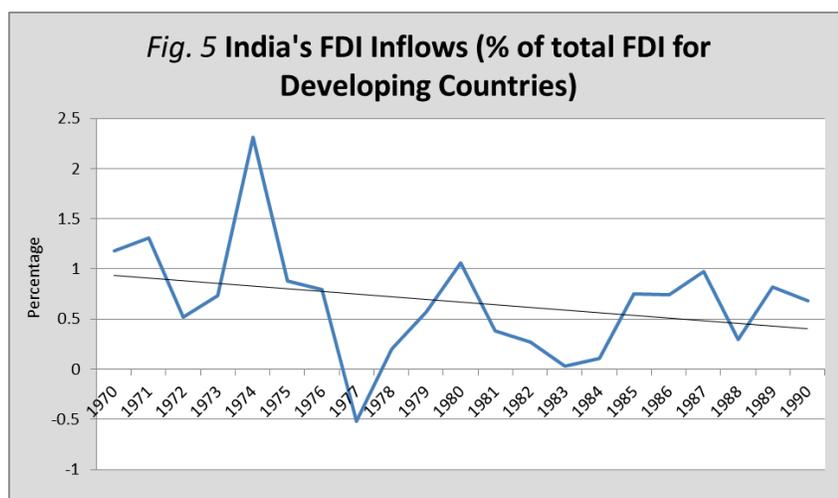
Source: UNCTAD

improvement in India's relative attractiveness as a host of FDI, compared to other major western source countries. However, Kumar did find that that the liberalization policies helped to diversify sources of FDI, including investment into the energy and services sectors, and suggested that the policies may have helped recover the shares of FDI, especially from Europe and the US, from a declining trend set in the late 1980s continuing up to 1992.



Source: World Bank

Since Kumar's paper only covers periods up until 1998, in this paper we extend the analysis up to 2010. We can see from Fig. 1 that the gross FDI inflows to India between 1970-2010 have been dramatic, particularly post-1990 [see Fig. 3].



However, as Kumar mentioned, while these figures may superficially support the signaling model that liberalization policies signal to investors that India is a more attractive location for FDI, it is unclear if the rise of inflows to India is in response to liberalization alone, or the result of an expansion of scale of global FDI activity. In order to control for this effect, we calculated the percentage of FDI inflows to India against all FDI in developing countries from 1970-2010. If the effect of the expansion of scale of global FDI activity was significant, as Kumar suggests, we would not expect to see a compelling rise in India's percentage of developing country GDP. However, we found a significant trend for India's FDI inflows in terms of percentage of total FDI for developing countries after the reform period post-1990. As shown in Fig. 6 FDI after 1990 grew from a modest 0.679% of all FDI in developing countries to a peak

of nearly 7% of all FDI in developing countries [see Fig. 6]. On the other hand, there seemed to be a downward trend in the period between 1970-1990, [see Fig. 5]. This result, controlling for global FDI activity, suggests that the growth of FDI in India stemmed from the economic liberalization policies, specifically those adopted after the economic crisis in 1991. Furthermore, this result also suggests that the economic policies served as a signal to investors that India has become a more attractive host location for international investment. This result can be due to a whole host of reasons, including the direct role and credibility of the IMF and World Bank in the reforms in the 1990s. The presence of these international institutions that promote economic liberalization under conditionality constraints very well may have signaled to foreign investors that the international presence in India will likely lead to more liberal and open policies to come in the future.

**Conclusion**

Economic liberalization has been a crucial factor of economic development and FDI in developing countries in the past few decades. In this paper, we have summarized the theories relating economic liberalization and FDI contributions to economic development, as well

## A Case Study on India's Liberalization in the Early 1990s

as how economic liberalization signals to investors that the host country has become a more attractive location for investment. We then analyzed how the economic liberalization policies in India starting in the late 1970s up to the 1990s have affected FDI inflows. By controlling for worldwide rise in FDI trends, we found that the economic liberalization policies in the two decades before 1990 did not serve as significant signals for FDI, but the IMF and World Bank-led liberalization policies starting in the 1990s significantly increased FDI and signaled to investors that India's FDI environment was becoming more attractive. Further research can be conducted on what explains the drastic change in FDI increase after 1990. We propose that the direct role and credibility of the IMF and World Bank in the reforms of the 1990s signals to foreign investors that the international presence in India will likely lead to more liberal and open policies in the future. Our research contributes to the whole host of literature of FDI, economic liberalization and economic growth. Through the case study of India's reform in the latter half of the 20<sup>th</sup> century, we propose that developing countries seeking more FDI inflows should work alongside international institutions to liberalize their economic policies to signal to the rest of the world that the country is an attractive host for investment.

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A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil Bangladesh, and Mali

Rohini Sigireddi

## I. INTRODUCTION

During the early 1990s, rates of breast-feeding plummeted as postpartum mothers turned to breast milk substitutes. Recently, there has been an effort by the World Health Organization (WHO) to promote breast-feeding as the natural method of infant feeding and boast its numerous health benefits for both mother and infant. However, the WHO views and supports infant feeding solely through the lens of biomedicine (which supports the practice of breast-feeding) and ignores the cultural context within which infant feeding exists. This study postulates the WHO's failure to consider the cultural contexts of infant feeding and illustrates various cultural contexts of infant feeding, through a cross-cultural investigation of infant feeding in the United States, Bangladesh, Brazil, and Mali.

## II. WORLD HEALTH ORGANIZATION'S BIOMEDICAL UNDERSTANDING OF INFANT FEEDING

The World Health Organization (WHO) considers infant feeding through a biomedical view and advocates for breast-feeding due to the numerous health benefits it provides. The WHO's statement on breast-feeding reads as follows:

Breastfeeding is the normal way of providing young infants with the nutrients they need for healthy growth and development. Virtually all mothers can breastfeed, provided they have accurate information, and the support of their family, the health care system and society at large. Colostrum, the yellowish, sticky breast milk produced at the end of pregnancy, is recommended by WHO as the perfect food for the newborn, and feeding should be initiated within the first hour after birth. Exclusive breastfeeding is recommended up to 6

months of age, with continued breastfeeding along with appropriate complementary foods up to two years of age or beyond.<sup>1</sup>

The WHO has published numerous reports on infant feeding that showcase a biomedical understanding of infant feeding and support for breast-feeding, through citation of scientific studies examining the content and lasting effects of breast milk. Scientific studies note lower blood pressure, cholesterol levels, obesity levels, and type-2 diabetes prevalence among children that are breast-fed.<sup>2</sup> Additionally, the organization cites breast milk as the primary source of Vitamin A and B6 for the infant.<sup>3</sup> Biomedical literature also notes that polyunsaturated fats present in breast milk result in lower blood pressures for infants later on in life.<sup>2</sup> The WHO contends that breast-feeding is the best way to feed an infant due to the enumerated health outcomes.

The most notable feature of the WHO's statement on breast-feeding is the notion that breast-feeding is the "normal" way of feeding infants. This statement suggests that alternative methods of infant feeding, such as non-human milk or formula based supplements, are unnatural, despite their heavily utilization by postpartum mothers. Additionally, the WHO's rationale for why breast-feeding is "normal" is that it allows for numerous biomedical advantages. The WHO assumes that all mothers would be aware of and desire these positive health outcomes, and thus contends that breast-feeding is the "normal" method for infant feeding. However, implicit in the notion that biomedical advantages are the ultimate goal of infant feeding, the WHO assumes that all mothers operate with a biomedical view of breast-feeding and abide by the ethnomedicine that is Western biomedicine. However, this is clearly not the case, as a later examination of infant feeding in different countries will reveal the different cultural contexts in which various methods of infant feeding are practiced. Additionally, the WHO stresses that all mothers have the ability and thus, should breast-feed their infants. Unfortunately, this interpretation only indicates that all mothers have a physiological ability to produce milk for their infant, however not all mothers may do so with the same ease or desire. The WHO thus ignores other cultural contexts in which infant feeding exists.

# A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil, Bangladesh, and Mali

Additionally, when understanding why a postpartum mother may not breast-feed, the WHO only considers biomedical conditions that would prevent breast-feeding. Cases in which the WHO finds it in appropriate for mothers to avoid breast-feeding include infants with galactosemia, maple syrup urine disease, and phenylketonuria. In these cases, the WHO advocates that infants consume formula that has been engineered to not contain traces of compounds that would trigger their illnesses.<sup>4</sup> The WHO also suggests avoiding breast-feeding when the mother suffers from severe illnesses, HIV, herpes simplex virus type I, is taking medications that would adversely effect the health of the newborn, is a substance abusing mother, or has breast maladies that would make breast-feeding dangerous to the mother or infant.<sup>4</sup> Lastly, the WHO suggests that exclusive breast-feeding may not be appropriate for low-birth infants, pre-mature babies, infants at risk of hypoglycemia.<sup>4</sup> These infants would require supplemental food in their daily diet. Thus, the WHO finds that only biomedical conditions afflicting the infant or mother would provide sufficient reason to avoid breast-feeding during the first six months of an infant's life.

The WHO's belief in the biomedical importance of breast-feeding has resulted in the formation of multi-national efforts to promote breast-feeding worldwide.<sup>5</sup> The WHO promotes breast-feeding through the distribution of services and information that propagate a biomedical understanding of breast-feeding and illuminate the medical advantages of breast-feeding. Efforts of this nature include the United Nations Children's Fund's (UNICEF) Global Strategy for Infant and Young Child Feeding and the 1980 WHO/UNICEF Meeting on Infant and Young Child Feeding. In 1990 the United Nations submitted the Innocenti Declaration on the Protection, Promotion, and Support of Breast-feeding, which advocated for breast-feeding policy and health services worldwide. Additionally, the World Health Organization began the Baby-Friendly Hospital Initiative (BFHI), which called for hospitals that were better suited for newborn babies, allowed for the support of breast-feeding, and drafted the "Ten Steps to Successful Breast-feeding." The WHO has also partnered with UNICEF to promote Community-Based Breast-feeding Programs in developing countries such as Madagascar, Honduras, and India.<sup>5</sup> These efforts seek to promote breast-feeding among postpartum mothers, through an explanation of the biomedical benefits of breast-feeding, provision of support systems within local

hospitals and clinics, and lactation consultants to aid mother's in the breast-feeding process.

Since the Innocenti Declaration, UNICEF reports suggest that global breast-feeding rates have risen fifteen percent, which is estimated to have already saved six million infant lives, as breast-feeding avoids infant consumption of unsafe food and water.<sup>6</sup> UNICEF estimates also suggest that breast-feeding could save 1.3 million infant lives yearly as it provides an immune-based defense to many illnesses and protect infants from contaminated food and water sources. Recent endeavors by the WHO to promote breast-feeding have been widespread and biomedically supported.

### III. MEDICALIZATION OF BREAST-FEEDING BY THE WORLD HEALTH ORGANIZATION

The WHO's support of breast-feeding, solely through biomedical literature, evidences the medicalization of infant feeding. Margaret Lock, a medical anthropologist, defines "medicalization" as the examination of elements of the life cycle, and natural human practices, through a perspective provided by medical technologies.<sup>7</sup> She finds that the phenomenon of medicalization has emerged due to discoveries in medicine, which allow for investigation beyond organic human assessment. The technical explanation allowed for by advances in medicine supersedes the natural understanding of life allowed for by unaltered, human perception. Herein lies the power of medicalization: it the ability to create a medical understanding of any aspect of life that is widely received. Additionally, the notion of a medical explanation, derived from innovative and unnatural technologies, has the ability to overpower and perhaps contradict mankind's natural understanding of human practices. Lock even notes that women found that "medicalization coincides with their own best interest."<sup>7</sup> Lock also postulates that the unique power harbored in medicalized explanations of life may provides the means of gaining control over and "civilizing" individuals in developing nations.

The WHO's efforts to promote breast-feeding globally showcase the potential of medicalized explanations of human behavior to ignore the cultural context of many human practices and to exert influence over developing countries. As referenced above, the WHO currently consults biochemical studies to support the claim that breast milk is uniquely nutrient-rich and longitudinal growth studies to suggest the physiological benefits of

breast-feeding infants. This medicalized understanding of the goal of infant feeding allows the WHO to suggest that breast-feeding is the proper way for mothers to feed their infants and ensure their health in the future. The WHO then promotes breast-feeding through biomedical literature distributed to individuals in developing countries, through their aforementioned multinational efforts to promote breast-feeding. However, the WHO does not consider the cultural context of infant feeding. Other understandings of infant feeding are ignored because the medicalized understanding of infant unquestionably supersedes common and cultural beliefs on infant feeding. When biomedicine is seen as the ultimate truth, as in the case of the medicalization of human behavior, cultural considerations are considered only secondary, if at all. Thus, the WHO's medicalization of infant feeding results in the disregard of the cultural context of breast-feeding.

#### **IV. NEED FOR THE WORLD HEALTH ORGANIZATION TO EXAMINE INFANT FEEDING THROUGH ITS CULTURAL CONTEXT**

The WHO promotes breast-feeding through a medicalized understanding of infant feeding, but ought to consider the cultural context of infant feeding. Philosopher Rebecca Kukla examines the ethics and ideology propagated in efforts that promote breast-feeding for biomedical reasons and finds that the cultural context of infant feeding is often ignored.<sup>8</sup> The author contends that current approaches to the promotion of infant feeding through a biomedical understanding have been ineffective, as they have failed to understand the practice infant feeding in its appropriate cultural context. When health care providers fail to consider the cultural context in which the postpartum mother lives, miscommunication and misunderstanding may result between the two regarding why the mother may not breast-feed. Some mothers may not have the ability to breast-feed, given their physiological, social, or economic constraints, however these factors are not considered when only the biomedical understanding of infant feeding, through breast-feeding, is considered appropriate and "normal." The lack of consideration of the cultural context of infant feeding is an unfortunate result of the aforementioned medicalization of infant feeding. Kukla thus suggests that infant feeding must be assessed through the cultural context of the mother and her infant.

Studies of breast-feeding globally reveal varying factors that impact a mother's method of infant feeding. Many of these studies emerged in the

early 1980s, alongside efforts to promote breast-feeding. In 1984, American nutritionist Sandra Huffman suggested that breast-feeding among women in developing countries was determined by sociological and behavior factors, urbanization, maternal education, socioeconomic status, health services, employment of mother, and the availability of substitutes for breast milk.<sup>9</sup> Additionally, a study that examined ethnographic works on breast-feeding found that maternal control over an infant's food intake varied across cultures.<sup>10</sup> This is especially important in regards to the WHO's notion that mothers should attempt to breastfeed as long as possible, possibly well into the age of two, an age at which the child has more physical and vocal freedoms and the ability to resist foods and breast-feeding. The study found that in Nigeria, the United States, England, Newfoundland, and Sweden, mothers exert complete control over what their infant consumes, whereas in countries such as the Philippines, India, Sardinia, the mother lessens her grip on what the child eats after a certain point in the early stages of childhood. Additionally, prolonged breast-feeding in developing countries has been understood to be a method of birth spacing, as breast-feeding suppresses ovulation, though this practice is not as effective as modern contraceptives.<sup>11</sup> Thus, breast-feeding prevalence and cultural context vary across nations.

One of the earliest studies of breast-feeding examined the prehistoric society of Kaminaljuyu that existed around 400 B.C.. An analysis of carbon and oxygen isotopes in tooth enamel reveals that infants in this society were introduced to solid foods around two years of age, but breast-fed past this age.<sup>12</sup> An effort to better understand infant feeding methods, their prevalence, and their base of support and cultural understanding will examine the United States, Bangladesh, Brazil, and Mali. These countries were chosen to represent the wide spectrum of countries that fall between the underdeveloped and developed nations. Additionally, prevalence data of breast-feeding in the aforementioned countries will be presented, to better understand the significance of breast-feeding in the given countries.

#### **V. CROSS-CULTURAL EXAMINATION OF THE CULTURAL CONTEXTS IN WHICH INFANT FEEDING EXISTS**

##### **VA. THE UNITED STATES OF AMERICA**

The prevalence of breast-feeding among women in the United States is sharply characterized by the duration of breast-feeding. A 2010 Breast-

# A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil, Bangladesh, and Mali

feeding Report Card from the Centers for Disease Control and Prevention reports that among newborn infants, only 74.6% are ever breast-fed, 44.3% are breast-feeding at 6 months of age, 23.8% are breast-feeding at 12 months of age, 35% are exclusively breast-feeding at 3 months of age, 14.8% are exclusively breast-feeding at 6 months of age, and 24.5% receive infant formula before 2 days of age.<sup>13</sup>

The breast-feeding prevalence differed among socioeconomic and racial groups in the United States. A recent study published by the American Academy of Pediatrics reports that among infants that are breast-fed exclusively for six months, "rates of breast-feeding initiation were highest for children born to mothers who were 30 years of age or older, who had more than a high school education, and whose annual household income was 400% of the federal poverty level."<sup>14</sup> Additionally, the study found rates of breast-feeding initiation varied widely across racial groups, with 81.8% among Hispanic children, 76.2% among non-Hispanic white children, and 55.5% among non-Hispanic black children. Rates of breast-feeding also differ among children of United States-born and foreign-born mothers, 72.6% of the former breast-feeding as compared to 89.6% of the latter.

The most prominent base of support for breast-feeding in the United States is the large and widespread biomedical literature base. The biomedical advantages of breast-feeding are numerous, with the National Institutes of Health reporting that:

Breast milk provides the right balance of nutrients to help an infant grow into a strong and healthy toddler. Breast-fed infants, and those who are fed expressed breast milk, have fewer deaths during the first year and experience fewer illnesses than babies fed formula. Some of the nutrients in breast milk also help protect an infant against some common childhood illnesses and infections, such as diarrhea, middle ear infections, and certain lung infections. Some recent NICHD-

supported research also suggests that breast milk contains important fatty acids (building blocks) that help an infant's brain develop. Two specific fatty acids, known as DHA and AA, may help increase infants' cognitive skills. Many types of infant formulas available in the United States are fortified with DHA and AA, and all formula available for preterm infants is fortified with these fatty acids.<sup>15</sup>

Other reasons for the promotion of breast-feeding include studies that have measured increased intelligence among breast-fed individuals. This claim results from a test to measure cognitive development, the Peabody Picture Vocabulary Test Revised (PPVT-R) test, which reveals a linear increase in scores of cognitive ability along side duration of breast feeding.<sup>16</sup>

Non-profit organizations, though lacking an explicit interest to promote biomedicine, promote breast-feeding through various organizations. These organizations include Breast Milk Counts/Leche Materna Cuenta, a website that is run by Texas Department of State Health Services WIC Program.<sup>17</sup> This site is offered in both Spanish and English and is filled with information on how to begin breast-feeding, how to continue breast feeding, why breast-feeding is good for the mom and the baby, and especially information on how working mothers can breast-feed. The site is accompanied by a jaunty tune, "Cookie Jar" by Alice Saffer, which suggests that this will lead new mothers to a thinner figure, protection from breast cancer, and smarter babies. Governmental organizations of this nature are especially influential on two largely growing populations in Texas, Hispanic mothers and working mothers.<sup>18,19</sup> Other groups in the United States that support breast-feeding include the International Baby Food Action Network, La Leche League, Human Milk Banking Association of North America.

A biomedical understanding and base of support for breast-feeding is also found within is legal measures in place to accommodate nursing mothers. The bottom of Breast milk Counts/Leche Materna Cuenta's website reads "Texas law says you

have the right to breastfeed in public.”<sup>17</sup> Additionally, President Obama’s Patient Protection and Affordable Care Act amended Section 7 of the Fair Labor Standards Act of 1938 (29 U.S.C. 207) to require that employers allow a break time for nursing mothers to produce breast milk, for up to one year after the birth of her child and provide space other than an bathroom where breast milk could be produced.<sup>20</sup> However, a nursing mother will not be compensated for time spent producing breast milk and an employer need not abide by these regulations if they employ fewer than fifty employees and abidance would cause an “undue hardship” on the employer. Thus, despite efforts to encourage breast-feeding among low-income, working class women, federal law places women who work on an hourly salary (as they are not compensated for time spent producing breast milk) and for women who work in small-businesses, at a distinct disadvantage. Thus, a biomedical understanding of breast-feeding is promoted through hospitals and clinics, legal measures, and non-profit movements that seek to assist nursing women.

## VB. BANGLADESH

A UNICEF statistic report reveals that among the four countries surveyed, Bangladesh had the highest percentage of infants that were fed exclusively on breast milk at 6 months of age and the highest percentage of infants that were breast-fed at age 2.<sup>21</sup> The percentage of infants with early initiation breast-feeding was 43%, the percentage of infants feeding exclusively on breast milk at 6 months of age was 43%, the percentage of infants introduced to solid, semi-solid, or soft foods at 6-8 months of age was 74%, and the percentage of infants breast-feeding at age 2 (20-23 months of age) was 91%.

Women of different socioeconomic classes have been affected differently by measures designed to promote breast-feeding. A larger increase in the percentage of women breast-feeding after the introduction of the breast-feeding program, has been seen among women of lower socioeconomic classes.<sup>22</sup> Additionally, an examination of breast-feeding among women who lived in tea gardens revealed that the highest frequency and duration of breast-feeding was found among mothers that were older than 35 years or housewives.<sup>23</sup> The employment status of the mother was thought to be the determining factor for breast-feeding, as mothers who worked in the tea gardens worked for eight hours a day and were unable to take their children to work and breastfeed them.

A study conducted among 125 Bangladeshi mothers and children of varying socioeconomic

classes revealed reasons why mothers failed to breastfeed their infants.<sup>24</sup> A Bangladeshi mother often raises an infant in the presence of the infant’s grandmother, who has a large influence over the diet of her infant grandchild, and may alter the duration and exclusivity of breast-feeding for the infant. Nursing mothers were often discouraged limited success with breast-feeding and began to believe that they had flat nipples. Women in this situation began feeding their children soy-based formula, honey, cow’s milk, or infant formula. Additionally, should a nursing mother encounter health problems in which she loses blood, her infant will be given infant formula because in Bangladesh blood loss is thought to decrease breast milk production. Many mothers in Bangladesh cite insufficient time to breast-feed, as the reason they do not breast-feed. This explanation is common among mothers that lack household servants and must do all of their own housework. Lastly, a lack of hospital initiatives to educate new mothers on how to breast-feed, few lactation counselors, and few systems of support for breast-feeding within the Bangladeshi hospitals, have resulted in a lower rate of breast-feeding in Bangladesh.

A meta-analysis of ethnographic data collected among breast-feeding women, from peasant farmer and landless laborer families, in Bangladesh in the late 1980s and early 1990s reveals many additional reasons why mothers in Bangladesh choose to not breast-feed their children.<sup>25</sup> Occasionally, some mothers do not wish to spend time at home with family and produce breast milk. Contrastingly, in Bangladesh breast milk is believed to be a “gift of God,” a notion that Western health care professionals have used to their advantage, by stressing the role of breast-feeding and motherhood in materials designed to promote breast-feeding in Bangladesh. Additionally, in Bangladesh there is fear of arsenic contamination in tube-well water, many mothers breastfeed, to reduce their infant’s exposure to unsafe water sources.<sup>26</sup> Many mothers also fear that they produce insufficient milk, which may be due to malnutrition or a lack of blood in the mother. A mother’s inability to produce milk due to malnutrition may also result in blame assigned to the mother-in-law of the breast-feeding mother, as the mother-in-law is responsible for feeding her. Additionally mothers are often unaware of the nutrient value of colostrum and discard, as they understand it to be related to the impurities of pregnancy, find it to be thick, and believe that it contains blood. Other mothers that feel that their breasts have become “heavy” or “full” believe that a *batash*, an evil spirit drawn to bodily fluids, has ruined their breast milk and will harm their baby,

# A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil, Bangladesh, and Mali

resulting in mother's decision to not continue breast-feeding. Other women in areas of large societal progress and fixation of female physique have begun to avoid breast-feeding as a means of maintaining the visual appearance of their breasts. Finally, often times the sickness of an infant is blamed upon the mother, as the illness is thought to have come from the breast milk, which implies that there may be some stigma in breast-feeding in that the lack of understanding of transmission of pathogens, result in maternal blame for the contraction of diseases by newborns.

A unique relationship between the Bangladeshi and Western biomedical views of the body has emerged. In the aforementioned study efforts by biomedically-trained health care professionals to promote breast-feeding have led to ambivalence among breast-feeding Bangladeshi mothers. The notion of "privileged knowledge" arose among the breast-feeding mother and alludes to those who understand the biomedical justifications for breast-feeding. Efforts to promote breast-feeding were thus often counterproductive, as mothers did not appreciate lessons from health care providers about the "proper" means of feeding their infants. Additionally, in Bangladesh, biomedicine has been incorporated into some traditional healing methods. The study cites also one case in which a ritual healer, a *Hazur*, diagnosed a child with having contracted a bad wind or spirit, a *batash*, and prescribed infant formula as a remedy.

Despite the use of breast milk substitutes in Bangladesh, a study reveals that breast-feeding is believed to be a more favorable means of infant feeding. The study examines the perception of breast milk substitutes among women of low and middle socioeconomic status in Bangladesh. The women in this study were familiar with television and radio slogans that suggested that "Nothing is comparable with breast milk" and "Mother's milk is pure, nobody has touched it."<sup>22</sup> They were thus aware of the significant difference between breast-feeding and infant formula and had the ability to choose which one they wished to feed their child. However, the study also revealed that 80.4% of mothers were unaware of differences among the breast milk substitutes of infant formula and milk powder, and many instead gave their children cow and goat milk. Thus, in Bangladesh important economic, societal, and familial connections result in the mother's decision to breastfeed.

## VC. BRAZIL

A UNICEF statistics report states that in Brazil the percentage of infants with early initiation breast-feeding was 43%, the percentage of infants feeding exclusively on breast milk at 6 months of age was 40%, the percentage of infants introduced to solid, semi-solid, or soft foods at 6-8 months of age was 70%, and the percentage of infants breast-feeding at age 2 (20-23 months of age) was 25%.<sup>27</sup>

Similar to the pattern found in the United States, the prevalence of breast-feeding varied among racial groups and access to family support. An examination of infants born to poor, urban parents in Brazil, between 1985-1986 reveals that the median duration of breast-feeding was 18 months and evidences early termination of breast-feeding.<sup>28</sup> The mothers that chose to discontinue breast-feeding did so because they believed that their infant had not exhibited satisfactory growth, believed that they had produced milk of poor quality, were advised to, had work commitments, or experienced breast problems. Additionally, Brazilian mothers that lacked family support in the maintenance of the household were four-times more likely to discontinue breast-feeding after 1 month of the infant's life. Thus the lifestyle demands on the mother heavily dictate whether or not she will be able to breast-feed her child.

The rates of breast-feeding in Brazil have increased in part due to strong efforts conducted by Western biomedical organizations. Some hospital programs that have early initiation breast-feeding and assistance in breast-feeding during the woman's stay in the hospital, both which have been shown to increase breast-feeding duration. Additionally, Brazilian law prohibits the hospital giving free infant formula to new mothers.<sup>29</sup> In the early 1980s a six-year follow-up study to a 1981 Brazilian national breast-feeding initiative in São Paulo reveals that there was an increase in the mean duration of breast-feeding and of exclusive breast-feeding.<sup>30</sup> These efforts were achieved through health centers controlled by the state government, São Paulo city government, and the federal health services, clinics that belonged to private insurance companies, and private consultants and hospitals. This data suggests that when measures to increase the prevalence of breast-feeding are taken, namely through support with biomedical underpinnings, they are successful.

However, there is the possibility that some biomedical justifications for breast-feeding may not resonate as strongly among mothers in Brazil. In the United States, breast-feeding is often promoted as a means of reducing maternal weight of postpartum mothers. However, in Brazil, this effect may not be prevalent as a study reveals that among Brazilian

mothers, a decrease in postpartum maternal weight was not correlated with breast-feeding.<sup>31</sup> This may be due to the different physiologies of American and Brazilian women.

#### VD. MALI

A UNICEF statistics report states that in Mali, the percentage of infants with early initiation breast-feeding was 46%, the percentage of infants feeding exclusively on breast milk at 6 months of age was 38%, the percentage of infants introduced to solid, semi-solid, or soft foods at 6-8 months of age was 30%, and the percentage of infants breast-feeding at age 2 (20-23 months of age) was 56%.<sup>32</sup>

Women in Mali often choose to breastfeed as a means of protecting their children from contaminants in food and water, as Mali has low sanitation levels. Protection against diarrheal diseases transmitted through contaminated public water sources. Breast feeding reduces the infant's need to drink contaminated water and passes on maternal immunity to the contaminants in the water, through the breast milk.<sup>33</sup>

In a study of women in Farniabogu, most of who were uneducated, born in rural areas but moved to urban areas, could not read or write, the high rates of breast-feeding were explained.<sup>34</sup> Malian women had a generational expectation that they would nurse their children, as they were surrounded by older women that nurse children, Additionally, in Mali it is consider it a "primary right" for infant to demand nursing at whim, nurse for comfort.<sup>34</sup> Breast-feeding is also "not culturally defined as an activity that significantly constrains a woman's activities."<sup>34</sup> In fact breast-feeding in public is common and male employers accept that an infant needs to breastfeed and allow women to do so while at work. Public breast-feeding is also eased because breasts are not considered sexual features in Mali, thus male employers are tolerant of breast-feeding so women breastfeed while at work, if necessary. Additionally, it is indicated that women do not see breast-feeding as an inconvenience to their daily life; mother does not hold the child during nursing so her hands are free to work.

There are also familial reasons for breast-feeding in Mali.<sup>34</sup> Malian women believe that the relationship among siblings is established by their feeding from the common breast milk of their mother. Additionally, women in Mali often breast-feed the children of others, but once they have done so, their children can no longer marry. Finally, due to the relatively early age of a Malian woman's first child, a mother will often still be nursing when her

daughter has a child and may breast-feed her grandchild.

There are many reasons why women in Mali tend to breast-feed.<sup>34</sup> Firstly, the government restricts the promotion of breast milk substitutes and encourages breast-feeding through radio and printed media. While women have access to "powdered commercial infant formula, powdered whole milk, Cerelac (a cerealmilk combination), pasteurized cow's milk, and raw cow's milk," these alternatives may not be pursued due to logistical difficulties.<sup>34</sup> The need to use cow's milk immediately, to prevent it from souring, is cited, as refrigeration is scarce in Mali. Additionally, given the low average income in Farniabogu, as compared to other cities in Mali, it was noted that most family budgets prioritize other items over breast milk substitutes, and hence mothers tend to breast-feed.

Lastly, the biomedical model of breast-feeding has had a significant effect on the nursing population in Mali. The United Nations Millennium Development Goals have allowed for the implementation of breast-feeding promotion programs. In Mali these have lead to

- i) the implementation of annual or semi-annual national breast-feeding campaigns;
- (ii) the formation of a national committee charged with the promotion of exclusive breast-feeding (5);
- (iii) the adoption of the ILO Convention on Maternity, which supports women's right to maternity leave and time away from work to breastfeed (34);
- (iv) the passage of a national Code for the Marketing of Breast Milk Substitutes (Code); and
- (v) the promotion of the Baby Friendly Hospital Initiative (BFHI).<sup>35</sup>

#### VI. CONCLUSION

When the World Health Organization conducts efforts to promote the biomedical model of breast-feeding; it is important that this organization take into account the different cultural contexts in which infant feeding rests. While biomedical literature supports the notion that breast-feeding can lead to numerous benefits for both the mother and

# A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil, Bangladesh, and Mali

child, it is important to note that these biomedical benefits may not be of importance to postpartum mothers in all cultures. Additionally, the reasons why mothers choose to breast-feed or to not breast-feed vary considerably, ranging from an understanding of the rights of an infant to occupational demands, indicating that the decision to breast-feed may reflect numerous elements of a mother's lifestyle. Hence, recommendations regarding infant feeding must take into account the cultural context in which infant feeding exists, for that individual or group of individuals, and the lifestyle of the postpartum mother.

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A Critique of the World Health Organization's Infant Feeding Recommendations and a Cross-Cultural Examination of Infant Feeding Methods in the United States, Brazil, Bangladesh, and Mali

Comprehensive Sex Education for Today's Youths  
Irene Eunjung Oh

The future and health of young American youths are jeopardized by the risks of sexually transmitted diseases (STDs) and unintended pregnancy. According to the Centers for Disease Control and Prevention (CDC), one person in the U.S. is infected with HIV every hour; the U.S. also has the highest rate of teenage pregnancy in the developed world. Federal support of sex education programs at public school began when the Reagan Administration introduced abstinence-only education in 1982. The Bush administration continued to support said education system and increased the funding to over \$175 million a year. Since its introduction, abstinence-only education has been controversial as to whether it has been effective in delaying teenagers' sexual initiation and reducing teen pregnancy. Primarily, proponents of abstinence-only education programs argue that premarital sex is immoral and that teaching only abstinence is 100% effective in preventing unwanted pregnancy and STDs among teenagers. They argue that comprehensive sex education, which emphasizes abstinence and provides information about contraception, encourages teenagers to have premarital sex. However, in recent years, there has been compelling evidence from numerous studies that comprehensive sex education is a more effective form of sex education.

Many researchers have found that comprehensive sex education effectively delays the onset of teenagers' sexual activity and reduces unintended pregnancy and STDs among teenagers. According to research conducted by the National Survey of Family Growth, teenagers enrolled in comprehensive sex education courses have a 50% lower rate of becoming pregnant than those who have received abstinence-only education. Texas is a good example that illustrates the positive impacts comprehensive sex education programs have had on youths. Texas, the center of abstinence-only movement for three decades, required that public schools only deliver sex education, which met a strict abstinence-only definition. However, in 2008, a report from the Texas Freedom Network found out that sex education curricula at public schools in the state fell far below standards. Curricular materials from the public-school districts turned out to be deeply disturbing; the materials traded on scare and shame tactics. Many of them also relayed erroneous or deliberately misleading information about contraceptive methods and the risks of abortion and blur religion and science. For example, according to a report for the U.S. House of Representatives on the

content of federally funded abstinence-only education programs, the curriculum states, "Sterility: Studies show that five to ten percent of women will never again be pregnant after having a legal abortion." In fact, obstetrics textbooks teach that, "fertility is not altered by an elective abortion." Although poor sex education might not be the only factor, Texas had the third highest teenage-pregnancy rate in the country; Dallas, Texas had the highest percentage of teenage repeat births among major U.S. cities in 2006.

But there have been drastic progress in Texas and across the nation. The teen pregnancy rate has dropped to a record low in almost 70 years, declining by 40% nationally; the fall has been particularly precipitous in Texas. While a number of other factors such as better access to contraception could attribute to the drop of teen pregnancy rates, researchers found that the key to declining pregnancy was the result of the effective use of hormonal methods like birth control pills among teenagers. Without the introduction of classes that include lessons on contraception, it would have been virtually impossible to achieve this record. In response to the record low teen pregnancy rate, comprehensive sex education has also been getting more support from the public. Polls consistently show that more than 80% of Americans support comprehensive sex education programs in schools, while abstinence-only education received the highest level of opposition (about 50%) and the lowest level of support (36%).

Despite the improvement, there is a lot more that can be done in order to curb teen pregnancies and birth rates. America still has the highest rate of pregnancy in the developed world. Many states with abstinence-only programs rank highest in the nation, with Mississippi ranking No. 1 at 55 per 1,000 teenagers, followed by New Mexico, Arkansas, Texas, and Oklahoma. Mississippi and Arkansas with one of the highest teen pregnancy rates in the nation still do not require sex education, and when it is taught, abstinence-only education is encouraged as a state standard. The comprehensive sex education model, as research has shown, has a proven effect on reducing teen pregnancies, while abstinence-only programs proved to be inaccurate and may cause harm. Given the alarming rate of STDs among young people and increased rates in teenage pregnancy in certain states, comprehensive sex education programs should widely be supported by educators, policy makers, and the public. In 2009, the Obama Administration devoted \$114 million to comprehensive sex education programs and

## Comprehensive Sex Education for Today's Youth

eliminated funding for abstinence-only sex education. Recently, the New York state government made it mandatory for public middle and high school students to take classes that include lessons on how to use a condom and appropriate age for sexual activity. I applaud this movement and hope that the rest of the nation would follow suit.

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# Comprehensive Sex Education for Today's Youth

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

*Daniel Cohen*

### *Introduction*

The current state of climate change is an alarming picture which foreshadows significant environmental, economic, and public health concerns for current and future generations. The concentration of carbon dioxide in the earth's atmosphere is unprecedented. In the pre-Industrial Age, carbon dioxide in parts per million (ppm) never reached beyond 280. In 1990, the carbon dioxide concentration in the atmosphere was 354 ppm and, today, the concentration is 388 ppm. If global fossil fuel use continues at its current pace, the concentration of carbon dioxide will be between 450 and 550 ppm by 2050 and within 700 and 1000 ppm by 2100. At 450 to 550 ppm, average global temperature rise will reach 2°C, or approximately 3.7°F. Carbon dioxide concentrations near one thousand may yield average temperature increases close to 6°C or 11°F.

Average global temperature has risen by 1.4°F, or 0.8°C, since 1800. More importantly, the annual rate of global temperature growth has tripled since 1970. The concentration of carbon dioxide in the atmosphere is so saturated that temperatures will experience a sharp rise over a significantly shorter period of time than they have in the past. This will accelerate the complications due to climate change. Certain regions of the world have experienced more drastic changes in average temperature than the world as a whole. Average temperatures have risen between 1 and 2° C, or 1.8 to 3.6° F, in Saharan Africa, Southern Africa, Canada, and most of Central, West, and East Asia. The effects of rising temperature are already beginning to show. The United States, for example, has experienced its most devastating draught in over fifty years with 20% of land being designated as in a state of drought. In these areas, approximately 50-55% of the land is in drought which merits the adjective "extreme" from the Department of the Interior. The US also recorded its hottest spring in history. Worldwide, nine of the hottest summers in history have occurred within the last twenty-five years. Anthropogenic climate change from mass utilization of fossil fuels is the leading cause of rising global temperatures and these corresponding consequences.

In addition to increased average global temperatures, the increase in atmospheric carbon dioxide concentration has resulted in rising water levels. Over the past century, sea levels have risen by 150 milliliters or six inches. Already one third of

Arctic summer sea ice has evaporated. Forty percent of all sea level rise is directly attributable to thermal expansion from greenhouse gas emissions. By 2100, environmental-focused think tank Resources for the Future predicts that global ocean levels will rise by one meter or approximately three feet. As glacial ice resides, ocean levels will continue to rise without abatement.

The consequences of fossil fuel-based energy policy on the environment are enormous and the effects will endure for numerous generations. Climate change will directly impact the natural environment through the increased severity and frequency of extreme events. Specifically, water and land crises will intensify. Flash floods are devastating and not uncommon extreme environmental events which result in billions of dollars of damaged property and lost productivity around the world. At the current rates of carbon dioxide emissions, increased water levels and precipitation will increase the frequency and magnitude of floods. The Intergovernmental Panel on Climate Change predicts that over 1 billion people in Central, East, South, and Southeast Asia will be affected by glacier runoff. This increase in water levels will result in floods that will destroy homes, infrastructure, and agriculture which as well as displace millions and cause billions of dollars in damage. Millions in Russia will be afflicted with the same fate once the permafrost begins to melt due to increased average temperatures and general climate variability. Large swaths of coastal regions will become uninhabitable due to oceanic reclamation as well. The Everglades in Florida or the city of New Orleans in Louisiana, for example, will be too submerged for humans or most animals to inhabit. Climate change will also increase the frequency and severity of hurricanes, tsunamis, drought, and fresh water intrusion. Countries in the Developed World who have strong infrastructures, emergency funds for disaster relief, and desalination technology may be able to mitigate the majority of the damage from these extreme environmental events. However, many developing nations will be unable to adapt with sufficient speed to meet these challenges. Mitigating the effects of ocean acidification will be far more difficult, however, even for the Developed World. Oceans are now 30% more acidic than the historical average pH level. Future ocean acidification may lead to major reductions in the population, if not extinction, of innumerable types of fish and aquatic life. Water crises are only part of the

environmental consequences of current fossil fuel-based energy sources.

Extreme events due to climate change will have considerable adverse effects on land and its use in the near and long-term future. Increasing temperatures will exacerbate soil erosion which will reduce the vitality of the ecosystem and its ability to preserve and reproduce life. Increased soil erosion will yield more frequent and devastating tornados as more loose soil is present in wind-blown areas. Midwestern states in the United States, specifically, such as Oklahoma, Kansas, Nebraska, and northern Texas, will be susceptible to more frequent and more damaging tornados. Drier earth will also lead to more severe forest fires. California and Colorado dedicate considerable financial and human capital to mitigating forest fire damage already. More frequent and destructive fires will multiply current expenditures and lost revenues from tourism and commerce in general. Soil erosion and drier earth from consistently above average temperatures will multiply this problem. Rising temperatures also pose an existential threat to most terrestrial life. The IPCC believes that 20-30% of all plant and animal species will be at risk of extinction if global temperatures rise beyond 2.5°C. The environmental implications of climate change are vast and directly affect the economic implications of carbon dioxide emissions.

Climate change is predicted to reduce economic output and productivity across the global due to its adverse effects on land, infrastructure, and human capital, and by raising production and transaction costs. By 2100, according to an IPCC report released in 2011, the collective continental economy of Africa and the regional economy of Eastern Europe will each lose 8-10% of GDP per year. Ironically, given that the OECD is the dominant cause of global climate change, Fankhauser and Tol (1996) predict that the OECD's GDP will actually rise by 4% by 2050. However, by 2100 and beyond that point, they predict that the OECD will lose 2% of GDP per year. Fankhauser and Tol's and the IPCC's econometric analyses predict net economic losses for every region of the world. The OECD will benefit, in the short-term, from climate change relative to other regions due to its more advanced adaptive capabilities and its services-based economies. Agriculture-based economies, on the other hand, will experience the greatest economic contractions. South and Central Asia, for example, will lose 30% of their agricultural yield by 2030 due to rising temperatures and shifting water conditions. Yield from rain-fed crops, which areas such as Sub-Saharan Africa rely on for exports, may be reduced by 50% by 2020. Numerous countries, particularly in poorer regions of

the world, will lose billions of dollars. In addition to the agricultural sector, industries such as timber, aquaculture, and mining will see increased costs and lost productivity due to climate change which will reduce global GDP by several billion. These environmental and economic consequences have spill-over effects that will constrain other sectors as well.

The energy sector will also be disrupted by climate change and this will impact economic activity at-large. Rising temperatures will necessitate increased utilization of space conditioning technologies. Mansur, Mendelsohn, and Morrison (2005) estimate that the US will experience an annual \$40 billion loss in social welfare due to energy expenditures on space cooling. This estimate assumes a 5°C increase in global temperatures by 2100 which is plausible according to recent scientific reports such as the IPCC and NOAA. Changing temperatures and increased climatic volatility will raise energy prices by increasing demand and production costs and by burdening energy distribution networks. Electricity grids, for example, will face increased stress and depreciation in the face of more severe rainstorms, floods, and winds. Providing constant electricity to homes during more frequent and severe weather events will be challenging and expensive. Soil erosion, coastal region inundation, and other land changes from climate change will raise the costs of producing fossil fuel as well as the price of maintaining energy infrastructure. Increased flooding, wind velocity, and soil erosion will tax the durability of roads, refineries, and other energy-related capital. Production will become more labor and capital intensive which will increase the cost of energy and related activity, such as transportation, for the ordinary consumer. The energy sector's vulnerability to climate change has substantial economic repercussions.

Climate change's impact on the environment and its subsequent effect on the global economy also threatens public health. Water and food insecurity, greater exposure to vector-borne diseases, and heat-related ailments are serious threats to public health. The poorest nations and peoples will bear the greatest health burdens. Approximately 75 to 250 million people in Africa will be exposed to increased water scarcity due to climate change within the next few decades. The initial flood concerns from melted mountain snows will be compounded by drought as river basins cease to be annually replenished by these snow melts. Rivers will dry up and this will reduce available drinking water. Water scarcity will also increase water pollution which will adversely affect public health because the concentration of people per

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

available water will increase. Cholera, diarrhea, dengue fever will become more prevalent due to fewer and dirtier water sources. Dehydration and water pollution-related illness will be even greater and more perpetual in poor regions than they are now. Flooding and overly abundant rainfall in some areas and drought and soil erosion in others will reduce crop yields and multiply hunger concerns. The fifty percent reduction in agricultural yields in Sub-Saharan Africa, for example, will leave millions at greater risk of malnutrition. Vector-borne diseases, particularly malaria, will increase as well. Fankhauser and Tol (1996) predict that malaria cases will increase by 10 to 30% in Sub-Saharan Africa by 2100 due to shifting climatic conditions. In 2010, approximately 216 million people were diagnosed with malaria and 665,000 died. Most of these victims were African children. Potentially, assuming constant rates, an additional 65,000 to 195,000 people could perish from climatic change-induced malaria. Heat-related illness such as heat stroke, severe sun burn, sun poisoning, and heat exhaustion will also increase. With the hottest spring in US history recorded in 2012 and 327 consecutive months in which global temperatures exceeded the corresponding 20<sup>th</sup> century average, heat waves pose a serious public health threat.

### *The Cause*

Anthropogenic climate change is attributable to the energy industry's market failure in carbon dioxide and other Greenhouse Gas (GHG) emissions. In a perfect market, the full cost of a private transaction is covered by the equilibrium price suppliers set and consumers pay. At this price, social well-being is optimized as marginal costs and benefits are equal and the full benefits and costs of the exchange are experienced by the private actors engaged. The energy market fails, however, because the full cost of the transaction is not borne solely by the consumers and suppliers involved. Since carbon dioxide and other GHGs have spill-over effects that transfer an economic or quantifiable burden to individuals not involved in the exchange, the energy market has an externality. This externality is negative because non-participants are injured by the transaction. Since the energy market has a negative externality, it follows that it is overproducing carbon dioxide and GHG emissions. The lack of a price signal on carbon dioxide and GHG emissions is the root cause of the negative externality. If energy suppliers and consumers are forced to pay for the marginal damage caused by carbon dioxide, the equilibrium output would be consistent with the

socially optimal point, given no other related market failures.

The market failure in energy due to unpriced carbon emissions is compounded by the naturally occurring market failure in research and development. Solving climate change may require more than just a price signal on carbon. Accordingly, a dual instrument policy portfolio of a carbon tax and clean energy subsidies may be required. The economic literature supporting a multiple instrument policy portfolio is extensive. Robert and Spence (1976) demonstrated that, under a range of realistic conditions, a combination of quantity and price instruments would provide a better outcome in terms of social costs than either instrument individually. Harvard economist Robert Stavins and Duke economist Lori Benneer argued that when more than one market failure, external constraint, or a combination of the two exist, the theory of second best applies and may enable multiple policy instruments to be more effective than just one instrument. This is applicable to climate change given the dual failures of carbon emissions and clean energy R&D. Morris (2012), Jaffe (2005), Metcalf (2007), Muro et al (2012), and Stavins and Benneer (2007), believe that public funding is necessary to support research, development, and deployment of new energies and technologies because the private sector under produces them since capital markets cannot fully appreciate the value of new energy-efficient technology and the spill-over effects of technology diffusion. Nascent technologies have difficulty competing on non-price characteristics despite demonstrating potential superiority. The lack of infrastructure for new energies combined with the massive and streamlined infrastructure for fossil fuel also discourages private market investment. Fossil fuel demand is being buoyed by the market's inefficiency.

Current fossil fuel output and global carbon dioxide emissions reflect these market failures. Annual carbon dioxide emissions spiked from 26.9 billion metric tons in 2004 to 31.7 billion metric tons in 2010. By 2015, Shapiro et al (2008) predict annual global emissions to reach 33.9 billion metric tons of CO<sub>2</sub> by 2015 and 42.9 billion metric tons of CO<sub>2</sub> by 2030. Fossil fuels are responsible for almost all of these GHG emissions. Coal accounted for 45% of the emissions in 2010 while petroleum claimed 35% and natural gas accounted for the final 20%. These emissions are being driven by a relatively small group of industries and countries. In the United States, the second highest emitter of CO<sub>2</sub>, the electricity sector, which is predominately powered by coal,

produced 33% of all annual CO<sub>2</sub> emissions while the transportation and industrial production sectors were responsible for 27% and 20%, respectively.

#### *The Players*

According to the International Energy Agency, the four countries with the highest annual CO<sub>2</sub> emissions are China, the United States, India, and Russia. In 2010, China emitted 8.3 billion metric tons of CO<sub>2</sub>. Eighty-six percent of these emissions came from coal and the other 14% came from petroleum. China's emissions increased by 7.2% from 2008 to 2009 and rose by 15% from 2009 to 2010. By 2030, it and East Asia's total emissions are expected to increase by 120%. The United States emitted 5.6 billion metric tons of CO<sub>2</sub> in 2010 which is below its peak output of 6 billion in 2007. From 2008 to 2009, emissions declined by 7%. This is probably due to electricity producers' initial shift from coal to natural gas. However, CO<sub>2</sub> emissions rose 3% from 2009 to 2010. The United States has a more even distribution of carbon dioxide emissions by fossil fuel than China. Forty-two percent of American emissions come from petroleum while 35% come from coal and the remaining 23% are derived from natural gas. The country with the third highest level of carbon emissions is India. In 2010, India produced 1.7 billion metric tons of CO<sub>2</sub>. Emissions increased by 8.7% from 2008 to 2009 but slowed to an increase of 4.5% from 2009 to 2010. This reduction in growth may be attributable to India's vulnerability to the economic contractions in the Eurozone and sluggish growth in the US. Given their low prices relative to petroleum, 69% of India's emissions come from coal while 23% derive from natural gas. Russia is the fourth of the highest carbon emitting countries with 2010 emissions reaching 1.6 billion metric tons. Emissions fell by 11% from 2008 to 2009 but rose 13% from 2009 to 2010. Fifty-one percent of Russia's emissions are created by natural gas while coal and petroleum account for 27% and 22%, respectively.

Future trends predict a substantial rise in carbon dioxide emissions but a strong shift in origin from the OECD to the Developing World. Relative to 2005 levels, CO<sub>2</sub> emissions are expected to increase by 59% under the business-as-usual scenario. OECD countries will increase their emissions by 24% with one third of this increase resulting from projected US energy policy. These estimates do not reflect the recent oil sands and shale gas revolutions, however. Carbon dioxide emissions in the Developing World are predicted to increase by 95%. In terms of regions, Asia is expected to increase emissions by 123% while the Middle East, Africa, and Central and South

America may emit 80% more CO<sub>2</sub>. Given the current and projected challenges posed by climate change, public policy which corrects the energy market failure must be implemented quickly.

#### *Potential Solutions*

The United States has contemplated numerous solutions but has only implemented a few policies to curb carbon dioxide emissions. As a result of Congress's inability to pass federal statutes governing these emissions, however, the Environmental Protection Agency (EPA) has become the country's leading CO<sub>2</sub> and GHG emissions regulator. A carbon tax, a cap-and-trade regime, and emissions standards, which include performance requirements and energy portfolios, are the three most discussed methods of reducing CO<sub>2</sub> emissions. A carbon tax would require all producers who emit carbon dioxide and other GHGs to pay the federal government a certain dollar amount per metric ton. A cap-and-trade regime would allow the government to distribute the rights to the number of metric tons of CO<sub>2</sub> produced in the US to emitters through a permit system. These emitters would be allowed to bank, trade, sell, or purchase these permits but, at the end of the fiscal year, the number of metric tons of CO<sub>2</sub> emitted would have to equal the number of metric tons for which they possess permits. Each year, the government would reduce the number of permits distributed to ensure actual CO<sub>2</sub> emissions reductions. A performance standard is a government order that mandates the energy efficiency of a production process or product. CAFE standards for automobiles are the most common example. Cars must travel a certain number of miles per gallon under the standard. This is applied, directly or indirectly, to the CO<sub>2</sub> emissions of a product or production process. The government generally through a fine punishes producers who violate this standard. Portfolios are another iteration of a standard in which the government mandates the composition of fuel use. By requiring producers to incorporate some percentage of reduced or non-carbon intensive energy source in their activities, governments can reduce emissions. The Renewable Fuels Standard, for example, requires that 14.4 billion gallons of fuel be produced from renewable fuels such as corn. Most emissions-related regulation comes from the EPA, however, which relies on a combination of instruments with varying levels of success.

#### *EPA Regulations*

The Clean Air Act of 1970 empowers the EPA to regulate GHG emissions through a variety of policy instruments. Under the Clean Air Act (CAA), Congress allows the EPA to regulate "air pollution

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

which may reasonably be anticipated to endanger public health or welfare.” According to Jonathan Adler, a professor law at Case Western, section 42 of the CAA mandates the EPA to regulate pollutants from motor vehicles and section 202 mandates such regulation on new cars and trucks. Sections 108, 109, 110, and 111 expand the agency’s power to regulate pollutants in general. These sections empower the EPA to conduct an “endangerment file,” which is an investigation on a substance it suspects of endangering the environment or public health. Prior to 2007, the EPA did not exercise its authority to regulate CO<sub>2</sub>. In 2007, the Supreme Court ruled in *EPA vs. Massachusetts* that the EPA is required to regulate GHGs as well as CO<sub>2</sub> because they qualify as air pollutants, which endanger public health or welfare. Since then, the EPA has utilized several policy instruments to meet their legal obligation to regulate GHG emissions.

Performance standards are the EPA’s main tools to reduce CO<sub>2</sub> emissions. The CAFE Standard is the EPA’s best known performance standard regulating GHG emissions. Under current rules, fuel efficiency standards apply to car models from 2012-2016 and mandate 5% per annum improvements in efficiency for SUVs and cars and a 21% reduction in light vehicle emissions. They also mandate average fuel efficiency of 34.1 miles per gallon by 2016. When developing performance standards, the EPA implements the “best system of reductions” method. This method promotes a combination of technology adoption and limited emissions trading within industries to maximize reductions while minimizing costs. The purpose of this policy is to improve energy efficiency so no “low-lying fruit” in reductions is missed before expensive and complicated measures are taken. Approximately 2.3 to 6.2% and up to 10% of total U.S. emissions, relative to 2005, may be reduced through the implementation of EPA regulations to improve efficiency in existing GHG emitting sources without fuel substitution or a reduction in energy output.

Setting emissions regulations for old, stationary sources and new operating facilities, such as refineries and fossil fuel-powered steam plants, under section 111 of the CAA is another iteration of the EPA’s performance standards tool. These existing facilities are regulated by “New Source Performance Standards” (NSPS), which are guidelines that determine the emissions levels of the facilities. The EPA allows the states to enforce these national guidelines, but the agency can enforce them under the authority of section five of the CAA. Coal-fired kilns, copper smelters, and pulp mills, for example, are

regulated by NSPSs. NSPSs do not currently apply to GHG emissions though they could in the future. By the end of 2012, the EPA is expected to regulate the emissions standards of petroleum refineries and steam boilers in power plants through NSPSs. Performance standards for coal-fired utility boilers have already led to a 2 million ton reduction in nitrous oxides over the last several years.

The EPA enforces these regulations through the permitting process. Any organization, which wishes to build a new facility or to substantially renovate an existing facility, must obtain a permit to do so. These permits mandate a specific range of emissions that the facility can produce in a given year. Permit-seekers must also demonstrate their utilization of the “best available technology.” Under section 165 of the “Prevention of Significant Deterioration” (PSD) clause of the CAA, companies are required to adopt emission controls—the “best available control technology” (BACT)—for all emissions subject to regulation by any part of the act if they construct or modify any facility that qualifies as a “major” stationary source. Construction or modification of a facility makes it a “new” source for purpose of this regulation. If the EPA suspects that a renovation of an existing facility will increase its emissions, which will increase air pollution, it can launch a “New Source Review” (NSR). Facilities, which are found to produce more emissions of air pollutants due to renovation under an NSR, are forced to meet the NSPS requirements of a facility of its type. Since the Supreme Court’s 2007 ruling, these regulations now include GHG emissions. Accordingly, the EPA has made temporary changes which will only regulate current firms under the PSD clause until 2016 and exempts firms with GHG emissions under 50,000 metric tons from the BACT requirement until after 2016.

### *Federal Government Clean Energy Investment*

Despite delegating responsibility to regulate CO<sub>2</sub> emissions to the EPA, the federal government is attempting to reduce fossil fuel consumption through clean energy investments in form of subsidies, tax expenditures, and loan guarantees. Clean energy policy, however, has not produced long-term solutions to the climate change crisis. From 2002 to 2008 under the Bush Administration, clean energy investment was less than \$30 billion while renewable energy technology only received \$12 billion in federal funding. Under the Obama Administration, federal government clean energy investments were significantly increased. Under the American Recovery and Reinvestment Act of 2009 (ARRA),

from 2009 to 2014, \$150 billion in federal public funds will have been spent on clean energy. Of these funds, \$89 billion will have been direct spending, \$51 billion will have been through tax expenditures, and \$10 billion through loan guarantees. The Obama Administration has promised an additional \$49 billion in loan guarantees for clean energy technology through 2014 if the Department of Energy deems the funds necessary. Federal funding was \$16.7 billion in the 2012 fiscal year. The vast majority of this financing has been dedicated to wide-scale commercial adoption as opposed to research and development (R&D) and manufacturing of prototypes. Approximately \$110 billion or 74% of these funds are dedicated to commercial adoption of clean energy technologies while only \$28 billion, or 18%, of funding is designated for R&D and \$12 billion, or 8%, is reserved for manufacturing. In 2012, R&D funding was less than \$5 billion. The federal government also utilizes the Department of Energy to guide and fund clean energy development.

The Department of Energy (DOE) helps guide clean energy policy through its own funding initiatives. However, these funds are insignificant in comparison to federal spending through the ARRA. The DOE's budget in 2011 was \$26 billion. However, only \$2.5 billion was dedicated to clean energy. Of these clean energy funds, \$304 million was spent on vehicle technology; \$243 million was spent on solar energy; \$216 million was reserved for biomass; \$170 million went to hydrogen fuel cells; and wind energy received \$79 million. In addition to spending only a small sum on clean energy technology, the DOE effectively offset some of the impact of these investments by dedicating \$939 million to fossil fuels technology. Fossil fuels received funding equal to 33% of clean energy spending by the DOE and none of that money was used to advance carbon capture and sequestration technology. DOE clean energy investments are too small to be effective as primary policy which is a major concern given the rapidly declining non-DOE federal government support.

Federal government funding for clean energy is quickly declining and private sector investment is following suit. By 2014, federal investment in clean energy will be reminiscent of its level under the Bush Administration. In 2009, the Obama Administration spent \$44.3 billion on clean energy. In 2010, that funding was reduced to \$35 billion. Federal spending will be reduced to \$10.9 billion by 2014. This fiscal cliff is problematic because public funds have been quite effective in leveraging private investment in clean energy. From 2009 to 2012, for every dollar of public investment, the private sector invested three dollars. It is no

surprise that a decline in public investment is being matched by a drop-off in private investment. From 2010 to 2011, when the federal government reduced its clean energy investments by 14%, the private sector reduced its investment by 33%. Clean energy industry leaders believe they need \$7-\$10 billion, at least, to develop and scale-up their technologies for the 2012 fiscal year. Private equity markets, however, are only willing to lend \$3.6 billion. Declining public investment has shaken private investor confidence which will cause a contraction in the clean energy market if no corrective course is taken.

Despite structural barriers and inconsistent funding from the public and private sector, the clean energy sector has had some successes. From 2006 to 2011, for example, electricity generation from renewable fuels doubled. Across the industry, 70,000 new jobs were created from 2007 to 2010 which is a 12% increase of the clean energy workforce. The DOE claims that its \$26 billion in loan guarantees, which supported 23 businesses, saved 56,000 jobs. Companies have also demonstrated some success in reducing production costs with the assistance of federal funds. The cost of wind turbines dropped 27% from 2008 to 2011 and between 24% and 39% from 2002. Solar panels have reduced costs by an even greater margin. From 2007 to 2011, solar modules reduced costs by 40% and PV solar panels can now produce electricity for \$3.47 per watt. That is a 50% decrease relative to 2002 costs. Although DOE and other federal government clean energy policy have had some success, reform is necessary to achieve energy breakthroughs at maximum efficiency.

#### *The Problems with US Clean Energy Subsidies*

Clean energy policy in the US has serious structural flaws which inhibit the efficient and effective commercialization of long-term energy solutions. The volatility of clean energy policy creates a lock-out effect on potential solutions in addition to being inefficient. It also contributes to overinvestment in technologies which have high costs of abatement while only generating relatively small energy gains. Although the Obama Administration increased federal clean energy expenditures by 435% relative to the Bush Administration, a significant portion of the funding was dispensed within the first two years of his presidency as a one-time stimulus policy. This has created a large boom in clean energy investment which will be followed by a massive contraction. Fifty-three percent, or \$80 billion, of federal money dedicated to clean energy for the entire 2009 to 2014 period was appropriated for 2009 and 2010. Thirty-

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

three percent, or \$51 billion, was dispensed primarily as a stimulus program to boost economic growth. Increased funding is necessary for clean energy breakthroughs but so is consistent funding. The volatility of tax credits and loan guarantees for clean energy technologies has also inhibited large-scale energy breakthroughs. The Wind Production Tax Credit, for example, expired three times from 2002 to 2007 and has been renewed seven times since 1992. It is set to expire for the fourth time in early 2013. The Manufacturing Tax Credit, which provides funds for the initial stages of production, reached capacity in 2010. This was only two years after it was introduced. Section 1705 of the Loan Guarantee Program for solar energy from the DOE expired in 2012, three years after its introduction. By favoring low-cost of production technologies, such as wind and solar energy, and being temporary at best and unpredictable at worst, federal expenditures create uncertainty, which skews private investment toward conventional alternative fuels, and encourages a boom and bust cycle. By front-loading investment, the federal government has discouraged long-term investment as well as ensuring budget cuts for clean energy R&D, manufacturing, and deployment by both the private and public sector in the near future.

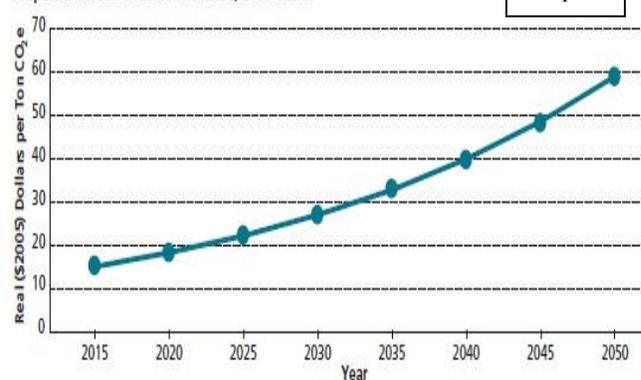
Compounding this problem is the distribution of funding. The vast majority, approximately 74% of federal spending, was dedicated to adoption of clean energy technology. This has helped create a lock-out effect in the clean energy market. By skewing federal funds to wide-scale commercial adoption and making them temporary, the market was distorted to favor low production cost technologies such as wind and solar energy. This has two fundamental problems. The first is that these technologies have high costs of actual CO<sub>2</sub> abatement and produce little additional energy relative to fossil fuels. Accordingly, it is doubtful that they will ever replace fossil fuels on a large scale. Solar and wind energy, for example, collectively received \$322 million from the DOE, or 15% of DOE's clean energy funding, in 2012 despite their infeasibility as overarching alternatives to fossil fuels. The second problem is that this policy discourages investment in potential long-term energy solutions because they have high initial costs. Federal government assistance helped technologies which were near scalability already at the cost of R&D funding in potentially more efficient and effective solutions. This creates the lock-out effect. By funding currently more adoptable but ultimately less effective technologies like solar energy, the government

discourages private investment in R&D and manufacturing of developing clean energy. Seven-eighths, or 88% of all private funding from 2009 to 2011 went to conventional, low-risk energy alternatives like wind and solar in response to government policy. In 2011, coinciding with a drop-off of public funding, wind turbine production contracted by 50% as did private funding. Clean energy expenditures need to be reformed and directed toward sustainable, long-term alternatives to fossil fuels if the US is to achieve significant CO<sub>2</sub> emissions reductions.

### *The Real Solutions: A Carbon Tax Swap and Clean Energy Investment Reform*

Any climate change policy must address the twin market failures in carbon dioxide emissions from fossil fuels and suboptimal levels of clean energy research and development. The best solution to these problems is a combined policy portfolio of a carbon tax swap and clean energy subsidies directed toward R&D that are tied to feasible performance standards. A “top runner” program for clean energy subsidies similar to Japan’s policy should be adopted in the US. Military procurement of clean energy technologies pertaining to aviation and automotive fuel, advanced batteries, and smart grids, for example, should also be implemented to support the manufacturing of clean energy prototypes. Without such procurement, long-term clean energy alternatives to fossil fuel may never be given the opportunity to penetrate the market. Consequently, certain EPA policies such as emissions performance standards, permits, and NSRs should be repealed to avoid inefficiency through redundancy with the

Proposed Carbon Dioxide Tax Rates, 2015-2050



Source: Metcalf et al. (forthcoming).

carbon tax swap.

### *A Carbon Tax Swap Tied to the Payroll Tax*

Table 1

**Relation of the Environmental Tax Credit to Payroll Taxes**

Wages (\$)	Payroll tax		
	Before credit (\$)	After credit (\$)	Reduction (%)
5,000	765	205	73
10,000	1,530	970	37
15,000	2,295	1,735	24
20,000	3,060	2,500	18
30,000	4,590	4,030	12
50,000	7,650	7,090	7
90,000	13,770	13,210	4

Source: Author's calculation.  
Note: Credit of \$560 per covered worker assumed. This assumes payroll tax rules as of 2005.

Gilbert Metcalf, a Treasury department economist and professor at Tufts University, has a carbon tax swap proposal with offsets to the payroll tax that would reduce cumulative US CO<sub>2</sub> emissions by 34% relative to a business-as-usual baseline based on 2005 emissions levels. The tax raises hundreds of billions in revenue as well. Metcalf's proposal would correct the energy market failure by pricing CO<sub>2</sub> in the most efficient and equitable way possible while reducing tax distortions. Under the Metcalf policy, starting in 2015, an initial tax of \$15 per metric ton of CO<sub>2</sub> and CO<sub>2</sub> equivalent of other GHGs would be levied. This tax rate would rise by 4% on top of inflation, per year, until 2050 when it reached \$60 per mt of CO<sub>2</sub>e. For simplicity, the tax would be levied upstream, or legally placed on businesses, because the US energy market has relatively few suppliers and hundreds of millions of consumers. According to government records from 2005, the vast majority of US coal comes from 1,415 mines while 90% of natural gas is retrieved from 110,000 of 300,000

wells and crude oil is pumped through 150 refineries. These numbers, particularly in the natural gas field, may have shifted. However, they demonstrate the administrative advantage of taxing upstream rather than downstream. The economic incidence of the tax, however, would most likely be passed on to consumers hence the carbon tax swap. Metcalf proposes an environmental earned income tax credit in the personal income tax equal to the employer and employee payroll taxes on initial earnings up to a limit. Using 2003 emissions and earnings, the credit would offset payroll taxes paid on the first \$3,660 of earnings per worker up to a maximum credit of \$560 per covered worker at the initial tax rate of \$15/mt of CO<sub>2</sub>e. The credit is capped at incomes of \$90,000 so consumers with incomes above that threshold will not receive the tax credit. Table 1 shows the effects of the payroll tax swap on tax burdens by annual income. As the tax rate rises, the credit rises proportionally to ensure a neutral distribution. Table 2 demonstrates how the credit would adjust in response to the adjustments in the tax rate.

In addition to the tax and the earned income tax credit tied to payroll taxes, a refundable credit for the embedded CO<sub>2</sub> in exported fuels and a reciprocal tax imposed on the embedded CO<sub>2</sub> in imported fossil fuels and a tax credit for CO<sub>2</sub> reducing land use decisions such as forest sequestration are included. These policies are included to preserve a proper price signal on CO<sub>2</sub> so less carbon intensive activities are incentivized with the least distortion possible.

# Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

This carbon tax swap proposal raises substantial annual revenues while contributing to meaningful carbon emissions reduction. Metcalf calculates that a \$15/mt of CO<sub>2</sub>e tax rate will raise \$80 to \$90 billion in 2015. That tax, as a percentage of GDP, is approximately 0.66%. By 2050, at 4% annual real growth, the tax will be 1.1% of GDP. While exact revenue figures for each fiscal year were not included in his proposal, they can be estimated

Varying the Carbon Tax Rate

Table 2

Carbon tax rate \$/ton CO <sub>2</sub>	Maximum credit	Income threshold
\$5	\$180	\$1,176
\$15	\$560	\$3,660
\$25	\$960	\$6,275

Source: Author's calculations.

Note: Income threshold is the maximum wage income for which the maximum

Modifying the Rebate in the Carbon Tax Swap

Income group (decile)	Earned Income		Earned Income and Social Security		Lump sum	
	Net (\$)	Net (%)	Net (\$)	Net (%)	Net (\$)	Net (%)
1 (lowest)	-68	-0.7	112	1.4	166	2.1
2	-120	-1.0	125	1.0	128	1.0
3	-57	-0.2	114	0.6	120	0.6
4	6	0.1	70	0.3	103	0.4
5	26	0.1	54	0.1	108	0.3
6	115	0.3	66	0.1	26	0.1
7	135	0.2	35	0.1	-32	-0.1
8	99	0.2	-61	-0.1	-52	-0.1
9	70	0.0	-95	-0.1	-171	-0.2
10 (highest)	-130	-0.0	-332	-0.2	-355	-0.2

Source: Author's calculations.

Note: This table reports the change in household disposable income resulting from different proposals for rebating the carbon tax. See text for descriptions of rebate proposals. The lowest decile includes households in the 5th to 10th percentiles. Mean net tax changes within each decile are reported. Positive numbers indicate an increase in disposable income and negative numbers indicate a decrease. Net (%) indicates the change as a share of income.

from a similar policy recommendation he published in 2010 given the similar structure and rates. Using this assumption, projected revenues in 2020, 2030, 2040, and 2050 are \$110 billion, \$160 billion, \$230 billion, and \$308 billion, respectively. Graph 1 shows the proposed tax path of Metcalf's rates. Revenues will eventually drop as non-carbon intensive energy sources are implemented by producers and consumers which is the purpose of the tax. In terms of CO<sub>2</sub> emissions reductions, the Metcalf proposal will cut annual US GHG emissions by 14% in 2015. Carbon dioxide emissions will be reduced by 8.4% and all other GHG emissions will fall by 50%. The majority of these emissions reductions, approximately 59%, will come from reduced coal use. Thirty-four percent will be attributed to less

petroleum use and 8% to decreased natural gas consumption. Coal, petroleum, and natural gas use are expected to fall by 14.7%, 5.6%, and 3.4%, respectively. If implemented today, coal reductions would probably be higher and natural gas reductions lower given the contemporary advancements of natural gas extraction and the discovery of new wells. The effect on petroleum seems indeterminate. Metcalf does not state the cumulative CO<sub>2</sub> emissions reductions of his policy beyond the year 2015. However, given its similar structure and tax rates to Shapiro et al (2008) and Morris, McKibbin, and Wilcoxon (2012), a plausible projection would be cumulative reductions of 34% relative to 2005 levels by 2050. Annual CO<sub>2</sub> emissions in 2050 would probably be 5.6 billion metric tons which is equal to emissions levels of 2012.

Metcalf's carbon-payroll tax swap proposal is a desirable policy solution to the energy market

failure because it is efficient, distributionally neutral to progressive, stable, and is not significantly disruptive of economic growth. A carbon tax is the most efficient policy tool to correct the surplus production of carbon dioxide because it directly targets carbon dioxide. By placing a price on CO<sub>2</sub>, businesses can adjust their production solely on the basis of CO<sub>2</sub> which is what any climate change policy desires. This carbon tax will reduce CO<sub>2</sub> emissions to socially optimal levels with only a 0.5% annual welfare reduction. As a subunit of efficiency, a carbon tax payroll

swap can reduce overall tax distortions. The marginal excess burden of the incomes tax in the US is between 0.2 and 0.4. By offsetting income taxes with a tax swap based on payroll taxes, an efficiency gain of \$30 billion can be made relative to a lump-sum distribution. A carbon tax by itself is regressive because energy expenditures as a percentage of income declines as income rises. By implementing a payroll tax swap, Metcalf's proposal corrects this intrinsic regressivity. Wage earners at the \$5,000 level would see a 73% reduction in effective payroll taxes while those at \$90,000 in income would receive a 4% reduction. Table 3 demonstrates Metcalf's carbon tax swap's ability to correct the regressivity of the tax and its efficiency over lump-sum redistribution. The carbon tax by itself would reduce

Table 3

the earned income of the bottom three income deciles by 0.7%, 1.0%, and 0.2%, respectively. With the tax swap, the same three deciles see net gains in income of 1.4%, 1.0%, and 0.6%, respectively, while the top three income deciles see net incomes losses of 0.2%, 0.1%, and 0.1%, respectively. Table 4 gives fuller analysis of the effects of the earned income tax credit tied to payroll taxes. The stability of the carbon tax swap also makes it sound policy. The coefficient of variation (CV) for a carbon tax using historic emissions from 1959 through 2005 is 0.19, and the CV for real payroll tax collections over that period is 0.56. This suggests that carbon tax collections should be even more predictable than payroll tax collections.

Given the current sluggish nature of the economy and millions of Americans' and most politicians' fear of new taxes, the implications of any new tax on economic growth is the standard litmus test. Metcalf believes the effects will be minimal because "price impacts of most industries are small and revenue recycling minimizes the rise in burden from the tax." American competitiveness will probably not be significantly affected either because the European Union's "Emissions Trading System" is more stringent and costly than this policy proposal. Even if US exports were threatened by this tax, other policies, such as border tax adjustments or output-based rebates, could be implemented to counteract any negative effects. Overall, the projected net effect on GDP may be less than 1%. This prediction is substantiated by Robert Shapiro's analysis on a similar carbon tax swap proposal. According to Shapiro, a carbon tax that begins at \$15 per metric ton of CO<sub>2</sub>e and has a real annual rise of 4% will decrease social welfare by 0.5%. In 2005 dollars, that is a loss of \$314billion by 2030. Economic losses or price increases will be greatest in the sectors of the economy directly related to energy consumption such as transportation. Metcalf's proposal will increase the production cost of gasoline by 13 cents per gallon, or 4% of 2007 prices, and natural gas by 54 cents per thousand cubic feet, or 7% of 2007 prices. In terms of consumer prices, at the initial tax rate, the following prices changes will most likely occur: electricity and natural gas prices will increase by 14.1%; home heating prices will increase by 10.9%; gasoline prices will increase by 8.8%; and air travel will increase by 2.2%. All other consumer commodities are only expected to experience a price increase below 0.3%. The benefit of this distribution is that energy conservation and efficiency will be encouraged while the bulk of consumer activity will be unchanged.

A carbon tax will distort some market decisions, however, and particularly energy-related decisions. Global petroleum demand, for example,

could fall by 33% in the first few years but then re-rise until 2030. Demand will drop off after this point, however, and remain level by 2050 for a net decrease in consumption. A similar phenomena could occur with natural gas. Metcalf also predicts that natural gas demand will triple by 2030 and then fall substantially afterward and level off around 2050. These scenarios are plausible because a carbon tax will incentivize fuel switching in electricity and general industrial production from coal to petroleum or natural gas due to cost and efficiency concerns. Demand drops after 2030, according to Metcalf, due to a tightening of carbon policy by the Developing World which he believes will occur by this time frame given a US carbon tax. Metcalf's proposal highlights the efficiency and high probability with which a carbon tax can reduce carbon emissions.

A carbon tax swap is not only the best solution to climate change because it reduces emissions at a low cost of abatement and minimizes market distortions, but because it is more efficient than any other policy alternative. The leading alternative to a carbon tax is a cap-and-trade policy. Dozens of iterations of the regime have been debated before Congress over the past five years and the European Union has already adopted one version of it. A carbon tax is more efficient and logistically easier to administer than a cap-and-trade program and it precludes the possibility of generating windfall profits for egregious polluters. Under a carbon tax, all carbon emitters must pay the same price for their emissions. No industry is favored over another and the annual rise provides policy certainty that enables businesses to allocate their resources as efficiently as possible for decades. A cap-and-trade program encourages rent-seeking which may lead to more profitable firms receiving larger than necessary permit allocations. This is both unfair and distortive as cost-minimization is impossible if all firms are not forced to equalize their marginal costs and benefits of CO<sub>2</sub> emissions. This allocation leads to an additional problem of regressivity as the firms who are most likely to receive excess permits are the wealthy ones. This allocation scheme would, in effect, transfer the majority of the cost of the policy to smaller firms for whom emissions represent a greater percentage of production costs. A carbon tax is also more efficient than cap-and-trade because it decreases energy demand for carbon-intensive fuels. The key to decreasing carbon-intensive energy demand is shifting the cost of emissions to consumers. Raising consumer prices will encourage fuel switching which will reduce carbon emissions. A carbon tax can be passed along to consumers in any industry. In regulated electricity markets, under a cap-and-trade

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

system with freely given permits, firms will absorb the cost of carbon with their emissions allowances and not pass on the increased cost to consumers. This will fail to reduce carbon-intensive energy demand. A carbon tax is easier to administer than a cap-and-trade program as well. The US has a well-established tax collection system. Collecting additional revenue will not require a massive expansion of federal government employees and the combination of preset increases and upstream legal incidence makes administration simple. To implement a cap-and-trade system, a new agency would be created or at least a large expansion of an existing agency would occur. These new employees would have no experience with the process of calculating, allocating, benchmarking, and collecting emissions permits. Additionally, the downstream nature of a cap-and-trade system, distributing billions of permits to tens of thousands of companies would be complex and inefficient in the initial years. Cap-and-trade would also be under the jurisdiction of multiple congressional committees from the Senate Finance Committee to the House Energy Committee whereas a carbon tax would be placed under one or two related committees. This shared jurisdiction would compromise the effectiveness of the program as well as complicate its administration. Finally, a carbon tax cannot generate windfall profits for private companies at the expense of the public while a cap-and-trade system can. If Congress follows its counterpart in the European Union and allocates emissions permits free-of-charge to the private industry, firms will have amassed risk-free, costless profits because each permit has a monetary value. Private firms will raise prices to reflect the future cost of these required permits but they will not lose a cent initially because they did not pay for these permits. The one-time allocation will have generated pure profit for polluters. Econometric analysis by Parry and Williams (2004) demonstrates that a corporate tax will only reclaim 35% of these profits so the public could be forced to subsidize private firms for no economic reason. A carbon tax's efficiency, administrative simplicity, and fairness make it superior to a cap-and-trade program.

A carbon tax is more desirable than most EPA regulations of GHGs, such as emissions standards, because it is more efficient, more affordable, more enforceable, and less distortive. EPA performance standards do not equalize the marginal costs and benefits of CO<sub>2</sub> emissions as precisely as a carbon tax would. According to Dallas Burtraw of Resources for the Future, regulators are less innovative, respond less quickly, and raise costs higher, in the long-run, than private firms would under a carbon tax. This higher price is an excess

burden relative to a carbon tax. This is, by definition, inefficient because EPA emissions standards raise costs more than necessary for the same result. Performance standards for emissions also raise the cost of investment in energy-efficient technology relative to a carbon tax. The EPA's "best available control technology" discourages firms from investing in more energy efficient mechanisms in older facilities for fear of being forced to purchase costly anti-air pollution capital. A carbon tax would enable firms to choose the most cost-effective method of reducing emissions. Given performance standards "technical and data-intensive nature," enforcement is difficult. Standards are often set too stringently for industry to comply and this leads to rent-seeking or last-minute leniency. Both scenarios increase costs while failing to mitigate emissions. Additionally, these complications actually discourage fuel switching because firms do not face consistent or serious price signals on carbon. A carbon tax, however, like other taxes, would be enforced more stringently than these regulations.

Emissions standards are also more distortive than a carbon tax because they can have "rebound" and "lock-out" effects. The rebound effect occurs when a performance standard encourages overutilization of a fuel which leads to greater net emissions than prior to the policy. By raising performance standards, the EPA discourages emissions because the regulated fuel will emit less CO<sub>2</sub> per unit. However, this makes the fuel more efficient which may encourage businesses to use more of it to expand production since the price of energy has been reduced through efficiency gains. Increased fuel utilization will then raise net emissions. Linn et al (2012), estimate this rebound effect to be approximately 11% to 13%. Carbon taxes encourage energy efficiency through fuel switching and price cumulative emissions not just rates of emissions so the rebound effect is an improbable outcome. The lock-out effect on investment due to emissions standards such as renewable energy portfolios is another reason why carbon taxes are superior policy instruments. Ethanol has had a rebound effect which has raised emissions in part due to the Renewable Fuels Standard. The Renewable Fuels Standard, which is a federal portfolio policy, mandates that 14 billion gallons of fuel be produced with renewable sources by 2014. Accordingly, the majority of the portfolio is occupied by ethanol, which has a low production cost but is inefficient in terms of carbon abatement. This policy favors ethanol and other low-cost biofuels which can't replace fossil fuels in the long-term at the expense of initially expensive but potentially long-term solutions. A carbon tax prices

carbon emissions equally so all alternative fuels will compete on carbon-intensity and energy-efficiency metrics as opposed to price alone.

The lower cost and greater efficiency of a carbon tax makes it superior to EPA regulatory tools such as permits and "New Source Reviews" (NSR) as well. These policies can be scaled back in the face of a carbon tax. Permits for emissions on stationary sources, such as coal-fired power plants, pulp plants, and refineries, for carbon dioxide emissions would be prohibitively expensive. Under the Prevention of Significant Deterioration clause, section 165, of the CAA, the EPA would have to issue permits to 6 million instead of 15,000 firms. Under Title V of the same act, 40,000 instead of 250 companies would face additional regulations. The PSD expansion would cost \$250 million per year and the Title V provision would drain \$15 billion annually from the Treasury. New Source Reviews are also too expensive relative to their benefits. NSRs discourage investment in cleaner, more efficient technology by creating a potential financial penalty in the form of investment in anti-air pollution capital. According to extensive analysis from economists Joshua Linn, Erin Mastrangelo, and Dallas Burtraw, NSRs reduced energy efficient investment from 1999-2009 when the EPA accelerated its information requests versus the period up to 1998 when requests were seldom. NSRs and permits are more expensive than a carbon tax and require more administration.

#### *Reforming Clean Energy Subsidies and Expenditures*

It is not enough to implement a price signal on carbon emissions. The current consequences and future threats posed by climate change demand the utilization of carbon-free, or at least low-carbon intensity energy sources. US clean energy subsidies must be reformed to reflect a strong and long-term commitment to performance-based investment while emphasizing research and development (R&D) and initial manufacturing. Subsidies can no longer be flat sum guarantees regardless of performance and their volatility and political ties must be corrected. US energy policy must also cease to support entrenched fossil fuel interests by repealing subsidies for petroleum, natural gas, and coal.

The United States' federal government must change its clean energy investment strategy from temporary, ad hoc funding favoring low-cost alternatives irrespective of long-term scalability and commercial success to performance-based, long-term investment in R&D and initial manufacturing of transformational non-carbon energy sources. Clean energy funding must be allocated over several years

and with set deadlines that politicians will not be allowed to cut short until after the prescribed period has elapsed. By providing funding on five and ten year bases, the government can create certainty in the clean energy market. This certainty will encourage the private sector to take larger risks on new R&D and prototypes instead of conventional clean energies. This policy change will also promote long-term investing which is necessary for the emergence of technologies that can replace fossil fuels. Additionally, legislation authorizing the funding should contain provisions barring congressional repeal or alteration until a sunset date set at the end of the time frame. This will bring stability to clean energy funding and end the frequent boom and bust cycle of investment. Mark Muro of the Brookings Institute estimates that private investment for clean energy from 2009 to 2014 will be between \$228 and \$482 billion. That amount is three times the size of public funding over the same time period. If such a volatile and temporary clean energy investment strategy can generate that much private support, a long-term, stable public commitment to clean energy technologies could leverage much more. The combination of long-term and stable public investment will encourage private investment in sustainable energy solutions which can phase-out fossil fuels.

It is not enough for clean energy investments to be stable and liquid over reasonable long-term timeframes. Clean energy expenditures must also be tied to performance to ensure that public funds are not revenue sources for impractical energy technologies, particularly if they are spaced over several years. The following policy recommendations could be adopted together, separately, or in various combinations. One potential reform is to have subsidies decrease on a one-to-one basis with costs of a product. Subsidized firms should not receive flat sums of public money without demonstrating improvements in quality and decreases in cost. If firms cannot lower their costs, then they should lose their public funding because they fail to demonstrate potential commercial viability. By linking subsidies to cost reductions, federal subsidies will incentivize improved performance because these firms cannot afford to lose their public funds in the early stages of development. Taxpayers' investment will be efficient and effective because these companies will produce results with smaller subsidies than before. Once products reach market maturity, subsidies will be phased-out so market forces can choose the winners and losers while driving further innovation and cost-reduction.

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

Another clean energy subsidy reform is a "Top Runner" program. In a "Top Runner" program, the best available, commercially deliverable energy efficiency standards are applied across-the-board within a product's category. For example, the most fuel-efficient microwave on the market is set as the minimum energy efficiency standard for all other microwave producers. Any firm that seeks federal funding must meet or exceed these standards. The policy uses the forces of competition to produce results while tying funding to performance to prevent lifetime rent-seeking and unsustainable subsidies. The cost of abatement is low because it is based on benchmarks that the market already deems feasible. By rewarding competition and performance among businesses and setting realistic targets, a "Top Runner" program can improve the performance and commercial viability of clean energy technologies. Products using energy sources such as solar, wind, geothermal, nuclear, and any future non-carbon energies would have to compete against other products using the same energy substance for subsidies based on efficiency, kilowatt-hours of energy or other appropriate metric, and current and projected cost. The bar for scalability and feasibility in clean energy must be raised but realistically and consistently.

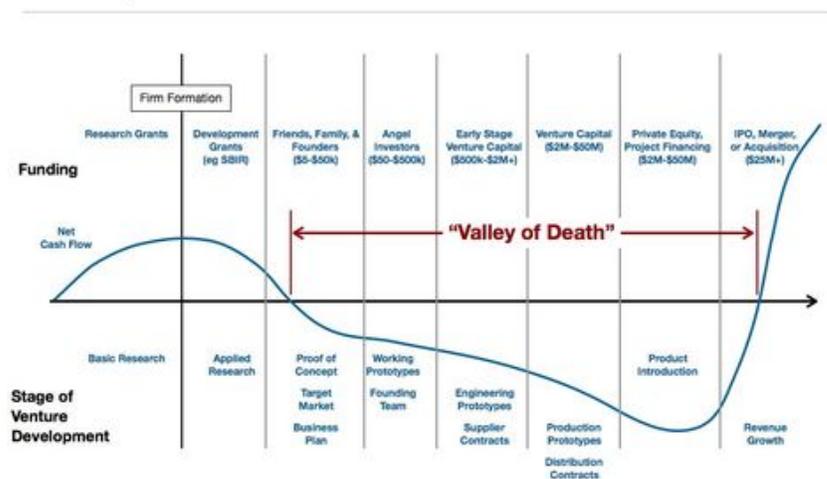
While this instrument is, essentially, a performance standard, it is superior to the performance standards utilized by the EPA, for example, because it sets realistic targets, encourages competition, rewards instead of punishes innovation, and addresses the issue of capital flows for the private sector and sustainable subsidies for the public sector. EPA performance standards provide no carrots and implement inefficient sticks that are either far too stringent or too lenient. A "Top Runner" Program creates positive incentive through financial reward and uses businesses' natural edge in innovation to promote public goals. Either an independent agency or an agency within the Department of Energy (DOE) should be created to set these standards based on the cost per unit of energy produced and the scalability of the technology. The agency should be comprised of DOE officials, academic experts, and representatives of the business and consumer sectors to ensure progressive but realistic goals and cross-sector consensus and commitment. DOE officials selected by the Secretary of Energy would oversee compliance and evaluation of recipients of federal

subsidies, loan guarantees, and tax credits to avoid any conflict of interest.

While applying a "Top Runner" program to clean energy specifically is a novel policy recommendation, the instrument itself has been successful in Japan. In the early 1990s, the Japanese government applied a "Top Runner" program to dozens of products to promote greater energy efficiency and to reduce the country's carbon dioxide emissions. Gasoline and diesel-powered automotive vehicles, air conditioners, refrigerators, batteries, and many other high-energy products are subject to the "Top Runner" program which pegs standards to the highest performing product on the market. The results have been quite remarkable. In 1998, Japan set a standard for 22.8% efficiency gains in gasoline-powered automobiles by 2010. The target was met in 2005. Diesel-powered automobiles improved their fuel economy by 22% from 1997 to 2004 while air conditioners have had a 68% improvement in energy-efficiency in the same time period. The Ministry of Economy, Trade, and Commerce estimates that the country has saved between 130 and 150 billion kilowatt hours of electricity from 1998 to 2010. That is equivalent to 18% of electricity production in Japan in 2011 and approximately the annual electricity output for Turkey in the same year. In terms of CO<sub>2</sub> emissions, this program has saved 126 million metric tons which is almost 10% of Japan's annual emissions. The program has also been a financial boon to the Japanese public. Savings are estimated between \$300 and \$500 million per year since 2002 while only costing \$1.16 billion in the same year. A "Top Runner" program has increased performance of various consumer products while reducing emissions and saving the Japanese public millions of dollars. Perhaps a similar program for clean energy in the US could have even better results.

Clean energy subsidies will not be reformed

### Lifecycle of a venture



by making them contingent on performance alone. The natural market failure in R&D is fundamental to the lack of feasible clean energy alternatives to fossil fuels. The Obama Administration only allocated \$28 billion over 5 years for clean energy R&D and the Bush Administration designated even less. According to Brookings scholar Mark Muro, that level of R&D funding is at least three times too small. The US will only discover the clean energy source of tomorrow when it becomes serious about investing in the R&D to find it and the initial manufacturing stages to present it to private investors. Accordingly, the federal government should provide academic institutions, public-private partnerships, and collaborative energy clusters approximately \$12 to \$15 billion per year for R&D. Specifically, these grants should be given for the exploration of new generation energy sources, particularly transportation fuels and electricity generation, and for increasing energy efficiency of buildings and batteries. The DOE currently gives \$1.6 billion per year for basic energy sciences. This funding should be increased and the Department should fund more university labs as well as promote more collaborative partnerships between universities and federal government scientists. This partnership will leverage the institutional knowledge, facilities, and skills of universities' and federal labs as well as enable fresh ideas and leeway for new paths of research. The DOE is currently proposing \$146 million for six energy clusters to research and develop batteries, energy storage, and smart grids. Ventures like these should receive more funding and their research should be fast-tracked for prototype development. Expanding the capacity and efficiency of batteries, electricity storage, and smart grids will reduce electricity consumption, make energy use more efficient and powerful, and will reduce carbon emissions. The final component of strong R&D funding is investment in human capital. The federal government only provides \$36 million per year for the training of a high-skilled, technical science workforce. This funding should be increased. The public-private partnerships between leading research universities and federal government labs are ideal training grounds for the leading scientists of tomorrow. Fellowships should be established and expanded to place the leading graduate student science minds in these partnerships working on clean energy sources and technologies.

Once the United States has made a serious commitment to performance-based clean energy technologies and to R&D into next generation energy sources that can replace fossil fuels, it must commit to the initial manufacturing of these breakthroughs. It is not enough to be a revolutionary product. Game-

changing technologies, particularly in the clean energy field, can be buried before they ever reach the possibility of commercialization because their start-up costs and high-risk nature deter private investment. This "valley of death" can be overcome by stable and substantial government investment in the initial manufacturing of prototypes. These prototypes can demonstrate feasibility and profitability to the market which will bring the private investment necessary for market scale-ups. The following graph, produced by the University of California-Davis' Center for Entrepreneurship, depicts this phenomena. An effective but underutilized method of overcoming the "valley of death" is military procurement. Numerous dual-use technologies have been developed, perfected, and then made commercially viable and available through procurement by the Department of Defense. Jet engines, radio chips, lasers, computers, the Internet, and electric grids were all originally developed for the military. Clean energy technologies can also be developed, manufactured, tested, and prepared in this manner. There are several dual-use products which the military could pay for that could be later adapted to civilian uses. Advanced batteries, aviation biofuels, vehicle efficiency, not to mention electric grids and new sources of automotive transportation fuel are all technologies that would be valuable to both the military and public sector. The military's rigorous performance standards and cost-reduction and performance-improving incentive structure have produced results for decades. Their application to clean energy prototypes will overcome the "valley of death" structural barrier, raise performance standards, and enable the sustainable commercial adaptation of clean energy technologies.

#### *Ending Fossil Fuel Subsidies*

These structural reforms to federal clean energy investment will provide stability, leverage private investment, promote more productive and efficient clean energy technologies and enable the eclipse of fossil fuels as the national and global energy source. Additionally, the economic benefits of clean energy subsidy reform should not be overlooked. The National Academy of Sciences has estimated that the net benefit of public energy investment from 1978-2000 was \$23 billion. Clean energy projects have added or preserved tens of thousands of jobs and dozens of federally-funded labs have not gone idle due to this funding. The benefits to the environment through major reductions in carbon dioxide emissions will preserve ecological stability and mitigate the more severe consequences of climate change. However, given the incumbency advantage of fossil fuels through its centuries old transportation and distribution networks and mass

## Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

integration into virtually all economic life, clean energies face an uphill battle even with federal government support. Accordingly, the US should no longer monetarily support fossil fuels. These subsidies distort the market, inhibit the commercialization of clean energy sources, and do not significantly reduce carbon emissions. From 2002 to 2008, fossil fuels received \$72 billion in federal support. This amount was six times the size of renewable energy subsidies over the same time period. In addition to receiving more funding in recent memory than clean energy alternatives, this funding has been far more stable. The Foreign Tax Credit, Credit for the Production of Non-Conventional Fuels, and Oil and Gas Exploration Expensing are three fossil fuel tax expenditures which have not been subject to the same volatility and political jockeying that clean energy tax credits, such as the Wind Tax Credit, have. These three provision provided \$26 billion alone for the fossil fuel industry over six years. That is essentially the same funding the Bush Administration gave to all clean energy sources. The Oil and Gas Excess Percentage over Cost Depletion Credit and the Credit for Enhanced Oil Recovery Costs allotted an additional \$7 billion for fossil fuels from 2002 to 2008. Although clean energy subsidies are currently larger than fossil fuels, the steep drop-off in funding that has already begun and will reduce clean energy subsidies to \$11 billion by 2014 combined with these fossil fuel subsidies will preserve fossil fuel incumbency. Eliminating these subsidies will reverse the energy imbalance in the US by improving the commercial viability of clean energy sources. By raising the cost of fossil fuels, consumers will be incentivized to switch energy sources and as clean energy and fossil fuel energy reach price parity, the market will shift away from carbon-intensive fuels. This will drastically reduce carbon emissions in the long-term. Eliminating fossil fuel subsidies will reduce emissions immediately as well. The Environmental Law Institute estimates that the termination of global public funding of fossil fuels would reduce emissions by 3.9%. If the US federal government ceased their fossil fuel policy, global emissions would drop by perhaps as much 1% since the US accounts for 1/6 of all emissions. Public support for fossil fuels must be eliminated so public investment in clean energy is not offset. A house divided against itself cannot stand and neither can a policy divided against itself be effective. The US must stop financially supporting fossil fuels if the country is to adopt widespread clean energy sources.

### Conclusion

The consequences of business-as-usual fossil fuel use are too great to overcome the benefits of the cheap and well-established energy source. Rising global temperatures will result in irreparable environmental damage which will lead to significant economic and public health-related consequences. Everyone will be susceptible to the threats posed by climate change but the world's most vulnerable citizens, those living in the poorest regions, will be affected the most. These are the very people who have contributed the least to the problem. As the world's leading economy and its second largest emitting of carbon dioxide, the US has the duty and interest to curb its emissions and to phase-out its fossil fuels with clean energy technologies. The best way to simultaneously cut emissions while promoting low to no carbon energy sources is to address the twin market failures of unpriced carbon and research and development funding. The US should adopt a carbon tax, which is set at an initial rate of \$15 per metric ton, which is tied to the payroll tax through an income tax credit. A carbon tax will enable an efficient supply of fossil fuels while incentivizing firms to implement non-carbon energy technologies. Stable, long-term, and performance-based clean energy subsidies should be coupled with the carbon tax to correct the market failure in energy R&D. A "Top Runner" program, similar to the policy applied in Japan, should be adapted to public clean energy funds and military procurement of next generation alternative energy prototypes, particularly in aviation and automotive fuels, advanced batteries, and smart grids, through the Department of Defense. R&D funding and military procurement of these prototypes will overcome the "valley of death" barrier to the widespread adoption of new energy. Practically and symbolically, the US must end its subsidies to the fossil fuel industry if it wants to substantively mitigate climate change. Current and future generations cannot bear the consequences of moderate to drastic climate change nor can they continue to utilize the out-dated and unsustainable energy sources responsible. A dual policy portfolio of a carbon tax swap and clean energy investment with public funding is the most efficient and effective way forward to stable and sustainable energy and climate policy.

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Confronting Climate Change: Carbon Tax, Revenue Recycling, EPA Regulations, and Clean Energy Subsidies

Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits  
*Neeraj Salhotra*

## I. Introduction

“We could put a million people to work retrofitting buildings all over America.” This was former President Clinton’s bold statement regarding energy efficiency. But energy policy today often focuses, not on energy efficiency, but rather on how to move from fossil fuels to renewable energy, how to end the United States’ addiction on foreign oil, and how to win the proverbial “clean-energy race.” While these three challenges—decarbonizing our energy use, strengthening our energy security, and increasing our economic competitiveness—are central for United States energy policy, the discussion must be expanded to include energy efficiency—the cheapest, cleanest, and fastest tool we have at hand for meeting our energy needs. This paper endeavors to explain why energy efficiency is important, why with such an appealing value proposition it is not more widely adopted, and how better financing strategies can overcome the barriers to widespread adoption of cost-effective energy efficiency retrofits. At specific retrofits can be made, and how these energy efficiency retrofits can be financed.

## II. Why Energy Efficiency is Important?

Energy efficiency retrofits sound appealing, but they often fly below the radar not reaching top-tier consideration in energy policy. This section demonstrates how energy efficiency retrofits can assume a more central role in meeting America’s energy and economic goals: creating jobs, boosting economic growth, reducing energy costs for consumers and the economy as a whole, and curbing greenhouse gas emissions that cause global warming.

A recent paper from the Center for American Progress (CAP) explains the benefits of energy efficiency: “Whether we are motivated by economic, national security, or environmental concerns, a national commitment to energy efficiency will create substantial new demand for labor across the economy, and especially in construction and construction-related manufacturing jobs [...] improving energy efficiency is the lowest-cost way to cut our carbon emissions, and it is available in every state in the union”

The United States, as of December 2011, faces an overall unemployment rate of 8.6% and a construction-sector unemployment rate of 15.6%.

While the overall economy has struggled with a difficult jobless recovery, the building and construction sectors, in the wake of a mortgage crisis and widespread real estate market collapse, have remained stalled in depression-like conditions. It is therefore, imperative, that the United States enact policies that create jobs today, especially in the hardest hit sectors of the economy and regions of the country. At a time when significant new construction is unlikely, investments in energy efficiency retrofits provide an exceptionally useful tool for this immediate work of job-creation. A recent joint Center for American Progress and Energy Future Coalition report concluded that retrofitting 40% of the United States commercial and residential buildings could create 625,000 full-time jobs over the next decade. Another study notes that President Obama’s Better Buildings Initiative (BBI), which aims to partner with businesses to improve energy efficiency by 20% by 2020, can create over 300,000 jobs.

Energy efficiency retrofits create direct jobs, putting earnings in workers pockets and increasing consumer spending. This consumption in turn results in further indirect job creation producing a “multiplier effect.” According to the Congressional Budget Office, the multiplier for construction projects (of which energy efficiency retrofits are a part), is between 1 and 2.5. As the Political Economic Research Institute found, for every million dollars invested in retrofits, 17 jobs are created. Energy efficiency retrofits will also spark up to \$500 billion in new investments over the next decade; these massive investments will serve to further stimulate the nation’s economy.

Energy efficiency retrofits also provide an environmental benefit by reducing greenhouse gas (GHG) emissions. Buildings, both residential and commercial, represent about 70% of the country’s electricity demand and account for 40% of the country’s GHG emissions. Reductions in a building’s energy usage (for example, via energy efficiency) can therefore provide significant GHG emissions reductions. According to the Energy Information Administration, reducing building energy consumption by 20% (which is easily doable through proven retrofits) would curb GHG emissions by 17 million tons by 2020.

Finally, at their most fundamental level, energy efficiency retrofits reduce electricity bills for both

## Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits

American homes and American businesses. The recently completed retrofits of the Empire State Building will reduce monthly utility bills by 38%. Because of the savings, within five years, the multi-million dollar up-front investment in retrofits will have paid for itself. After five years, all the energy savings will become a net benefit for businesses in the Empire State Building, improving the operating income and profitability of the property for investors. McKinsey & Company estimates that using proven energy saving technologies, utility bills could be reduced by up to \$130 billion annually.

Energy efficiency retrofits offer the United States a means to create jobs, boost economic growth, reduce consumers' utility bills, and decrease greenhouse gas emissions. American policymakers can therefore ill afford to ignore energy efficiency retrofits when formulating energy policy.

### III. What Specific Retrofits can Property-Owners make?

Often when property owners are approached about energy efficiency retrofits, they are unsure to what exactly people are referring. This section provides background on concrete retrofits that homeowners and building-owners can make.

- Owners can improve insulation to seal air leaks. Such investments can save up to 20% of heating and cooling costs (or up to 10% of total energy costs).
- Owners can replace their existing windows with double-paned windows to reduce the heat gain/loss of a home or office. Double-paned windows can annually save homeowners between \$126 and \$465.
- Owners can replace their traditional roofs with metal roofs that reflect more sunlight thereby reducing the roof's temperature and, by extension, the heat transferred inside the home or building. Such renovations can save up to 25% of energy costs.
- Owners can replace their appliances with more energy efficient models. New EnergyStar appliances are often at least 15% more energy efficient than the older, more energy-intensive, appliances.
- Owners can invest in solar panel generation, and, depending on geographic location, such investments can save the average family almost \$50 dollars on its monthly energy bill. Because solar energy generated on site displaces demand for

electricity generated from power plants, this retrofit is a form of energy efficiency.

- Owners can paint their roofs white to keep interiors cool. While *prima facie* this may not seem like an energy-saving idea, white roofs can deflect 70 percent more sun.
- Owners can also upgrade their Heating Ventilation and Air Conditioning (HVAC) systems. HVAC improvements can reduce a families' utility bill by nearly \$200 annually.

This list is by no means comprehensive, but it does provide a few examples of retrofits that home owners and building-owners could legitimately make to reduce energy costs, decrease greenhouse gas emissions, boost economic activity, and create jobs.

### IV. Challenges to Energy Efficiency Retrofits

Retrofits certainly have real potential to improve the U.S. economy and curb greenhouse gas emissions. Yet the current paradigm presents real market barriers to significant implementation of retrofits. Specifically, there are three challenges that hinder investments in retrofits. Firstly, retrofits require significant up-front investments that accrue benefits over time. As such, the fixed costs may render retrofits difficult for many residences and businesses. Secondly, a lack of transparency in the real estate market stymies investments in retrofits. Namely, building owners are reluctant to invest in retrofits since it is often unclear if retrofit costs can be shared with tenants. That is, if a property owner retrofits a rental home, the tenant may be the only beneficiary of the cost savings which stem from the retrofits. As such, viable investments may be neglected due to the complexity of real estate markets. Finally, there are structural features of power markets that disincentivize investments in retrofits. Specifically, since utility companies are guaranteed a fixed rate of return, they have no incentive to invest in energy efficiency even it is economical. Simply put, these three challenges hinder cost-effective investments in energy efficient retrofits.

### V. How to Finance Energy Efficiency Retrofits?

It is now patent that energy efficiency retrofits do provide substantive economic and environmental benefits; it is also clear, however, that there are significant hurdles to retrofits becoming widespread. As such, it is important to think creatively about ways to finance retrofits. This section explains two

financing plans (PACE and On-bill) that can address this capital shortfall.

#### *What is PACE Financing?*

There are many tools for spreading out payment for the upfront cost of energy saving retrofits, from unsecured consumer credit, to government tax breaks, to utility company subsidized loans. However, making low-cost debt financing available to property owners in an affordable, accessible, and simple way has remained a challenge. Property Assessed Clean Energy (PACE) financing is an important strategy that meets all of these goals. PACE financing allows property owners to finance energy efficiency retrofits through an assessment on their annual property tax bill. This is important because the security of this repayment mechanism means lenders can offer loans at lower costs, and the debt accrued transfers with the title of the property making building owners more comfortable with investing.

With PACE, property owners approach their municipality for a loan to pay for the retrofits and then each year repay a fraction of the loan in the form of increased property taxes. With a well-designed retrofit, this increased tax payment will be more than offset by new consumer savings on energy bills. Once the loan is repaid, the owner reaps the full benefits of reduced utility bills. PACE financing can be summarized by this four-step process:

1. The building owner completes an energy audit to determine what retrofits are economical and efficient for his/her building.
2. The building owner then applies for municipal funding to complete the retrofits.
3. The government, via bonding or leveraging private capital, pays the contractor for the retrofits.
4. The building owner repays the loan over time through an assessment on his/her yearly property tax bill.

#### What PACE Action has Occurred?

PACE programs began in the early part of the last decade, and 27 states created programs for either commercial or residential retrofits. In July 2010, however, residential programs were largely suspended when the Government-Sponsored Entities that back the secondary market for residential mortgages—Fannie Mae and Freddie Mac—and their regulator the Federal Housing Finance Authority (FHFA), issued guidance that they would not purchase mortgages encumbered by a PACE lien,

effectively chilling demand for PACE as a financial product. In theory, the lending agencies were concerned since the property tax bill is a senior lien, which, in the event of a default, would be repaid before the original mortgage; however, these concerns simply did not materialize (as the next paragraph explains). Because federal agencies currently support 90% of all residential mortgages, the FHFA's decision effectively halted all residential PACE programs and temporarily stymied the burgeoning interest in PACE financing.

Preliminary data suggests that the regulators' fears were largely unfounded. This early data on residential retrofits indicate that homes with PACE loans have a default rate of .08% as compared with the average default rate of 3.2%. The exposure of mortgage holders to the underlying risk of this additional lending can also be managed through effective underwriting standards, and measures can be taken to ensure that the actual exposure of lenders is limited to the delinquent tax payments, not the full loan amount.

To address these unresolved policy concerns, on July 20, 2011, a bipartisan group of 15 Congressmen/women introduced the PACE Assessment Protection Act of 2011, which will prohibit "Fannie Mae, Freddie Mac, and other Federal residential and commercial mortgage lending regulators from adopting policies that contravene established State and local property assessed clean energy laws." If passed, this legislation will once again permit the proliferation of market interest in residential PACE financing and provide an accelerant to the market for commercial retrofits.

Barring passage of new legislation or new court rulings, FHFA has the final word on residential PACE legislation. This is not the case, however, in the commercial real estate sector where, with lender consent, PACE mortgages may proceed. Indeed interest in Commercial PACE financing is growing rapidly with both new municipal and state programs springing up around the country and significant engagement from banks and lending institutions in exploring how to make PACE a useful tool for driving productive investments into stalled commercial real estate markets.

#### How are PACE Programs Financed?

PACE programs can obtain funding in three ways—municipal bond sales, public/private partnerships, and treasury funds. While some PACE programs are funded via the county treasury, this is an

## Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits

unsustainable financing scheme. As such, this section focuses on both public/private partnership and bonding financing schemes.

A public/private partnership would likely be designed to use public funds to leverage private capital. Specifically, the government could capitalize a debt-service reserve fund and use that to attract private capital (such a system has been used by the DOE in the Loan Guarantee Program). By creating a municipally-capitalized debt-service reserve fund, the government removes uncertainty regarding repayment; as such, investors will be more likely to finance such a project.

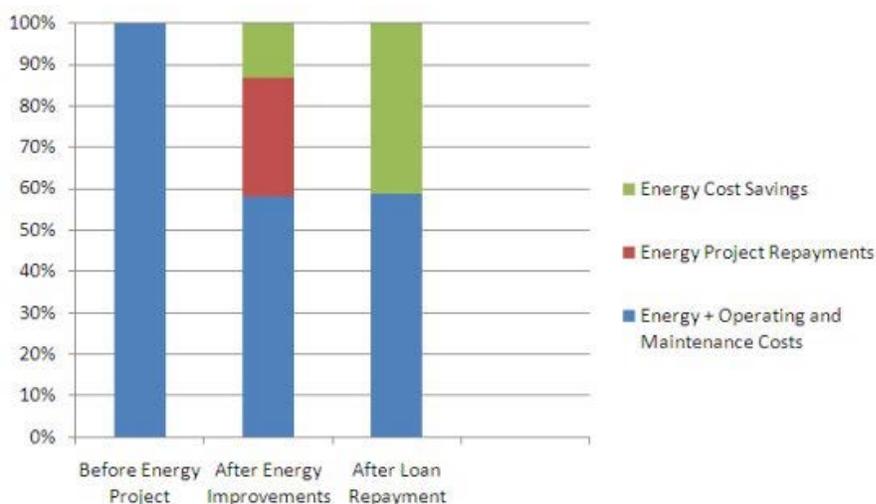
Bonding authority, on the other hand, allows municipalities to issue bonds and use the money to fund local projects. This structure is used for constructing roads and bridges, and the bonds are backed by the obligation of the city. These bonds are attractive to investors since the interest is exempted from federal taxes and the payment streams are very reliable. In other places, municipalities are offering conduit bonds without the backing of the full faith and credit of a city's balance sheet. This provides lower risk for the city but less security to investors; however, even in this situation the security of a tax lien appears to offer significant comfort to the capital market, and is likely to prove sufficient for financing these programs.

### What are the Strengths of PACE?

PACE programs have been implemented around the country and numerous strengths have emerged. Firstly, PACE provides a low-cost, highly scalable financing mechanism for overcoming the up-front cost barriers to investing in energy efficiency retrofits. Secondly, PACE allows, at *virtually no cost to the taxpayer*, local governments to encourage energy efficiency retrofits. Thirdly, PACE either taps into bond markets or leverages private capital to complete retrofits. Fourthly, PACE ties repayment to the property not to the owner, which allows long payoff periods (15-20 years). Fifthly, for commercial, multi-family residence, or rental property retrofits, PACE creates a mechanism whereby property owners can share the costs of retrofits with tenants who benefit from lower monthly electricity bills. Finally, PACE facilitates energy efficiency retrofits, which create

local jobs, boost local economic activity, and reduce energy costs (as shown in below chart).

**Figure I. Savings from PACE Financing**



### What are the Limitations of PACE?

While the preceding analysis explains the numerous real benefits of PACE policies, there are a few potential limitations. Firstly, Commercial PACE financing is generally assumed to require the consent of a property's primary mortgage holder, as the property tax assessment creates a senior lien to the mortgage. In other words, because, in the event of a default, property taxes are repaid before mortgages, the mortgage holder must consent to increasing the property tax assessment via PACE. While some jurisdictions have launched PACE programs that do not stipulate "lender consent," by and large the market is looking to identify ways to make lender consent more attractive and standardized, rather than challenging this requirement. Secondly, PACE carries administrative costs and thus requires a large customer base to achieve economies of scale. Finally, many PACE programs are funded unsustainably by a city or country treasury, and have yet to develop business models that rely solely on capital markets.

### What are Examples of PACE Programs?

As stated earlier, PACE-enabling legislation has been passed in 27 states, and multiple municipalities have already developed *bona fide* PACE programs that are financing energy efficiency retrofits. This section will examine two specific programs: Boulder County ClimateSmart Loan Program, CO and Ann Arbor, Michigan PACE.

### Boulder County ClimateSmart Loan Program

The Boulder County ClimateSmart PACE program was launched in 2009 and has funded 29 energy efficiency retrofits for homes, offices, and apartments. The program offers loans with a 7% interest rate and a 10-20 year payoff period. By coupling a long repayment period with a low interest rate, property owners face manageable yearly payments.

The program is funded through a combination of municipal bonding authority and county treasury funds. The use of treasury funds is problematic since that renders the program neither sustainable nor scalable. Nevertheless, Boulder decided to support treasury funding with bond-based funds. But, there are two challenges for Boulder's bond finance plan.

Firstly, Boulder relies on Qualified Energy Conservation Bonds (QECCBs), which were meted out to states and municipalities via the Recovery Act. While QECCB's created an attractive instrument for near term financing, over time they may be self limiting to the program, as there are only a finite number of these bonds. In addition, because the QECCBs offer especially low interest rates, municipal bonds will be unable to maintain the same cost of capital in future issuances of PACE financing. If Boulder is forced to increase its interest rates, fewer property owners may elect to retrofit their homes or businesses.

Secondly, Boulder plans to rely on a pooled-bonding structure. Pooled-bonding means that property owners can apply for financing and when there is a sufficient pool of applicants, government bonds will be issued and funding will be provided. This approach can delay and possibly even restrict certain retrofits.

While Boulder's PACE program represents a positive first step towards financing energy efficiency retrofits, its bonding structure and reliance on the county treasury hinders the program's scalability and sustainability.

### Michigan PACE

In December 2010, Michigan authorized municipalities to use PACE financing for energy efficiency retrofits. While the law did not represent a mandate to create such programs, it allowed, and to a certain degree encouraged, cities and towns to adopt PACE financing.

In October 2011, Ann Arbor launched a PACE program, which will use a debt-service reserve fund to catalyze private investment in home and business retrofits. The city plans to capitalize this fund with \$430,000, which will be leveraged to fund \$4.3 million in retrofits. This is in sharp contrast to Boulder that relied on county treasury funds, QECCBs, and a pooled-bonding approach.

While the Ann Arbor program is just beginning, it has all the characteristics of a successful PACE financing plan. Firstly, the program relies on public/private financing to fund energy efficiency retrofits. By relying on such a funding mechanism, the PACE program is sustainable, scalable and requires *zero municipal debt*. Secondly, Ann Arbor has partnered with Clean Energy Communities to develop and implement the PACE program. This partnership will reduce administrative costs, increase efficiency, and streamline the process. Finally, Ann Arbor has endeavored to publicize the PACE program; this effort should increase applications and help build economies of scale. If they are able to issue PACE financing at competitive pricing and achieve market uptake, then Ann Arbor may offer a strong model for other counties and cities to follow, *at virtually no cost to the taxpayer*, to incentivize energy efficiency retrofits.

### *What is On-bill Financing?*

On-bill financing for energy efficient retrofits has emerged as an alternative to PACE for securing financing of energy efficiency retrofits. On-bill programs allow property owners to repay the cost of retrofits as a line item on their monthly utility bills. Like PACE, On-bill financing has a four-step process:

1. The building owner completes an energy audit to determine what retrofits are economical and efficient.
2. The building owner applies for funding to complete the retrofits.
3. The utility, via its own capital or private capital that has been raised, pays the contractor for the retrofits.
4. The building owner repays the loan over time as a line item on his/her monthly power bill.

Needless to say, the fundamental difference between PACE and On-bill, is PACE requires annual repayment via property taxes while On-bill mandates monthly repayment through the utility bill. While utility bills offer a very secure repayment mechanism,

## Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits

they do not carry the same value as collateral for financing the loan that is offered through a tax lien backed by the property. With On-bill, however the monthly repayment is linked to the energy expense, and calculated to be less than the savings resulting from the retrofits. For example, if the expected monthly savings are \$50, the monthly loan repayment would be \$40, so there is a structural guarantee of net savings for monthly cash flows.

### What On-bill Financing has Occurred?

On-bill financing began in 2002 as a pilot program in New Hampshire and since then has been expanding rapidly. Recently, New York passed the “Power NY Act” which will allow low-income individuals to finance energy efficiency retrofits via On-bill financing. And in mid-August, 2011 Hawaii passed a bill mandating the Public Utilities Commission (PUC) to explore the possibility of providing assistance via On-bill financing to consumers who perform energy efficiency retrofits. Moreover, numerous other states including, Arkansas, California, Connecticut, Illinois, Kansas, Massachusetts, and Michigan New Jersey and Rhode Island have implemented some form of On-Bill financing for energy efficiency retrofits. These states have different degrees of on-bill usage (varying both in scope and sector, commercial or residential.) Nevertheless, the programs together have financed hundreds of retrofits. The presence of these programs coupled with the recent passage of New York's and Hawaii's bills suggests the growing interest in On-bill financing for energy efficiency retrofits.

### From where does the money come?

Unlike PACE which relied heavily on government funding (municipal bonds, public/private partnership, or the county treasury), On-bill financing can rely solely on private investment—via either the utility or private investors. Private investors or a utility can finance the retrofits and then recover the loan and interest through the monthly payments. Because property owners rarely default on their utility bills, it is not necessary for the government to serve as a backstop.

### What are the Strengths of On-bill financing?

On-bill programs have been implemented around the country, and numerous strengths have emerged. Firstly, it provides a low-cost, highly-scalable financing mechanism for energy efficiency retrofits. Secondly, it provides local governments a mechanism, *at zero (or virtually zero) cost* to taxpayers, to

encourage energy efficiency retrofits. Thirdly, because the repayment structure is tied to the property not the owner; it encourages lending and borrowing. Fourthly, since repayment is not tied to property taxes, the role for the municipal or city government would be very limited. Finally, residential owners are able to share the costs of retrofits with tenants who benefit from lower utility bills.

### What are the Weaknesses of On-bill financing?

While on-bill financing can rely solely on private capital, without government funding and the security of a tax lien, the cost of capital will be higher. This may mean that interest rates are prohibitively high or that the program could stall due to lack of capital. Utility companies and property owners may also be resistant to link payment to utility bills, for if an owner misses a payment, a state's Public Utility Commission will have to determine whether access to power is interrupted or not. Also unlike property taxes, depending on lease structures commercial property owners may or may not be able to share the utility costs with their tenants. If they are unable to share the costs, such a repayment scheme could be unattractive. Finally, if the loan is made through the utility, the property owner may be unable to change utility companies until the loan is repaid.

### What are Examples of On-bill Programs?

On-bill programs have been implemented on both residential and commercial properties; two examples of robust programs are the San Diego Gas and Electric (SDG&E) program and the New Hampshire SmartStart program.

#### SDG&E On-bill Financing

SDG&E has offered on-bill financing since 2007 and has over 100 outstanding loans totaling over \$3 million. The program has been economically efficient with a default rate of only .57%. SDG&E encourages participation and reduces the likelihood of default by offering low-interest loans and basing monthly repayment on projected savings. The program relies on utility and private financing; however, the California Public Utility Commission has capped loans at \$10 million. As such, viable projects may go unfunded due to the cap; put differently, the program is not completely scalable. Finally, SDG&E requires customers to have been “in good standing” for two years before taking a loan for retrofits; this rule aims to reduce default. Since the rule applies to those customers who may have switched to SDG&E within the past two years but

were in "good standing" with the previous utility, it may unintentionally delay viable retrofits.

SDG&E's on-bill financing program is a robust sustainable plan to finance energy efficiency retrofits. Though it does have flaws, the results are self-evident: hundreds of projects funded and many others in the pipeline.

#### New Hampshire SmartStart Program

SmartStart was begun as a state-mandated pilot program from 2002-2004; however, because of its successes, it has now been institutionalized. Like the SDG&E program, SmartStart offers low-interest loans and relatively long payoff periods. Unlike SDG&E, SmartStart pegs monthly loan payments to actual monthly utility savings. Specifically, the monthly loan payments (which, as was stated earlier, are a line item on the utility bill) are set to 75% of the monthly savings. This prevents monthly repayments from becoming burdensome and virtually eliminates the risk of default. Like SDG&E, however, SmartStart has limited funding, which can delay viable retrofits. Simply put, SmartStart, though held back by lack of funding, has helped many New Hampshire property owners retrofit their homes and businesses.

#### **VI. What are the Implications of this analysis for US Energy Policy?**

This paper has explained why retrofits are important; what specific retrofits can be made, and two proposals for how retrofits can be financed. This section outlines the policy implications for national and local governments.

#### *National Policy Recommendations*

1. Congress should pass and the President should sign the PACE Assessment Protection Act (discussed in the section on recent PACE activity). If this bill becomes law, it will remove the barriers that are currently restricting residential PACE financing and prevent such barriers from arising in the commercial sector.
2. The federal government should engage in a discussion with utilities, businesses, and property owners about the benefits of energy efficiency retrofits. Customers, both commercial and residential, should understand the cost-savings resulting from retrofits.

3. Finally, both in tax and fiscal policy and in guidance for data disclosure and underwriting standards in mortgage markets, the federal government should establish incentives for mortgages on energy-efficient properties.

#### *State-wide Policy Recommendations*

1. States should pass legislation allowing municipalities to fund energy efficiency retrofits via either On-bill or PACE financing schemes.
2. States should make public funds available to support the development of innovative credit enhancements to entice greater volumes of private lending into PACE and On-Bill financing markets.

#### *Municipal Policy Recommendations*

1. Municipalities should encourage (as Ann Arbor did) their state to adopt legislation allowing PACE or On-bill financing.
2. Municipalities should establish debt-service funds, loan loss reserves, or other credit enhancements to leverage increased levels of private investment.
3. Municipalities should allow 20 year payoff periods for PACE loans and at least 10 year payoff periods for On-bill loans.
4. Municipalities should encourage utilities to cap On-bill monthly repayments at some fraction (e.g. 75%) of monthly savings to ensure monthly net savings for ratepayers.
5. Municipalities should form partnerships (as Ann Arbor, Los Angeles, and San Francisco have) with 3<sup>rd</sup> party companies to reduce administrative costs and streamline the process associated with PACE financing.
6. Municipalities should engage major public engagement efforts targeting local property owners, utility companies, financial institutions, and construction contractors, about why energy efficiency retrofits reduce energy costs, create local jobs, and boost local economic activity.
7. Municipalities should employ either PACE or on-bill financing to fund retrofits to its own building stock.

#### *Design Recommendations for Municipalities Finance Program*

Having suggested broad policy recommendations, this section provides an outline for establishing

## Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits

energy efficiency retrofit finance plans at the municipal level. That is, if a city was planning to create its own policy, it would do well to consider the following framework.

Well-structured plans should aim to combine the best elements of both PACE and On-bill financing. Specifically, cities or municipalities should consider the following:

1. Prequalifying energy auditors and retrofit contractors to provide trusted points of engagement for customers and to ensure high quality execution of retrofits;
2. Allocating funds to capitalize loan-loss reserve funds or other credit enhancements, to leverage increased private capital and reduce the cost of capital;
3. Allowing long (e.g. 15-20 year) payoff period for the loan to encourage deeper retrofits;
4. Coordinating with power companies to allow monthly repayment on the utility bill as a possible collection mechanism; and
5. Ensuring that monthly payments represent a portion of monthly energy cost savings (e.g. 75%) to ensure net energy cost savings.

Such a program, addressing these key design concerns, would combine the best aspects from PACE (a long pay-off time to reduce possible default and a debt-service fund to leverage private capital) and On-bill (monthly payments tied to the utility bill to reduce default and private funding to reduce government spending) to increase consumer options and provide a successful, scalable, and sustainable plan to fund energy efficiency retrofits at the municipal level. This program would also avoid a number of pitfalls encountered by some PACE (increased government spending and bureaucracy and heightened resistance from mortgage companies fearful of default) and On-bill (caps on funding and short repayment periods) programs. Put simply, this plan, which adopts the best aspects from both PACE and On-bill, financing, can provide a viable strategy to fund energy efficiency retrofits.

### VII. Conclusion

When considering energy policy, U.S. policymakers often discuss increasing the use of renewable energy or reducing the reliance on foreign oil, yet too often energy efficiency receives insufficient attention. The

facts are clear, however: energy efficiency must be a key part of U.S. energy policy.

Energy efficiency provides an obvious benefit of reduced energy usage. In real terms, American home owners and business owners will pay lower monthly utility bills. Retrofits also create real and lasting environmental benefits. If homes and businesses reduce energy consumption, greenhouse gas emissions decline in parallel.

On the most fundamental level, with millions of Americans struggling to find work and with the government unwilling to spend money to reduce unemployment, retrofits financed via PACE or On-bill are perfect ways to eliminate the upfront cost to investors of conducting retrofits, while creating new profitable financial products for investors, and creating an entirely new domestic industry for American workers and entrepreneurs. As former President Clinton said: "We could put a million people to work retrofitting buildings all over America."

In the final analysis, therefore, policymakers at all levels of government would do well to consider energy efficiency retrofits as an integral part of a broad energy policy. Specifically, they should put both PACE and On-bill financing strategies to work within their local markets to fund energy efficiency retrofits that reduce energy costs, improve environmental health, create jobs, and boost economic growth.

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Economic Liberalization as a Signal for Increased Foreign Direct Investment? Funding Energy Efficiency Retrofits

Integrity in Elections: Modern U.S. Policies Concerning Voter Fraud  
*Clara Roberts*

Everyone has heard the stories: countless dead and fake people registered to vote, people voting multiple times, election clerks disposing of ballots. How many of these tales are fictional and how many are valid? The truths of election fraud are murky, fraught with political agendas. The policies related to election fraud sometimes have mixed motives or outcomes, but they carry out an important function in protecting the integrity of the democratic process.

Concern over election fraud is not a new issue. It has resurfaced on the nation's political agenda several times throughout history, most recently in 2011. Before 2011, election fraud scares happened after a surge of laws targeting low election turnout took effect, including extensions of absentee and mail-in voting. The 2000 election contest between George W. Bush and Al Gore also sparked much more controversy. Unfortunately, most of the evidence and facts on this issue are purely anecdotal. Conducting a large-scale study of fraud is difficult, given the federated structure of elections. Election procedures differ from state to state and from county to county and data on fraud is equally diffused, if it exists at all. The studies that have been conducted reveal that there is little evidence of successful voter fraud prosecution; however these studies are far from comprehensive (Minnite 2007). Ideally, policy makers would be able to know exactly how much fraud occurs and be able to tell if it was worth spending millions of dollars and hundreds of hours on policies to combat it. Unfortunately, the situation is far from ideal. It may not be clear if election fraud is common, but what is clear is that many Americans perceive it as a serious issue. The threat of election fraud chips away at one of the core values shared by most Americans, the belief in democracy and the responsibility of policy makers in ensuring an equal playing field. One of the jobs of government is to maintain equal opportunity through procedural guarantees (Feldman 1988). In this case, the procedural guarantees are meant to ensure that the process for the election of leaders is fair. The possibility of election fraud has endangered the assurance of equal opportunity and freedom from corruption in voters' eyes, and public opinion has urged stricter procedural policies onto the agenda. Politicians pushing for laws to combat election fraud believe that if there is a chance that fraud might be jeopardizing the election process, the foundation of America's democracy, the policy makers, must address the issue.

Before it can be solved, election fraud needs to be defined. One widely accepted definition is an action that "corrupts the process of 'obtaining and marking ballots, the counting and certification of election results, or the registration of voters'" (Minnite 2007). Fraud can be carried out by an individual or by a group. When committed by an individual, it either occurs during registration, such as knowingly registering in the wrong district or when not a citizen, or at the polls, such as casting multiple votes (Swindles.org 2011). Organization fraud, committed by a group, can include obtaining multiple absentee ballots, vote buying, and ballot tampering (Minnite 2007). Organizational fraud is actually easier and possibly more common than individual fraud, because groups have more access to resources and are often people with some power in elections, like election officials. Types of fraud that only officials have the power to commit include erasing names from registration lists, turning away voters, and giving false information to voters. Most publicized cases of voter fraud are organized and there is some evidence to suggest that organized fraud is more common than the variety committed by individuals (Minnite 2007). Occasionally, an allegation of voter fraud will be tried at the federal level, but this only occurs when the infraction violates the Voting Rights Act or federal statutes and if the infraction might affect the outcome of a major election. As states are in charge of running elections, most allegations of voter fraud are directed to the state attorney general or the secretary of state, depending on the specific state. A few states have a special election board that handles complaints. All states criminalize voter fraud to an extent, but the laws differ from state to state. Most laws classify the offense as a felony (Minnite 2007). It appears that the number of allegations of voter fraud have been declining recently, probably due to three major factors: "the declining influence of political machines, improved voting technology, and strengthened election administration" (Minnite 2007). The last factor is the most important in this context, because it encompasses the majority of the policies enacted with the goal of reducing election fraud, which will be the focus of the following section.

It is impossible to describe in detail all of the policies aimed at preventing election fraud, simply because there are so many. Some don't even initially appear to have that purpose, such as the requirement that all election results be posted publicly. Additionally, the sheer volume of laws, due

## Integrity in Elections: Modern U.S. Policies Concerning Voter Fraud

to different levels of government, is impressive. One of the most well-known policies regarding election fraud is federal. George W. Bush and his administration passed the Help America Vote Act in October 2002, partially in response to the 2000 election scandal, with the expectation that mandated programs would be in place by 2006. The government provided \$3.9 billion dollars to states, so that they could comply with new regulations (“Help America Vote Act”). Those regulations included the creation of a single, state-wide registered voter list, new voting technology requirements, more accessible polling places, voter education requirements, provisional ballot allowances for those not on the registration list, a complaint system for voters whose rights have been violated, and a state-filed plan outlining how they would fulfill the requirements. In addition to state mandates, the law created the federal Election Assistance Commission, also known as the “Help America Vote Act”. The goal of the policy is twofold, as it is aimed both to reduce fraud and to increase participation. One of the more major results of HAVA was the installation of electronic voting machines at many polls, replacing paper ballots, which contributed to much of the confusion in the 2000 election. The law also required voters who registered by mail to present an ID, but not necessarily a photo identification, when voting for the first time (Shambon 2004). At the time, this was controversial, but it now seems like a lax requirement in light of 2011 policy developments.

Before 2011, only Indiana and Georgia had photo ID laws in place; at least 34 states considered photo identification legislation last year (Sullivan 2011). All of the laws require voters to present a form of photo identification at the polls, and many also require absentee voters to send a copy of theirs with their ballot. Most states outline the types of acceptable photo identifications very specifically and many do not accept student identification. Laws in various states make different exceptions to the identification rule, including: people with a permanent disability, people with religious objection to being photographed, people over 65, who may show a form of expired identification, people who lost their photo identification in a natural disaster, and people who are hospitalized or in a nursing home. States that require absentee voters to send in identification make exceptions for the military and their spouses, overseas voters, and others who are entitled by law to absentee vote, like the elderly. All of the states offered some form of free identification, but some required a signed affidavit affirming the identification was for voting purposes (Sullivan 2011). The most interesting of these photo identification bills is the one passed in Rhode Island.

It stands out from the others for a number of reasons. Firstly, it was the only law nation-wide to garner bipartisan support. Generally, Republicans have been in support of photo identification regulations and Democrats have opposed them, but the heavily Democratic state of Rhode Island needed support from both parties to pass its law (Jacobson 2011). This law did not receive universal support, but it was more universally supported than its counterparts and received no negative attention from the Attorney General (Curry 2011). A second reason this law is intriguing, and likely the cause for its politically diverse support, is the fact that it is the most lenient law of its kind passed last year. Additionally, it will go into effect in two parts; starting in 2012, voters had to present some form of non-photo ID at the polls (like a birth certificate or a social security card) and starting in 2014, voters will be required to present photo identification (Jacobson 2011). This program allows voters more time to acquire appropriate forms of identification and the state more time to adjust its programs. A wider variety of types of identification is accepted in Rhode Island than in any other state. These include: a Rhode Island driver’s license, a Rhode Island voter identification card, which is a new, free identification card, a U.S. passport, any form of photographic identification from a U.S. educational institution, a U.S. military photo identification, any photo identification card issued by U.S. or Rhode Island, or a Government-issued medical card with photo. The student identification provision is especially noteworthy, because of how broad it is compared to those in other laws. Finally, the law is unique because it allows voters to vote without photo identification in a roundabout way. If a citizen does not have photo identification at the polls, they will be allowed to cast a provisional ballot. The signature on that ballot will then be compared to the voter’s signature on their registration. If the signatures match, the vote will be counted (StateOfElections.com 2011). While some still express the concerns associated with voter identification laws in general, primarily the disenfranchisement of minority voters, others see Rhode Island’s bill as an acceptable compromise.

This past year brought new anti-fraud policies besides those requiring identification at the polls. Several states also restricted voter registration, required proof of citizenship to register to vote, and also reduced the time for early voting. The state of Ohio shortened the early voting period, therefore ending same day registration. Two states placed new restrictions on voter registration, including requiring pre-registration of any voter registration activity with the state, signed affidavits from volunteers, and registration forms returned to county officials within

forty-eight hours of signature, mandatory training of registrars with possible exam, and a requirement that registrars must be citizens eligible to vote in the state and may not receive performance-based compensation. Before 2011, only two states required proof of citizenship to register to vote, however, three states passed such a regulation last year. Additionally, five states reduced the early voting period (Sullivan 2011). Some of these regulations seem to target election fraud more clearly than others. Some examples include the laws restricting voter registration in Texas. As part of my research for this analysis, and in support of the democratic process, I organized a voter registration drive. In order to register others, a person must be trained as a deputy voter registrar for a given county. I was trained last year, before the new laws were put into effect, so I had a brief meeting with a representative on my college campus and was given a stack of literature about registration. Currently, anyone who wants to be a registrar must attend an official seminar at the county election office and may be required to take an exam. While the process of registering voters is not a complicated one, the training may cut down on mistakes and errors that may lead to purposeful or accidental fraud. The new legislation also mandates that registrars must be United States citizens and must be eligible to vote in the county in which they are registering, meaning they don't have to be registered, but they must have an address there and they can't be registered in another county. The logic behind this particular rule preventing fraud seems to me to be lacking. It is apparent that an examination of the effects of the many possible and implemented election fraud policies is necessary.

Opponents to the above policies worry that, rather than preventing fraud, the policies serve a primary function of discouraging voting. Legislation that increases regulations for voting and registration has the unfortunate consequence of making it more difficult to vote. With voter turnout already painfully low, are these laws worth it? That is the question that makes election fraud such a contentious issue. While no one would argue that fraud is a good thing, there is a deficit of evidence testifying to its frequency, and therefore some think that the possibility of reduction in participation is not worth the security the laws provide. Further complicating the issue is the fear that regulations like photo identification requirements disproportionately affect the poor and minorities, which are historically disenfranchised groups.

During a symposium to analyze the effect of voter ID laws on turnout, participants examined four major empirical papers that had been published. Two of the studies found decreased turnout and a disproportionate impact on minorities, while the other

two studies claimed that the laws did not decrease turnout at all (Sobel 2009). No study showed a significant number of individuals who had been turned away from the polls because of lack of identification. While it has been proven that minorities are more likely to lack photo identification, these numbers don't seem to translate to participation rates in voting, but it is unclear as to why. In conclusion, the symposium decided that the voter identification laws had no significant negative political impact on turnout or minorities. However, researchers also speculated that the laws may attempt to solve a nonexistent problem while also implanting the problem of election fraud in the minds of voters who didn't previously think about it, and thus scare them away from the polls (Sobel 2009). On the other side, proponents of voter identification laws contend that the laws create an image of a more secured process in the minds of voters. Another study assessed the effect of non-photo identification and other, older election regulations on turnout and found no negative impact (Lott 2006). While making sure that policies do not reduce voter turnout is a noble effort, it does not answer the real question: do the policies serve their purpose, which is to prevent election fraud? Unfortunately, the research into the laws' efficacy is complicated. Firstly, there's the problem that little data on fraud before the policies exist. It is therefore impossible to measure current fraud, which is a daunting task in itself in comparison to fraud before the laws were in effect. Additionally, there are so many different policies at different levels of government that studying their effects becomes complex. Little research has been conducted on these policies and the prospects for future research don't seem bright. However, it is possible for policy makers and analysts to look at possible effects of policies and only implement those which seem most likely to prevent fraud while not unduly disenfranchising or deterring voters.

After having examined several policies intended to combat voter fraud, I can make a recommendation concerning what legislation states should implement. Because the constitution allots states the responsibility to run elections, the duty to enact effective election law falls primarily on the individual states, rather than the federal government. Although election law cannot be more centralized, it would be useful to enact federal legislation requiring more communication between local, state, and federal government regarding procedural legislation and election fraud, like the provision of HAVA that required states submit an implementation plan. I also recommend that the federal election commission maintain the other requirements HAVA put in place,

## Integrity in Elections: Modern U.S. Policies Concerning Voter Fraud

as they have made elections more orderly and standardized.

To the states, I make the following recommendations, based on best practices. Firstly, it is important that officials continue to maintain state-wide voter registration lists. They should be checked regularly against lists of deceased or otherwise ineligible voters. Additionally, they should be electronic and made public (Callahan and Minnite 2003). This prevents individual and organizational registration fraud by eliminating illegal registrations. Texas currently has such a system, although it is unclear how regularly it is maintained or how often it is used. I found the site convenient while registering voters, because many did not know if or where they were registered. With a full name, zip code, and date of birth, we could both find out. Another way in which technology should be and has been incorporated into voting is through the use of electronic ballots. Thanks to HAVA, the use of electronic polling places is now widespread, but it should continue to be developed. Fraud is much easier to commit when paper ballots or other systems are utilized (Callahan and Minnite 2003).

Regarding voter identification laws, I think a reasonable balance can be struck between those that are more extreme and not having them at all. Voter identification laws can help prevent impersonation at the polls and voting multiple times, but the possible implications of voter disenfranchisement make them something policy makers should be careful to enact. Voter identification laws should exist, but they should be broad and flexible. Policy makers can accomplish this end by adopting Rhode Island's law as a model. Many varieties of photo identification should be accepted, including student identification, or any identification issued by state or federal governments. The states should also implement the policy using the Rhode Island two-step plan model and use the affidavit system. If a voter does not have their identification at the polls, they may sign an affidavit stating they are who they say they are and are eligible to vote. The signature will then be compared to their registration signature and their vote counted, provided the signatures match. This is the system used for absentee voters. Some say that system will require too much time and delay results. However, if the law is written and implemented properly, the affidavit channel will be used very rarely and will not interfere with the election process (Atkinson 2007). Additionally, free voter identification cards should be made readily available to all citizens. States may need to create more locations at which voters can obtain such an identification, if, as in Texas, where DMVs are few and far between. Any identification needed to obtain

said photo identification should also be free (Atkinson 2007). Finally, the law must make it clear that all photo identification requirements are to be uniformly enforced. The law cannot be used as a tool of discrimination and its implementation should be closely monitored to prevent that outcome.

There remains a policy geared towards preventing fraud that has not yet been discussed, but has obvious merit. States should adopt the practice of having all committees and boards involved with elections be non-partisan or bi-partisan (Callahan and Minnite 2003). This will deter one party from taking advantage of its position in government to sway elections.

All new requirements of voters, registrars, and election officials stipulated by the recommended legislation should be clearly publicized and incorporated into greater efforts towards voter education. The most prominent thing I learned from my experience registering voters and researching election law is the dearth of information available on voting regulations. The majority of voters don't have time to dig deep to find out how to register, where to vote, or if they need identification at the polls. Those facts should be common knowledge and it is my belief that, above all, election laws should address making that a reality. It is the sad truth that some of what appears to be election fraud is actually a result of mistakes made by unaware citizens. This is why, in addition to voter education, I also recommend required education of voter registrars, with the provision that the requirement be accompanied by greater availability of training. Registrars need to be fully aware of what they are doing, but education requirements shouldn't make it exceptionally cumbersome to become a registrar, especially since it's a volunteer position. The other policies restricting voter registration and voting, including strict eligibility rules for registrars, outlawing election-day registration, regulating registration drives, and shortened early voting periods, are ineffective at reducing election fraud and should not be implemented. They reduce participation without serving their purpose. In fact, election-day registration may actually reduce fraud, because it is carried out by election officials in a secure environment (Callahan and Minnite 2003).

When analyzing election policies, it is important to keep in mind that "to the extent that further reforms upgrade accuracy, record-keeping and accountability, professionalize service delivery, and simplify the process for voters, election administration can continue to be strengthened as a bulwark against fraud" (Minnite 2007, 5). Any reform that does not accomplish one or more of those ends, or that does so at the expense of voting rights,

should not be considered. However, voting and procedural law reform is essential to the integrity of elections. Even though voter fraud may not be as common as many voters think, the above recommended policies will reinforce the integrity of elections both in actuality and in the minds of voters, possibly encouraging them to vote when they might not have before. Additionally, they embrace a compromise that should please, or at least pacify, members of all political affiliations. Therefore, I propose that a set of policies encompassing the above regulations be written for official recommendation to the states.

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## Marijuana: An Opportunity to End an Unwinnable War *James Dargan*

### **I. Introduction**

The “War on Drugs,” the name given to coordinated law enforcement efforts to eradicate drug consumption in the United States, has raged for decades. It began under the exceptional circumstances of the 1960s during which drug use was linked to broad social phenomena such as crime and public unrest. Campaigning against drug use and appearing “tough on crime” became winning messages during elections, dissuading the reconsideration of the mistaken classification of marijuana as a hard drug. Meanwhile, marijuana users are doomed to unfounded criminal punishment. The financial cost of the drug war has surpassed a trillion dollars, while the total social cost cannot be calculated. Yet, there is little evidence of success of such drug policy.

International leaders have spoken out against this futile war. The Global Commission on Drug Policy, a collection of internationally acclaimed politicians, intellectuals, and financial and public health administrators (most recognizable are Paul Volcker, former Federal Reserve chairman, and George P. Schultz, former US Secretary of State), recently issued a report detailing the impact of the International War on Drugs. Its recommendations challenge the entire existing system of enforcement practices. This commission claimed “All authorities – from the municipal to international levels – must recognize the clear failure of the war on drugs to meaningfully reduce the drug supply and, in doing so, move away from conventional measures of drug law enforcement “success” (e.g. arrests, seizures, conviction), which do not translate into positive effects in communities.” Its final conclusion couldn’t be clearer: “the war on drugs has failed, and policies need to change now.”

It’s time the US has a serious discussion about existing drug laws, and marijuana is an ideal starting point. In its recommendations, the Commission encouraged “experimentation by governments with models of legal regulation of drugs (with cannabis, for example) that are designed to undermine the power of organized crime and safeguard the health and security of their citizens.” Political support for legalizing marijuana is higher than ever. Recent polls have demonstrated American support between 50 and 59 percent. Voters in Colorado and Washington passed initiatives that fully legalized marijuana for recreational use, to the acclaim of many law enforcement officials. With legalization becoming a real political possibility, now

is the time to challenge current justification for continuing a failed policy and demand government adopt a reality based approach.

Legalization is the appropriate next step of reforming US policy. The enforcement of current criminal sanctions against both marijuana users and sellers has sharpened over the last forty years without creating any significant decrease on the drug market. Demand for marijuana has risen during times of the greatest levels of prohibition enforcement. Marijuana supply remains abundant and accessible to the youth. The criminal approach to drug use has failed to achieve its goals, necessitating a new approach that accepts the reality of drug use. The federal government must recognize marijuana use is beyond its control, accept its occurrence, and shift policy towards taxation and regulation, which can be achieved under the full legalization of marijuana, including production and consumption. Such policy will generate revenue that can then be invested in programs such as drug treatment and rehabilitation programs which are more effective at reducing drug use, and also reduce the mass imprisonment of nonviolent drug law offenders. Prohibition has failed and it is time to consider alternative policies.

### **II. Origins of Marijuana Criminalization**

The earliest marijuana prohibition laws emerged at the state level between 1914 and 1931, primarily in the West and the Northeast. In the West, marijuana use was concentrated among Mexican immigrants. This small minority had little influence among the white political class that advocated for marijuana restrictions. The effort to ban marijuana can be attributed to two major factors: racism and a public perception of a direct link between marijuana and crime, though there was little evidence of such. In the Northeast, marijuana use was not common even at the time prohibition was adopted. Legislatures outlawed marijuana consumption out of fear that recent narcotics laws, which targeted opium, would motivate people to begin using marijuana as a substitute. It appears the prohibition of marijuana was a preventative measure rather than response to any actual problem in these states. Regardless of the motivation, Bonnie and Whitebread conclude “[states] relied on lurid and often unfounded accounts of marijuana’s dangers... legislators in these states found it easy and uncontroversial to prohibit use of a drug they had never seen or used and which was

associated with ethnic minorities and the lower class.”

The Uniform Narcotics Act of 1932 was the first federal legislation to directly address marijuana. The Harrison Narcotics Act had been passed in 1917 as the first major national legislation related to narcotics, requiring the registration and taxation of all transaction involving cocaine or opium. The Uniform Narcotics Act was far more comprehensive and sought to resolve the discrepancy in narcotics laws between states. It set clear standards for all states to implement, and by 1937, thirty-five states had implemented this act including the marijuana provision requiring it be treated identically as all other narcotics. Thus, the Uniform Narcotics Act set the precedent for harsh treatment of marijuana despite a complete lack of scientific investigation into its effects, all while the general public took little notice. Had those involved in crafting the legislation researched the empirical and scientific evidence of the effects of marijuana use, they would have undoubtedly concluded marijuana should not be included at all. A British commission study in India on local marijuana users concluded there was no link between marijuana use and crime. A Panama committee report determined that marijuana was not a habit forming drug. It was out of ignorance that the Uniform Narcotics Act included equal treatment of marijuana as with harder drugs such as cocaine and opium. Similarly, there was no public outcry over this decision because “use of the drug was slight and confined to underprivileged or fringe groups who had no access either to public opinion or to the legislators.”

Aggressive drug laws and enforcement were catalyzed by rising drug prevalence and crime in the 1960s. The major driving factor behind new drug laws was the counterculture movement that emerged in the 1960s in response to Vietnam. This movement was characterized by a general distrust of institutions and a rejection of cultural norms, much to the offense of older, conservative generations. Their rebellious spirit is idealized in current pop culture images of hippies smoking marijuana and listening to British rock stars. Indeed, marijuana use was rampant within this subgroup of the population, along with other drugs such as LSD. “Drugs became symbols of youthful rebellion, social upheaval, and political dissent.” The additional news of widespread heroin use among soldiers in Vietnam further raised concern of drug use. In 1971, half of the troops returning from Vietnam reported having tried heroin or opium, with one fifth demonstrating signs of dependence. Domestic heroin use was rising as well. By 1968, heroin use had risen to 5 percent among college students. New York was plagued by overdoses and

drug related diseases. Marijuana use had increased threefold from 1960 to 1966. Additionally, a crime wave overcame the US during this time. The Civil Rights Movement bred several violent offspring such as the Black Panthers. Urban ghetto riots in major cities such as Chicago effectively shut these cities down. Street crime was also up. Television brought images of this chaos to the homes of middle-class, white, voting Americans weekly, along with reports of a growing “drug abuse” problem that combined marijuana, cocaine, and heroin as one comprehensive drug problem despite the demographic divide between their users. The culmination of these independent issues provided a political opportunity for presidential hopeful Richard Nixon, who campaigned to restore “law and order” and utilized this perception to fight all drug use indiscriminately as a means of fighting crime, including those political protesters.

The public unrest that brought Nixon to the White House and the political pressure of public office contributed to the wrongful, politicized misclassification of marijuana as a dangerous substance. The first major reform of the Nixon Administration was the Comprehensive Drug Abuse Prevention and Control Act of 1970. This Act overhauled existing federal regulations of the entire pharmaceutical industry. The most important portion of this act was the Controlled Substances Act which created today’s modern system of classifying controlled substances according to medicinal value, harmfulness, and potential for abuse or addiction and provided the infrastructure for criminal penalties against those violating regulation regarding manufacture and sale of these substances. After passage, all drugs had to be classified within the new framework. President Nixon appointed a National Commission on Marijuana and Drug Abuse to examine proper treatment of marijuana. The commission concluded “looking only at the effects on the individual, there, is little proven danger of physical or psychological harm from experimental or intermittent use of the natural preparations of cannabis.” Additionally, it found that cannabis does not lead to physical dependence while even heavy, long term users showed psychological dependence no worse than tobacco users. The report clearly accepts that marijuana use is far less harmful and less addictive than all other narcotics or even alcohol in some instances. Such a report leaves any observer baffled by the decision to classify marijuana as a schedule I substance alongside heroin and LSD.

Despite the baselessness of Marijuana’s classification, politics has motivated the continued persecution of marijuana users. Support for tough drug policy originated in the Republican Party during

# Marijuana: An Opportunity to End an Unwinnable War

the 1960s. When Richard Nixon challenged President Johnson, his campaign had two major focal points: Vietnam and social disorder, each of which was a wedge issue used to gain an electoral advantage in the election. With the apparent success of this policy in the 1968 election, the Republican Party became the “tough on crime” Party. New drug laws were meant to clamp down on the national crime wave and protest movements while restoring order to society. Or, simply put, to fulfill their campaign pledge and gain credibility for future elections. As long as crime remained a public issue, appearing “tough on crime” translated to electability and dashed all hopes of reconsideration of marijuana laws.

### III. The Current Justification for the War on Drugs

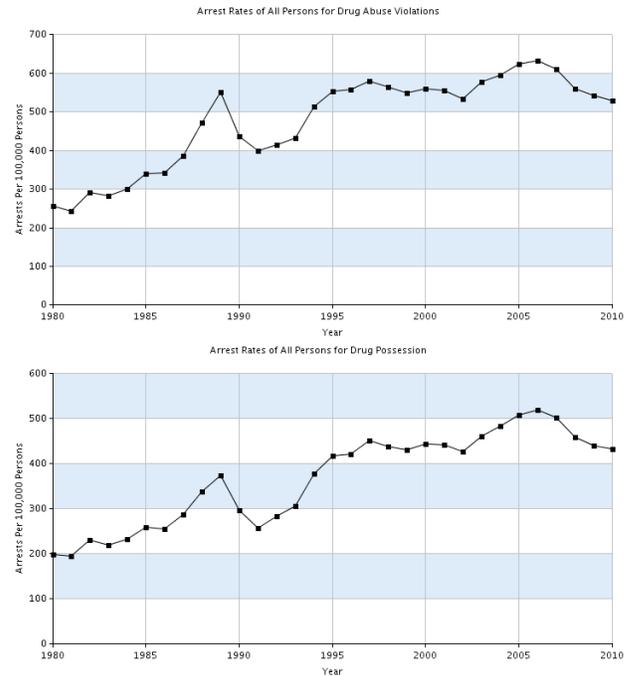
Since the Nixon administration, federal policy has continued striving to limit drug use through force against both users and dealers. When President Nixon announced the modern war on drugs, he asked Congress to pass legislation “to consolidate at the highest level a full scale attack on the problem of drug abuse.” He sought to “tighten the noose around the necks of drug peddlers” and “[strike] at the illegal producers of drugs... and trafficking in these drugs.” In theory, such policy could cause a reduction in drug use if enforcement could achieve a significant reduction in the drug supply. The resulting scarcity would necessitate a reduction in consumption due to physical limitations. Also, the risk posed to drug users by harsh criminal penalties if caught should reduce demand. The adoption of minimum sentences under the Reagan administration was partially based on this principle. Together, these policies could, in theory, reduce drug use in America and serve as the current justification for existing drug policy. Empirical evidence, however, demonstrates such policy has failed.

### IV. Prohibition Hasn’t Deterred Marijuana Consumption

The war on drugs was declared with the goal of reducing drug use in America, but consumption remains high. Marijuana use has grown for two decades. In fact, the National Research Council has found “existing research seems to indicate there is little apparent relationship between severity of sanctions prescribed for drug use and prevalence or frequency of use, and that perceived legal risk explains very little in the variance of individual drug use.” Prohibition is destined to fail, as it always has, because American society has built on a foundation of personal liberty and a spirit of rebellion.

### A. Expansion of Law Enforcement

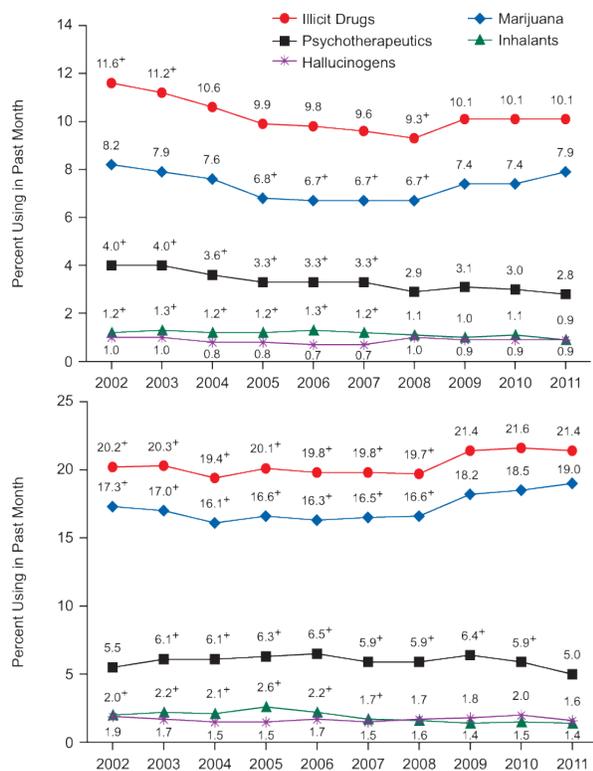
**Figure 1.** Arrest Rates for Drug Charges



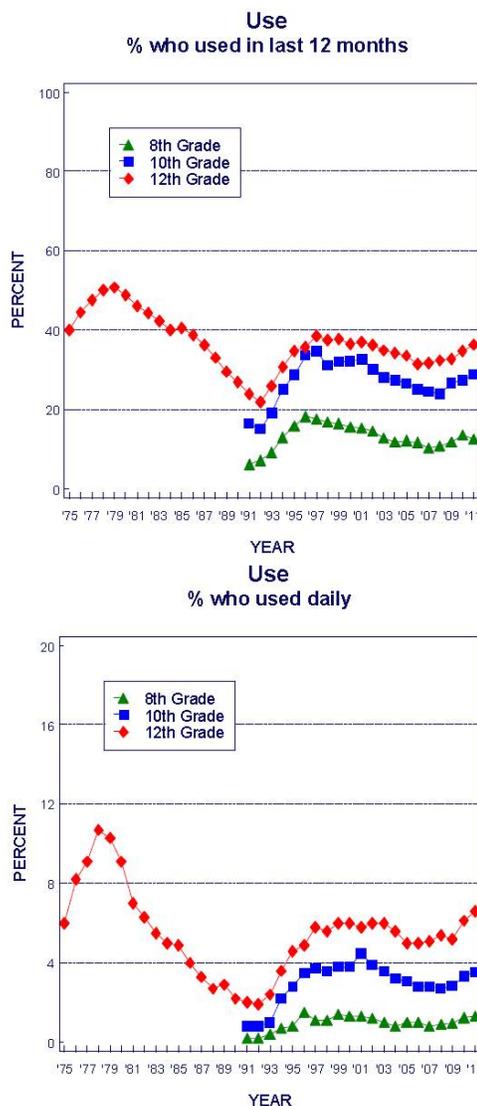
As part of the nationwide war on drugs, law enforcement agencies have escalated enforcement efforts of drug laws. Figure 1 shows the increase in arrest rates since 1980. The graph on the left shows the arrest rate for all drug charges, including sale and manufacture. The graph on the right displays the arrest rate for simple drug possession. The data shows that enforcement of drug laws has actually increased continually during the last three decades. Between 1980 and 2010, the adult arrest rate for drug possession or use grew by 118 percent. Of those arrested for drug possession, a growing fraction is for marijuana. Since 1995, over 40 percent of drug possession arrests were for marijuana, peaking in 2010 at 52 percent. Enforcement of marijuana laws has consistently increased for the last 15 years but with little gains to show for it.

### B. Marijuana Use has been Unaffected

**Figure 2.** NSDUH Survey Results for Marijuana Use Ages 12-17 and 18-25



Drug policy discussions seem to invariably center on the youth, but data on drug consumption rates among the youth reveal prohibition to be ineffective. Figure 2 illustrates the results from the National Survey on Drug Use and Health (NSDUH) for the last ten years, with the left hand side revealing use rates for those ages 12 to 17 and the right hand side showing use rates for those ages 18 to 25. Both exemplify a stable pattern in regular drug use. Notably, marijuana use among those ages 12 to 17 declined on net by .3 percentage points from 2002 to 2011 while use among those ages 18 to 25 increased on net by 1.7 percent points. This aggregate data, as well as state by state breakdowns demonstrate that a significant portion of the youth population continues to engage in illegal drug use despite prohibition laws. **Figure 3. MTF Survey Results for Marijuana Use**



A similar trend is demonstrated in the results from this Monitoring the Future Survey (MTF). Figure 3, displays the percent of respondents in three different education levels that reported having consumed marijuana. The graph on the left displays use within the last year, a measure best used to capture those first experimenting with marijuana. The graph on the right displays daily use, a measure used to capture chronic marijuana users. The data collected from the MTF survey differ from the NSDUH, but it reflects the same recent trends in rate of use among teenagers.

C. Effect of Prohibition on Use

Examining the data on drug law enforcement as measured through arrest rates and drug use rates measured by the NSDUH and MTF

## Marijuana: An Opportunity to End an Unwinnable War

displays a complete lack of correlation. Marijuana use declined in the 1980s but increased in the 1990s. But arrest rates increased more the majority of this time period. Even as drug possession arrests increased from 1991 till 1997, marijuana use increased among daily users and infrequent users. In the early 2000s, monthly drug use remained relatively flat despite further increases in arrest rates. Any narrowly construed correlation found from a select few years is disproved when a broad time span is analyzed.

Research on the effects of prohibition policies on drug use rates reveals there is little correlation between punishment and the decision to consume drugs. In 1998, the National Research Council was asked to perform a comprehensive review on US drug policy's effectiveness. While the report heavily emphasized the lack of adequate research to sufficiently evaluate the effectiveness of current drug policy, it made two important initial conclusions based on the research available. First, the perception of legal risk associated with drug use has little impact on the self-reported drug use. Second, variance in the severity of legal penalties has no demonstrated relationship with prevalence of drug use and "substantial inscribed eases in prescribed fines would have little or no effect." Additionally, studies analyzing differences in marijuana use rates between states that have and have not decriminalized marijuana use found no significant difference. In short, the current drug policy of enforcing criminal penalties against marijuana users has had no demonstrated impact on rates of marijuana use. These conclusions can be expanded to the international level as well. Evidence suggests countries with strict user-level criminal penalties have comparable drug use rates to countries with more liberal policies. The Vienna Declaration, the summation of international studies on the impact of current drug policy supported by countless experts in a range of related fields, concluded "there is no evidence that increasing the ferocity of law enforcement meaningfully reduces the prevalence of drug use." Deterring drug use through intimidation is futile because social forces are stronger than government.

### D. The Tradition of Civil Disobedience

The principle of civil disobedience, the peaceful refusal to obey specific laws deemed unjust, is deeply rooted in American culture. The maxim "government derives its power from the consent of the governed" was explicitly stated in the Declaration of Independence. It was a guiding principle in the adoption of the democratic government established after the Revolutionary War. It also implies a

corollary: that government has no power to enforce laws without the consent of its people. It was this principle that implicitly guided the American Revolution. The English government was passing laws that colonists deemed oppressive, so they refused to comply. Numerous protests were staged to openly defy laws they felt were unjust, ultimately leading to war. American history praises these individuals who blatantly violated the law to achieve some reform they deemed desirable. The Founding Fathers are idealized in history texts for their dedication to personal liberty. Martin Luther King is hallowed for his leadership in fighting discriminatory laws through peaceful protests. The Civil Rights Movement is the epitome of successful civil disobedience accomplishing significant change for the betterment of society. Infinitely more examples can be drawn from history, but the point is sufficiently made that American society has long celebrated civil disobedience in pursuit of reform.

This historical success of civil disobedience and the praise credited to those who have partaken motivate future generations to engage in such acts. When students are taught to respect the achievements of figures in history who utilized civil disobedience, they are unintentionally indoctrinated into accepting its validity. To criticize the use of civil disobedience implicitly criticizes America's greatest heroes. Supporting these heroes requires accepting their actions as legitimate, or else they would be idolizing criminals. Once legitimized, individuals may align their own actions with those of the past, utilizing the principle of civil disobedience to justify a range of acts. Most go unnoticed with no harm to society. Many are noticed, and punished accordingly. But it leaves open the question why should I obey an unjust law if disobedience is a legitimate means to achieve reform.

This acceptance of civil disobedience motivates current drug consumption in the US. This isn't to say that every individual act is a defiant rebuttal of the law. Many drug users are quite scared of the power of law enforcement. The role of civil disobedience is subconscious. Henry David Thoreau, arguably the most preeminent writer on civil disobedience, argued "it is not desirable to cultivate a respect for the law, so much as for the right." Drug users recognize their actions are illegal, but they do not accept such laws are in the right. Their view of the right is for the law to allow them to freely partake in activities in the privacy of their homes that do not directly impact others. They act in violation of the law because they disagree with it and feel justified in disobeying it. Most recognize that this is by no means a legal defense in court if they should be charged, but

the opinion of illegitimacy regarding total prohibition encourages disobedience.

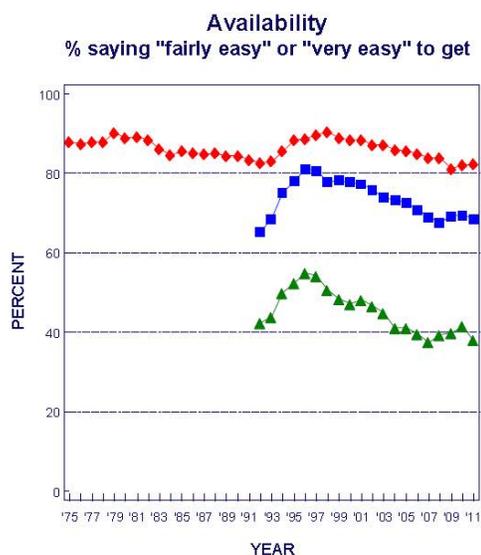
Such disobedience of the law is encouraged by widespread social acceptance of marijuana use. Why should law enforcement punish those who consume marijuana if the majority of the citizens it is meant to protect and serve accept marijuana use? The majority of Americans nationwide support the legalization of marijuana. Yet, law enforcement continues to arrest individuals for simple possession and consumption. When the law ceases to reflect the will of the people, civil disobedience becomes a viable recourse. The disobedience of a few is insignificant in the grand scheme of law enforcement, but when mass proportions of the population engage in marijuana use and even more oppose criminal enforcement, disobedience becomes increasingly legitimate. Society has increasingly accepted marijuana use for what it is: a nonviolent exercise of one's right to decide what to consume in private. The lack of social stigma against marijuana use removes the traditional backing for prohibition. Without this social pressure to abstain from marijuana use, the respect for prohibition laws has declined, encouraging further intentional disregard of the law.

#### V. The Effects of Prohibition on Supply

Despite expanding budgets, federal agencies have been unable to create the supply shortage necessary to have any significant impact on demand. Marijuana use and access remain high, even as federal spending on the war on drugs has skyrocketed. Prohibition has merely transferred ownership of the drug supply to cartels in a black market while strengthened enforcement only increases their profits.

##### A. Drug Accessibility Has Not Declined

**Figure 4.** MTF Survey Results for Marijuana Availability



Despite efforts to thwart drug suppliers, high school students report very high accessibility rates for marijuana. Since its founding in 1975, the Monitoring the Future survey asked respondents how easily they could obtain the drug being questioned. Figure 4, shows the trend for responses over time to be completely flat. The percent of participants responding marijuana was “very easy” or “easy” to obtain has never dipped below 81 percent. If prohibition and tough sentencing laws implemented in the 1980s had worked, a noticeable drop in accessibility would have been observable. The absence of any displayed impact on accessibility shows that existing drug laws have been ineffective in reducing the drug supply. Much research supports this conclusion. A recent government commission report in the United Kingdom found “the evidence for traditional drug law enforcement efforts, which have focused on arrests and drug seizures with the aim of reducing supply, suggests that often they have limited or no sustained impact on supply.” Such is the case with the United State’s policy.

A more striking observation is the independence of use rates and accessibility. Throughout the 1980s, marijuana consumption on a daily basis declined while accessibility remained stable. This suggests there is little direct link between marijuana supply and demand. Based on the high accessibility rate, students who wished to consume marijuana had the physical ability to obtain. Yet, more and more students consciously chose not to engage in marijuana use. Supply was not a factor in this decision. Therefore, the decline in marijuana use can only be explained by factors that altered student desire, i.e. demand. If drug policy is intended to reduce marijuana use, then policy should focus on

## Marijuana: An Opportunity to End an Unwinnable War

demand, not supply. Yet the drug war has focused heavily on supply, with no demonstrated success in this field. The survey data further demonstrates the failure of prohibition.

### B. Cartels Dominate the Drug Supply

Free market mechanisms are undermined by prohibition, which artificially reduces the number of suppliers and grants Mexican cartels majority control of the market. In the absence of government intervention, competition serves as a guiding force in the market. Where a strong demand exists, firms will enter the market to meet that demand. Competition between these firms will drive down prices and eliminate inefficient suppliers, those with the highest costs of production. Instead, government policy has reduced domestic supply by physical arrests, confiscation, and deterrence through the threatening power of the law. Potential producers abstain from the market out of fear of law enforcement. Other producers are eliminated by force and sent to prison. The result is a gap in domestic supply that must be met by imports from foreign countries, particularly Mexico, which are owned by drug cartels.

While estimates are plagued by incomplete information, it is clear Mexican cartels own a disproportionate share of the domestic marijuana market. The UN Office of Drug Control has estimated only a third of the marijuana consumed in the US is produced domestically, leaving the rest under the control of organized crime. RAND has proposed an estimated range of 40 to 67 percent of marijuana consumed in the US comes from Mexican cartels. These cartels collectively form an oligopoly, where few firms dominate a market, and abstain from true price competition. While the Mexican cartels violently compete for control of the drug trade, each has almost exclusive control over specific portions of the US market. Their large share of market control enables them to set market prices, increasing their profits. This practice is most effective in regions where prohibition is enforced most rigorously, because competition is eliminated entirely. Cartels are thus strengthened by prohibition because they don't have to compete against producers in the US, who would be able to grow marijuana domestically and sell it at lower prices.

Additionally, the risk marijuana producers and smugglers face due to law enforcement further increases cartel profit. In an unregulated market with perfect competition, firms will produce a good until the marginal cost of production equals the marginal revenue received, i.e. price. When regulations are introduced into the market, the marginal cost rises. As a result, a combination of reduced supply and higher costs of production increases market price. In the case of criminalization of marijuana, no physical

costs are imposed on most suppliers. Instead, a risk is introduced that a few specific suppliers might get caught or shipments might be seized at a very high, isolated, individual cost. The suppliers and traffickers monetize this risk and pass it along to consumers in the form of higher prices. The more successful law enforcement efforts are, the greater the probability of getting caught. Likewise the more severe the punishment if caught, the greater the cost. Both increase the financial risk associated with marijuana trafficking and, consequently, increase the price. "Those drug producers and smugglers who manage to avoid apprehension make greater realized profits when punishment increases because the increase in market price exceeds increase in their unit avoidance costs." This is the "catch-22" facing the DEA today, as more effective enforcement practices with greater criminal punishments only raise black market prices. Higher market prices due to the financial risk passed on to consumers increase the cartel's net profit. Higher profits motivate increased involvement in the marijuana market. Thus, law enforcement efforts to discourage suppliers actually encourage them.

### C. Eliminating the Drug Supply is Impossible

The premise of the war on drugs ignores the physical limitations of US enforcement agencies to effectively curtail drug trafficking into the US. The US-Mexico border is 1,933 miles long, much of which is desert. The logistical difficulties of maintaining surveillance on such a vast stretch of land are overwhelming. Only a small fraction of the border has actually been fenced off, leaving most of the border open desert for deliveries in the darkness of night. Even where fencing exists, tunnels are commonly discovered underneath. Some of these tunnels are several hundred yards long and are located near major US cities. Besides transporting drugs through secret routes across the border, an unknown amount is smuggled across border checkpoints. Over 125 million people entered the US across the US-Mexico Border in 2010. Any number of these individuals could have been concealing drugs in their personal vehicles. Combining all these means of smuggling creates an insurmountable challenge for the DEA to stop the inflow of drugs into the US, including marijuana. As long as marijuana is profitable, the cartels will find a way to smuggle it into the US despite the best efforts of the DEA and US Border Patrol to stop it.

### **VI. Legalization is a Realistic Approach to Marijuana Use**

The war on drugs has failed to achieve its stated objectives in regards to marijuana. The demand for marijuana is substantial and criminalization is ineffective at reducing it. As long as there is a demand for marijuana a black market

will exist to supply it. Marijuana use cannot be stopped by harsh enforcement of criminal penalties.

As such, government would be better served to accept this inevitable fact and consider the best means to bring this market under its authority. As the United Kingdom Drug Policy Commission concluded,

“As part of efforts to encourage responsible behavior, and our society’s response to it, we cannot ignore the fact that a small but significant segment of the population will experiment with drugs, and that some of them will continue to use drugs, even if they know about the risks. So we do not believe that pursuing the goal of encouraging responsible behavior requires the prevention of all drug use in every circumstance. This is not to say that we consider drug use to be desirable. Just like with gambling or eating junk food, there are some moderately selfish or risky behaviors that free societies accept will occur and seek to limit to the least damaging manifestations, rather than to prevent entirely.”

Legalization empowers domestic growers to enter the marijuana market and compete against the black market at a competitive advantage. These businesses, unlike the black market, could be regulated and taxed by government.

#### A. Legalization Would Weaken Cartels

Mexican cartels are sustained by large economic rents from the drug market that would be eliminated under legalization. Prohibition stifles competition in the drug supply. Cartels are the only businesses capable of producing large quantities of marijuana for distribution within the US, and thus are able to charge prices far above the actual cost of production. Additionally, a large portion of the price borne by marijuana consumers is due to avoidance costs incurred while trafficking marijuana into the US, and risk associated with selling marijuana under prohibition.

Ending prohibition of marijuana would encourage domestic production whose competitive advantage over the cartels would eliminate most of the marijuana black market. Once marijuana production is made legal, domestic businesses will form to grow marijuana and openly sell it to the American public. Competition between these businesses will drive down prices until market equilibrium is reached where supply equals demand and firms produce until the marginal cost equals the market price. Close proximity to the customer base means low transportation costs. Risk associated from participating will be minimal as long as businesses comply with regulations.

In contrast, the cartels will face most of the costs faced under prohibition. Even if marijuana is legalized for production and use, trafficking marijuana across an international border would remain illegal. The cartels would still incur avoidance costs and significant risk by smuggling marijuana across the U.S. Mexico border. Transportation costs would remain high since the bulk of marijuana produced by Mexican cartels is located hundreds of miles away from customers. Regulations such as those already imposed for medicinal marijuana would keep street sales illegal. Only registered and regulated businesses could conduct marijuana transactions. All of these hurdles would keep the cost and risk of selling marijuana for cartels high while prices decline.

This disparity in costs could weaken the entire cartel regime. A study by the Mexican Institute of Competitiveness estimated cartels could lose as much as 30 percent of their entire revenue by the passage of ballot initiatives in Washington, Colorado, and Oregon for legalizing marijuana sales for recreational use (2 of these initiatives passed). Similarly, a RAND Corporation study conducted prior to the failed California legalization initiative in 2010 concluded that legalizing marijuana in California would effectively eliminate cartel revenue from supplying Mexican marijuana to the California market. If legalization measures were adopted federally and states followed, these cartels could lose almost all their marijuana sales, which may account for as much as 60 percent of cartel revenue according to one 2006 U.S. estimate by the Office of National Drug Control Policy. While this often quoted figure is likely an overstatement, it reflects the true fact that a substantial portion of cartel profit comes from marijuana and there is no more effective means of weakening the cartels than by cutting down profits. By taking away the financial foundation and the entire organization just might crumble.

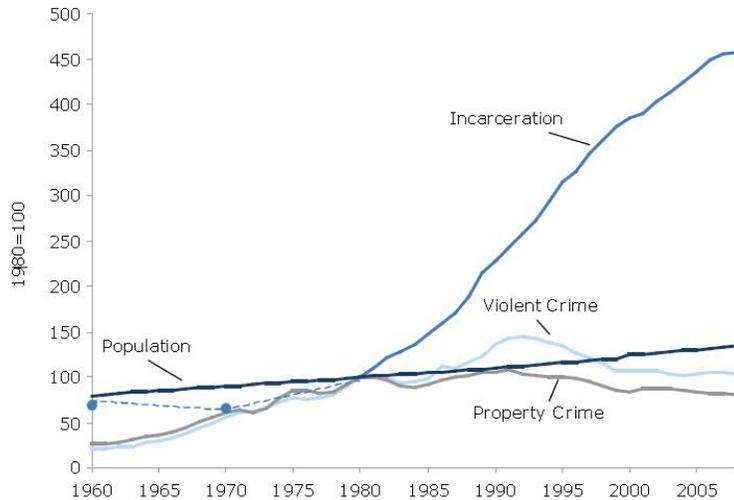
#### B. Legalizing Marijuana Would End the Mass Incarceration of Drug Users

The United States’ war on drugs has caused mass incarceration that surpasses the entire world. In 1980, the rate of incarceration in the US was only 220 per 100,000. By 2008, this figure had risen to 753 per 100,000. This rate is over three times higher than the next highest country in the Organization for Economic Cooperation and Development (OECD). Non-drug commitments to state prison remained low throughout the 1980s and early 90s. In contrast, new commitments based on drug charges increased ten-fold within a decade. Figure 5 displays the surge in the prison population due to tough anti-drug laws. As of 2010, 51.4 percent of the federal inmate population was serving a sentence for drug charges.

# Marijuana: An Opportunity to End an Unwinnable War

The social burden placed on society to support not just law enforcement efforts but a growing prison industry is incomprehensible.

**Figure 5.** Comparison of Normalized Incarceration and Crime Rates



Legalizing marijuana production and use would end the practice of imprisoning simple drug consumers and producers. Street dealers would be replaced by legitimate, regulated businesses. Those who currently sell illegally could gain employment at legal businesses. Those who choose to engage in marijuana use without harming others would cease to be punished for a victimless crime. Ending the mass incarceration of the American people for such harmless action, especially considering the racial disparity in practice, is simply the humane thing to do.

### C. Legalization of Marijuana Would Fund Treatment and Education Programs

The financial costs of marijuana prohibition are colossal and well recognized. Dr. Miron's analysis that marijuana legalization could produce 7.7 billion dollars in savings and 6.2 billion dollars in tax revenue has been widely cited, even motivating a petition signed by over 500 economists calling for an open and honest discussion of marijuana laws. Alternative estimates can be found but there is no debate over the fundamental fact that prohibition costs the U.S. taxpayers enormous sums of money.

This massive spending on a hopeless crusade steals funding from more effective treatment and education programs. The point of calls for legalization isn't simply to save money, but rather to both save money and invest in more effective means of reducing drug use. The costs of current policy are extensively described in reports published by the

National Center on Addiction and Substance Abuse at Columbia University. A critical message is that crime and inmate health costs would be dramatically reduced if just a fraction of current spending on penitentiaries was diverted to drug rehabilitation

programs or substance abuse treatments for inmates. Marijuana legalization would offer new funding for such programs for both criminals and non-criminals alike to reduce drug use and dependence.

A range of alternative approaches to drug use have been proposed, each with some merit. Each could and should be conducted along with research on their effectiveness. The important message is that more effective means of reducing drug use are available beyond criminal sanctions.

### VII. What Legalization Does Not Mean

The majority of opponents of legalization seem to misunderstand the implications of marijuana legalization. Many fears are thrown around that are completely unfounded and worth refuting. Legalization does not mean government condones drug use but that there are wiser policies than criminalization to fight it. Legalization does not mean those who commit crimes under the influence go unpunished but that those who safely consume marijuana in private may do so in peace. It does not remove civil liabilities from marijuana sellers or users who destroy the property of others. It doesn't remove employers' ability to drug test their employees and fire them for drug use assuming the employer reserves this right in the employment contract. Legalization is about protecting the safety of those who responsibly consume marijuana without harming others.

Additionally, many mischaracterizations are thrown at supporters of legalization. Many advocates of legalization are against drug use but feel criminal penalties are either too severe or ineffective. Some discuss the financial benefits of legalization not as an argument to end prohibition but as a means to finance more effective programs and policies. Others argue drug use is a health matter that law enforcement exasperates. None wish to see teenagers using drugs of any kind. The difference between supporters and opponents is typically not in the goals sought but the means of achieving such goals.

### VIII. Conclusion

The war on drugs has been lost. Despite decades of expanding budgets and intensified punishment, drug use persists. Elimination by force is futile. It's time the U.S. drops its idealistic, self-righteous crusade against drug use. The Federal

government should pursue a reality based approach that accepts those actions which are beyond its control and focuses on the most effective means of limiting the social costs. Marijuana is a good starting point.

Legalizing marijuana production and consumption is the first step towards a reasonable drug policy. Ending the criminal sentences for marijuana users will reduce the costs of prisons and law enforcement. Legalizing sales will bring the marijuana market within the government's authority to regulate. The tax revenue and budgetary savings produced from legalization can then be invested in pursuing a more effective and science based approach to educating the youth and treating addicts. In the long run, such reforms will alleviate many of the social costs of drug use.

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## Medical Education Reform

*Sophia TonNu*

### Introduction

From the very beginning, formalized medical education has operated in a global context. In the late 19<sup>th</sup> and early 20<sup>th</sup> only the wealthy and their children could afford to make the journey to prestigious medical schools from the University of Edinburgh in Scotland to the University of Heidelberg in Germany. Globalization of medical education has only increased in the 21<sup>st</sup> century. While universities continue to compete among themselves sub-nationally, the increasing economic demand for health-care in a global context has fueled convergence toward a common medical education model. Increasing political integration in the European Union has formed the framework for a set of common educational and professional standards. Common problems in medical education have also driven similar program innovations. However, while medical education has become more uniform in the past two decades, lingering institutional and historical arrangements have resulted in various national idiosyncrasies. Cultural expectations and mores have often reinforced these configurations. This paper examines these considerations in the context of reform to medical education in several OECD countries.

### Data

The paper undertakes an examination of the medical education models in the following countries: United States, Canada, United Kingdom, Germany, France, Japan, Italy, the Netherlands, and Sweden. Convergence in the current structure of medical education groups these countries (along a continuum) into three clusters. The Anglo cluster consists of the United States, Canada, and the United Kingdom; The United Kingdom model shares features with the continental countries. The second cluster consists of those countries we can consider as familial: Germany, France, Japan, Italy, and the Netherlands; The Netherlands model has features closest to the Scandinavian model of medical education, Sweden. The following table examines six variables related to the structure of medical education in these countries: pre-medical studies, admission into medical school, medical school curriculum, funding for medical schools, program evaluation of medical schools, and certification for practice.

### History

Historical changes in medical education are rooted in two time periods, the first decade of the 20th century and the 1970s'. Medical education in the era prior to 1910 was highly variable in quality. Individuals wishing to enter the medical field traditionally pursued one of three options: (1) apprenticeship with an medical practitioner, (2) study at a proprietary college staffed by private practitioners, (3) study a medical school adjunct to research university staffed by professors. During the 19th century, medical students in the United Kingdom, Canada, and the United States for the most part entered into apprenticeships or attended proprietary colleges. Germany and Italy primarily had medical schools based out of research universities. And France following the Napoleonic Wars and the various revolutions, settled on state-funded medical schools and teaching hospitals located in primarily in Paris. This location in France's leading city, however, also meant that while not formally attached to a research university, medical schools co-existed with best secondary education institutions in France. Following the Meiji Revolution, Japan's Prime Minister and Diet formally invited and evaluated various foreign public policy experts. As a result, the Japanese government decided to follow the German model of university-based medical schools. Clinical experience through "clerk" or internships in hospitals was not required in any of the above nations. Certification to practice in a geographic region was generally proffered after a small monetary fee. Quality of medical care varied highly with competence and socio-economic resources.

Beginning in 1890 in response to these deficiencies, the American Medical Association(AMA) began advocating the standardization of medical education. But the organization encountered severe difficulties in a climate adverse toward governmental regulation of professionals. Then in 1910 through the Carnegie Foundation for the Advancement of Teaching, the AMA hired Abraham Flexner. Flexner went on a year-long sojourn through some 151 medical school in the United States and Canada. At the end of his report, he concluded that none other than John Hopkins University embodied the appropriate model of medical education. And Hopkins in turn was based off the German model of medical education: (1) two years minimum on the basic sciences, (2) based out of research university, (3) staffed by salaried professors. In a few years, the number of medical

## Medical Education Reform

schools in the United States and Canada fell to less than 75 institutions.

In the years following the Flexner report, proprietary schools dependent on tuition fees per a student gradually died out. Unfortunately, many of the schools closed in efforts to standards promulgated by Flexner consisted of schools located in the poorer rural areas and 'black' medical colleges. Those that survived were medical schools most able to support the expensive laboratories, teaching hospitals, and faculty, schools either with substantial state support or private institutions with large private endowments. On a whole, these schools were located in or near major metropolitan areas with potential client base and supplemental revenue. When asked about this mal-distribution, Flexner valued quality over quantity. There was no right for the "poor boy" to attend medical school and institutions should restrict themselves to financially lucrative areas. Unfortunately, while Flexner believed in medicine as a social instrument of care, he also believed that the medical school graduates would spontaneously disperse themselves to where they were most needed. In 1912 with the help of William Ostler, Flexner again put forth a report on medical education in Europe that emphasized the merits of the German medical system. The Flexnerian emphasis on basic and clinical science followed by a modicum of clinical training prevailed all over Europe, but most strongly in the United Kingdom and in Italy. Early adopters of Flexner's recommendations also have the oldest programmatic evaluators or accreditation agencies in the General Medical Council and in the Liaison for Medical Education. France, in closer partnership with its centrally located hospitals, retains a stronger tradition of clinical-based experience.

Fast-forward to the late 1960s and 1970s, the number students reporting disenchantment with the volume of information consumed during medical school has risen. Students also perceive that information in the lecture-centered courses in the basic and clinical sciences as irrelevant to the medical context. Increasingly, graduates enter the work force uncertain of their skills in a clinical setting. Professors report that students have a greater rate of satisfaction while working with patients and solving problems in a clinical setting.

Then in 1969 at McMaster's University in Hamilton, Canada, the medical school decides to

problem-based learning (PBL). Students instead of passively receiving information during a lecture can now work in small groups researching specific disease-based problems. In the following decade promulgated through the Report of the Panel on the General Professional Education of the Physician and College Preparation for Medicine, the PBL style spreads from the University of New Mexico to the rest of the United States. In the Netherlands, Maastricht University is the first early adopter. The curricula slowly spread to Lipkonig University in Sweden by 1986 and to the United Kingdom. Italy, Japan, France, and Germany, the oldest university-based countries, were the slowest to adopt.

However, PBL curricula were not uniformly implemented. Adopted first by new universities seeking a curriculum, as in Maastricht University in the Netherlands, or adopted by oldest and most prestigious universities, as in Harvard University, the success of the model often depended on administrative support and funds for training staff members. Without training, schools encountered problems with the 'overload of curriculum' and faculty skepticism over the tradeoffs between knowledge depth in the basic and clinical sciences and the relevance of the new curricula.

### Economy

Economic demand and supply has driven much of the proposed change in medical education in the past two decades. The WHO and OECD currently projects a world-wide shortage of over 4.3 million health-workers in the coming decades. As such the global competition for physicians has increased exponentially. Today, the Anglo-American countries and Sweden report that up to a third of their physician and nursing work force is foreign-trained. Germany, France, the Netherlands and Italy have comparatively small shares of foreign trained or foreign-born doctors, but again the percentage continues to raise. In addition, these figures mask the fact that in the university orientated Germany and the Netherlands especially; many students go abroad for their clinical experiences. Only Japan has less than 1% foreign-born doctors in its physician work-force, a discrepancy which can be explained by prevailing xenophobic attitudes and an unusually restrictive immigration policy.

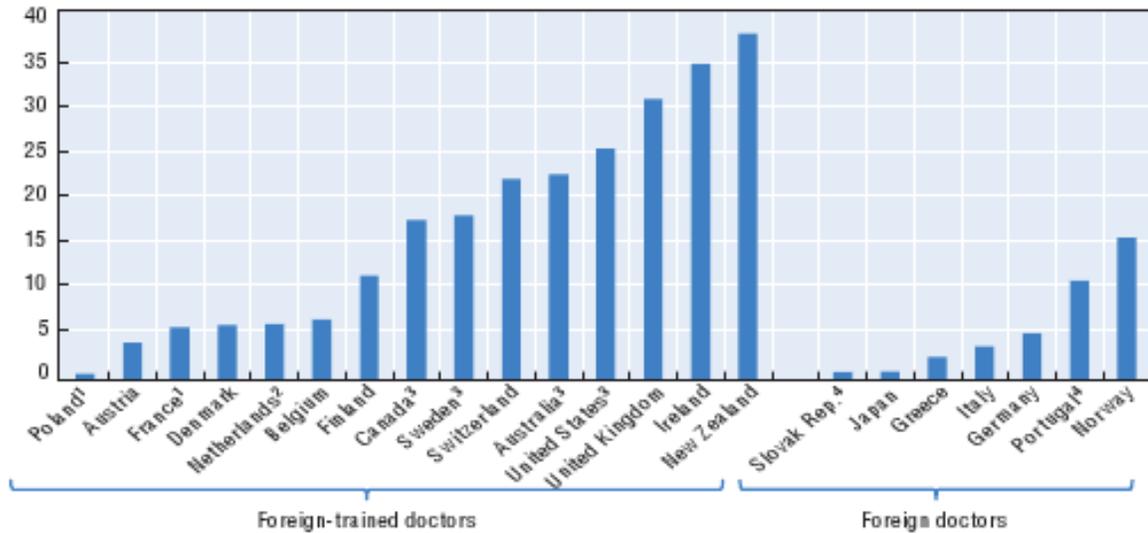


Figure 1. Share of foreign-trained or foreign doctors in selected OECD countries in 2008 (or latest year available) percentage. Source: [www.oecd.org/health/workforce](http://www.oecd.org/health/workforce).

In any case, this globalization of the health-worker workforce has driven the formation of both the World Federation of Medical Education (WFME) and the Institute of International Medical Education. While the Global Standards for Quality Improvement in Medical Education promoted by the WFME are not binding, all of the OECD countries are participating members. The standards also address many of the common themes in medical education reform movements including: (1) accreditation (programmatic evaluation) of medical schools, (2) knowledge of the basic sciences and scientific method, (3) integration of the social sciences in the curriculum, and (4) formal experience in a clinical setting. Note that over a century later, the Flexner's report's emphasis on knowledge of the basic sciences, rooted in German university practice, has survived.

Competition has also increased due to the European Economic Area (EEA), with the above-mentioned shortages in multiple countries has resulted in doctors now leave their native countries to freely move to other nations in the EU. Italy, the only country with currently under-employed physicians, has had nearly a quarter of its graduates leave for more remunerative opportunities. The majority of foreign-trained physicians within Europe also derive from European Union countries, with the exception of the United Kingdom. Historical patterns of migration of professionals from the British colonies have resulted in greater representation of those nationalities in the British work-force.

The aging demography of many of the OECD countries including Italy, Japan, France, and the US has also bottlenecked the supply of doctors. On one hand the retirement of the post-war boom generation from work includes the attrition of many doctors from the work force. On the other hand, with 25% of the population over 65 in Japan, the demand for gerontological services has skyrocketed. In addition, the global depression in 2009 has also placed severe fiscal strain on the health and welfare services of all of the OECD countries. The retrenchment of Medicare benefits into a voucher system in the US is one of many cost-cutting ventures put forward. In 2006, the Prodi government tried and failed reform medical reimbursement of the Italy's socialized system. Under Prime Minister David Cameron, Parliament tried to introduce competition into the National Health Service (NHS) through the use of competing physician provider groups. Such attempts to cut costs have often accompanied decreasing the remuneration of physicians, encouraging their retirement. Efforts to transition from expensive specialized care to team-care headed by general practitioners, has also increased the demand for general practitioners.

The cost of educating doctors has only ballooned in tandem with overall medical costs in the late 20th and early 21st century, putting pressure on universities to innovate and educate efficiently. Much of these costs include the pre-requisites of a Flexner recommended research university: laboratories, teaching hospitals, and experienced faculty. As a result student tuition has sky-rocketed at Canadian and American institutions. On average, Canadians

## Medical Education Reform

now leave medical school with over \$30,000 in debt, while Americans leave with well over \$100,000. Students attending private medical schools in Japan leave with about \$22,000 in debt. Defraying costs have also driven the introduction of small fees in the United Kingdom, about £3000, and in Germany at €500 a semester. Raising tuition costs appear to have exacerbated the socio-economic divide in medical school admission. In the United States, the coincidence of race and socio-economic status have also contributed to the under-representation in the medical profession. The under-representation of minorities may have also aggravated long-standing health-care disparities along ethnic, social, and rural lines. Doctors of a minority or rural origin often return to practice their under-served communities. Growing evidence, also indicates that co-occurrence of ethnic identity of physician and patient improves the health-statuses of under-served groups. Increasing costs may also be behind movements toward teaching population-based or socially determined medical interventions in medical schools. If the supply of physicians does not increase commensurately with population, doctors will have the unenviable task of treating ever greater numbers of sick individuals with diminishing resources.

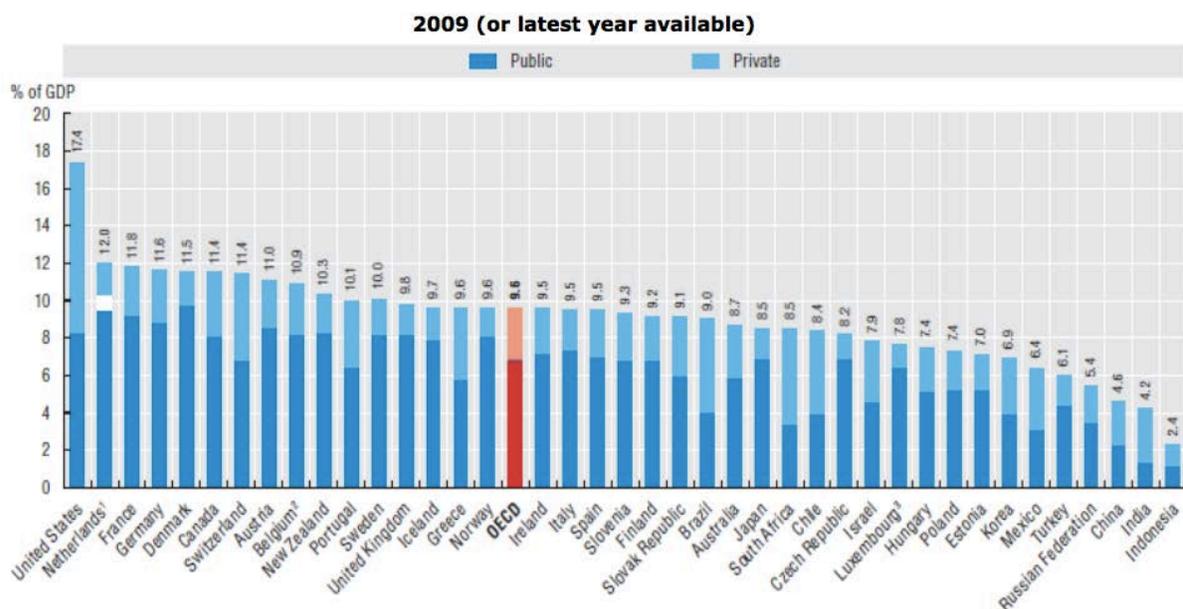


Figure 2. Medical expenditures as a percentage of GDP. Source: OECD Health Data 2011; WHO Global Health Expenditure Database

### Political

Economic integration in the European countries has been accompanied by political integration. Enhanced centralization of political power has aided in the implementation of reforms in powerful states, while de-centralization has impeded efforts to promote uniform change. Hence, many of the economic incentives for a greater unification of medical education objectives have resulted in political initiatives to reform medical education. Beginning with the Treaty of Rome in 1958, the European Union and its predecessors began forging the European Economic zone to facilitate the free movement of goods, services, and capital. As part of that endeavor, Article 57 of the treaty urged the mutual recognition of diplomas allowing entry to practice medicine. At the time, however, the ability to

practice in places like Germany and France was contingent on post-graduate requirements from rotations through clinical specialties to the preparation of a thesis. Today, as part of a European Economic zone, workers move freely among 27 countries. This proliferation of varying medical education standards has instigated a movement toward standardization of professional standards and higher educational minimum requirements. As part of that process, Bologna Declaration in 1999 created a European Higher Education Area, mandating the harmonizing of degree requirements. The declaration imposed at a minimum six years of education with 5,500 hours of instruction per a year. The European Credit Transfer (ECTS) and Quality Assurance System for students and professional licensure has also increased the national incentives for harmonize curriculum and other educational requirements. In recent years with European Directive 2005/36, Article 24, the EU has moved forward with

standardization of the general direction and specific content for medical training curriculum. The directive requires members to harmonize requirements for entrance in to medical school and requirements for fitness to practice qualifications. Emphasizing a basic grounding in the clinical and basic sciences coupled with a greater awareness of the social determinants of health, the directive's influence can be found in the many national legislative efforts to reform medical education.

In response to the Bologna Declaration, countries including the United Kingdom, Germany, Italy, and the Netherlands all adopted a bill for higher education reform at the national level. Reform has often followed the political institution lineaments of each of the regimes. In a unitary parliamentary state, reform in the United Kingdom has been driven primarily by the General Medical Council (GMC) and the Postgraduate Medical Education and Training Board (PMETB). In 2003, the GMC published *Tomorrow's doctors*, a document specifying both the content and evaluation criterion for medical school curricula. The overarching desired outcomes for physician training again include: (1) knowledge of the scientific method and basic sciences, (2) integration of the social sciences into the curriculum, and (3) experience in a clinical setting. The document goes on to specify minimum content requirements in detail.<sup>37</sup>

Germany, in 2004, adopted the Federal Medical Practitioner's Act (Bundesärzteordnung) to align the national curriculum with the Bologna process. By mandate, 60% of instructional content in Germany is virtually identical. But suiting its federal system divided into the Lander states, the other 40% of curriculum is at the discretion of the individual institution. The Netherlands' Ministry of Health in cooperation with university representatives and industrial representatives in a more corporatist fashion worked up the Blueprint 2001, again outlining specific required content areas. In 2002, the Ministries of Higher Education and Health in France similarly implemented a broader framework for a national curriculum. Again, reform came from the top in a highly politically centralized country. And in educationally centralized Italy, reform also occurred at the national level facilitated by the Ministry of Higher Education, the National Committee of Medical Degree Course Heads, and the National Committee of Medical Deans.<sup>42</sup> Japan also implemented reform at the national level in the late 90s' and in 2003, giving medical schools' greater financial discretion, while mandating new national curricula. Sweden, while freeing up curricula choice

up in the 1990s, still has higher education guidelines emanating from a unitary government.

In contrast, the federal and more private orientated states of Canada and the US have had a far more fragmented process for medical education reform. While the Royal Society of Physicians in Canada has issued the CanMEDS guidelines in 2005, again emphasizing greater experiences with clinical experience and population-level health, the 17 medical schools are free to adopt whatever curriculum they wish. Similarly the Liaison Committee on Medical Education, sponsored by the Association of American Medical Colleges and by the American Medical Association, has accreditation guidelines for both Canadian and US schools, but has no actual shut-down power over medical schools. And in contrast to the mutual recognition of professional licenses enshrined in the Bologna Process, American physicians must cooperate with 50 individual state licensing boards.

### Institutional

Implementation of policy directives and curriculum seems limited or enhanced by the government-private institutional arrangements in the nine countries. The centralization of funding and curriculum has speeded the implementation of reforms in the United Kingdom, Sweden, and the familial nations. Countries with centralized funding and health-care systems have a greater range of economic incentives to encourage private actors to cooperate. Nations that leave curriculum and medical school funding to private sources have to negotiate with physician associations and private universities. Much of this political leverage or lack therefore of seems to stem from long-standing funding patterns of each of the countries. The federal government funds all 36 medical schools in Germany. Implementation of the German Medical Practitioner's Act and new licensing requirements came swiftly in 2004. The Netherlands similarly funds all eight public medical schools. The PBL curricula adopted in Maastricht University spread within the decade to the other seven schools. At the national level, France and Italy both fully fund all of their medical schools. New licensing requirements and changes were smoothly implemented. Finally, the Swedish also fund all six medical schools in their country. In Sweden, the PBL innovations first adopted by Linköping University in 1986 spread quickly to the other five medical schools.

Japan is a curious case. Implementation of national directives was swift in the fifty government-funded medical schools and more fragmented in the

## Medical Education Reform

thirty private medical institutions. Canada has mixed system of funding. While its seventeen universities are ostensibly public, funding cut-backs in the 1990s has driven most institutions toward a greater reliance on tuition fees and research revenues. The United States, overwhelmingly has the most private mix of funding, with most students financing their education through taking on large loads of private debt. Rigor and uniformity of curricula and admission standards vary widely in Canada as the United States.

During the health-education reform, the institutional arrangement of health-care systems also appears to have mirrored the state's ability to implement reform. With a state that owns and finances much of the medical infrastructure and employs or reimburses nearly all medical practitioners, there exist fewer opportunities for outside influence of the British system. Similarly, Germany, the Netherlands, France, Japan, and Italy all negotiate state reimbursement of private physicians. Even when negotiating private interests in corporatist countries (i.e. Japan and the Netherlands), this appears to have given the state greater leeway during curricula formulation.<sup>38-44</sup> Growing differences in provincial priorities and funding for NHI in Canada seem to mirror the fragmenting of curricula across Canadian schools. The greater relative strength of private provider of health-care in the Canadian system also parallels the accreditation authority ceded to the Royal Society of Physicians. In the US, the magnitude of curricular fragmentation by university also finds commonalities in the regulatory and provider snarl of health-care insurance and provision. The private American Medical Association has more power vis a vis curriculum reform than the federal government.

Universally, however, whatever the speed of implementation curricular innovation has often been met with hostility in university faculty regardless of origin. In recent years integrating social sciences into the curriculum has met resistance from both within the physician profession and within its' schools. Concerns similar to the integration of PBL training into medical education have emerged. Professors worry that the new requirements impinge on time spent on the basic and clinical sciences. Students in both the United Kingdom and Germany have complained over the theoretical and abstract nature of courses in public health. Social sciences staff have reported relatively lower funding and prioritizing of staff during hiring and instruction time. It appears that the longevity and prestige of many medical schools have increased their organizational inertia opposed to change. The strongest opposition to the

social sciences integration has been found in entrenched professors and researchers in the natural and clinical sciences.

### Culture

Cultural expectations and mores have lingered in individual countries, shaping differences in medical education among gender and racial/ethnic divisions. Gender disparities have persisted among countries that outright barred women from medical schools during much of the 20<sup>th</sup> century. With the exception of brief periods during World War I and World War II, prevailing attitudes about a women's place in the home and the perception that women were both mentally and physically unfit for the rigors of the medical profession resulted in the refusal of medical schools in Germany, Japan, Italy, the United Kingdom, Canada and the United States to admit women and other discriminatory measures well into the 20th century. The first countries to formally admit women on a equal footing to male medical students were France and Switzerland in the 1860s. A strong state and republican tradition drove a top-down command from the federal government in Paris to integrate medical schools into co-educational institutions. Co-education in rest of continental Europe and the UK until the exigencies of World War II The presence of a strong state also smoothed gender integration in both the United Kingdom, Germany, Italy where the federal government granted the women the right to attend medical schools in 1914. In the United States, higher education integration appears to have been primarily driven by the burgeoning feminist of the 1960s and 1970s movement rather than the federal government. To this day, Japanese male physicians outnumber their female counterparts by a 2:1 ratio. This appears to be driven by Confucist familial traditions, where the male breadwinner takes precedence over a woman.

To a degree, historical patterns of bigoted and racist attitudes also explain ethnic disparities in admission to medical schools and to the profession. In particular, African-Americans until 20<sup>th</sup> century were barred from admission at all medical schools with the exception of the 'black' medical colleges of Howard and Meharry. Even following World War II, African-Americans continued to be barred from entrance to southern medical schools and from residencies in hospitals. In the United States as a result, minorities compose less than 6% of all physicians. In contrast in the United Kingdom and Canada, have higher percentages of South Asians, Philippines and other minorities. Admittedly, the United States has far more heterogeneous population and thus a greater number of minorities to integrate

then countries like Sweden and Japan. Increasing immigration and migration in Europe has however changed countries' traditional homogeneity. The acceptance of highly skilled professionals and ambivalence toward poorer immigrants hints that socio-economic divisions may end up replicated in immigrant populations.

Most countries have adopted measure during admission to encourage low socio-economic applicants. Germany sets aside a mandated percentage of medical schools spots for low income students. In the United Kingdom, the GMC specifically requires admission boards to promote "equality and diversity" in the student selection process. Over half of admissions in the Netherlands derive from a lottery system. With a similar egalitarian impulse, France allows all holders of the baccalaureate to enter medical school before weeding out students during national examination at the completion of one year in medical school. And even then, 70% of students retake and pass said exam. To a lesser extent, national admissions test wholly guide the admissions process in Italy and Japan. Oddly enough, Sweden, after reforms toward school choice at all levels during the 1990s', has the most similar evaluative admission process taking into account prior marks and work to the United States and Canada. Both Canada and the US, have interview processes that take into account all prior academic and extra-curricular work. And both have university-individualized affirmative action policies. Institutional setting, however, does limit the diversity of the student body. In particular, in *Bakke vs Regents of the University of California System, et al.* forbids the use of quotas in medical school admissions in the United States. Race can be considered in an applicant's profile, but cannot form the basis of a quota. However, despite the use of lotteries or affirmative action medical school admits in both France and the US overwhelmingly come from a middle-class professional background. Predictively, many students have one or both parents in medical professions:

It also appears that widespread abuse of medical students often follows gendered or ethnic defined lines. In general, widespread reports of verbal and physical abuse have been found in most of the countries. Medical students compared to their general education counterparts report greater rates of depersonalization, burnout, depression, and other mental health problems. Students have also often reported a greater prevalence of mental health degradation in the surgical specialties. In surveys of Swedish, the Netherlands, the American, Japanese,

and Canadian female medical students have reported greater rates of sexual harassment. Verbal abuse has also included racial and ethnic slurs in the above-mentioned countries. It appears that the overall issues with mental health stem from a mentality of 'toughing it out' through medical school. It also seems that medical training culture almost expects a particular level of physical and mental breakdown during the internship and residency requirements. Students, both male and female, rarely report abusive incidents to university authorities. When queried, many cite a lack of faith in the efficacy of university education. Professors and clinicians in positions of authority also frequently perpetuate instances of abuse.

It appears that harassment among gender lines may derive from lack of female doctors in positions of authority. Rarely if ever are the ikoyku-kaza departments heads in Japan female. Even in Sweden, a gender disparity exists in the ratio of female to men appointed a professors in medical schools. Men overwhelmingly compose the majority of surgical specialists in several countries including the United States and Canada. Similar arguments may also be inferred along ethnic and racial lines. While as noted the share of foreign-born doctors as part of the work force has increased in the past few years, those in positions of authority generally date from a generation back. If there are few women in placed upper echelons of the hierarchy of the medical training system in the United States, there were also few minorities in any position of authority. This homogenization of the work force appears to have a self-perpetuation effect. Students, who survive the process, take pride in enduring said trials. Said students, once in a leadership position, continue the pattern of hiring the 'toughest'. This aspect of medical training culture may overall further contribute to the elitization of the medical profession.

### Conclusions

In the coming decades, the impact of economic forces on medical education will probably only increase. Considering the near decade incubation period for both physicians and specialists, countries facing shortages in gerontology, general practice, and rural areas have few options beyond investing in those areas immediately. Programs introducing student to rural and general practice early in their education appear to be effective in encouraging students to consider these specialties. Reaching out to students from rural areas also appears to have increased the retention of physicians in rural areas, since students from rural areas often return to their hometowns to practice. But

## Medical Education Reform

considering the poor funding of hospitals and other medical infrastructure in rural areas, building teaching hospitals and medical schools in rural areas may be the next step in remedying the 20th century's shift to urban areas. The low remuneration of rural and general practitioners also suggests that financial incentives or subsidies will be required especially in countries with a high incidence of medical school indebtedness<sup>59-60</sup>. The US and Canada, in particular, will probably have to offer the most extensive loan forgiveness or grants to students due to schools' dependence on student tuition as revenue source.

Overall, the admissions process, the pre-medical stage, and funding for medical schools may be in for an overhaul if countries remain serious about increasing the socio-economic and gender diversity of their student bodies. Ultimately, a personal tradeoff persists between time invested in medical school and available monetary resources. There exists the possibility, countries may simply choose to compress the length of medical training by omitting particular curricular requirements. But considering the delicate balancing act between competing departments and professors, that may prove impossible. This leaves policy changes and funding in consideration.

Despite the lottery systems and near universal presence of the national admissions test, medical students in France, the Netherlands, Japan, Italy, United Kingdom, the US, and Canada remain overwhelming native-majority and from a middle-class background. This suggests that the weeding out of lower socio-economic classes from medical school occurs before the admission process. A lottery doesn't work if individuals of a lower socio-economic status have already self-selected out of the applicant pool. Considering the under-representation of minorities and students of low SES status that enter higher education or complete high school, intervention may have to come at the primary schooling level for some countries. Countries with alternative school tracking early on (Japan, France, and Germany) will probably have to financially and programmatically reach out to students of a low SES background. In the more fragmented system found in the United States resistant to regulation at any level of education, medical schools will have to assume the obligation of reaching out to these students. Pessimistically, the costs of medical school may have to exceed the means of middle-class families before an impetus to action exists.

On the gender side of the equation, increasing the number of women in academic and leadership positions is again tied to reaching out to students,

educating faculty and administrators, and implementing a transparent system to review harassment complaints. Considering the length of medical training in all nine countries, verging on over a decade depending on specialization, generous family leave policies may also encourage the retention of women in the physician work force. Cynically, countries may be in a Catch-22 situation. Individuals have a tendency of hiring successors similar to them, perpetuating the elitist over-tones in the physician work force. The current entrenchment of less diverse leaders in academia and professionally may not abate until their retirement.

In the future, the inherent conflict of interest between physicians' interests and the physician supply probably necessitates the independent assessment of medical school performance at least from view of admissions. Simply put, allowing professional associations like the AMA and the Japanese and French physician groups' input into the number of students educated has mirrored declines in the number of medical schools graduates. Considering the growing demand for health-care services and the shortage of health-workers, limiting the supply of future physicians is particularly untenable.

In addition, despite the institutional rigidity in medical schools, the changing social climate and shifting spectrum of disease prevalence demands greater flexibility in curriculum innovation. The large internal resistance toward the implementation toward uniform minimum standards outside the basic sciences in many universities, however, suggests that change will not come internally. Change may have to come from an outside organization, from a central body vested with the power to assess medical schools and implement change. Fragmentation and the weak enforcement powers of private accreditation agencies also suggest that harmonization in standards through voluntary agreement will be long in coming. The Anglo-American countries already have centralized accreditation of medical schools through private physician-lead association. But left to their own devices, curriculum-wise, admission requirements vary widely between various universities. Harvard University and John Hopkins University now require social sciences classes as a part of their pre-medical requirements; Texas state universities do not. It's likely that in the more state-orientated countries of France, Germany, and Japan, ministries of health and higher education will simply have to create a bureaucratic organ to inspect medical schools and implement new curriculum.

Regarding the social sciences, the growing specter of medical costs consuming well-over 10% of GDP in these countries suggest that efforts to mediate the social determinants of healthy populations has become a necessity rather than an option. Using the implementation of PBL as a model, integration of the social sciences requires training of both natural sciences staff and social scientists. Successful implementation in Sweden has also been accompanied by the concurrent teaching of the allied health professions (public health, etc.) at the same institution as traditional medical students. Investing in faculty training also appears to have alleviated transitional problems in Japan and in the Netherlands. Attempts to integrate the social determinants of health may be aided by the greater integration of the basic sciences and clinical experience. Increased clinical requirements have often lead to outsize burdens on university affiliated hospitals, resulting in an increased number of opportunities to gain clinical experience in a community setting.

Everything considered, the fact all nine countries have at least attempted to introduce changes to their medical training systems suggest that change will come at some juncture. Growing economic forces hint that change will become inevitable when the supply of doctors cannot meet the demands of a country's health system. The continued dominance of the natural sciences, research, and lingering cultural vagaries does attest to the fact that change does, however, come incrementally. Variations in implementation speed imply that OECD countries with stronger or unitary states have more options when encouraging uniform policy implementation than the federal states of the United States and Canada.

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#### INTRODUCTION

Many Muslims in Europe and North America apply Sharia – Islamic law – to civil matters despite nevertheless adhering to the secular law of the land. For many Muslims, Sharia’s recommendations on marriage, divorce, and inheritance are relevant regardless of one’s country of residence. Given this, Muslim communities have proposed or established Sharia-based religious institutions in Canada and the United Kingdom to resolve family disputes, obtain Islamic divorces, and settle inheritance matters. In this paper, I broadly refer to these religious institutions as “Sharia courts,” although, in practice, they operate under a variety of names ranging from Sharia Councils to Muslim Arbitration Tribunals.

Under the legal arrangement of religious arbitration, Sharia courts have emerged to inform private Muslim arbitration rulings on matters related to marriage, divorce, and other civil matters in England. British scholar Werner Menski claims that British Muslims from Pakistan and Bangladesh have produced a particular Sharia for British Muslim needs. Rather than importing Islamic laws from their countries of origin, Menski argues that Britain’s postcolonial Muslims from Pakistan, Bangladesh, and India have adapted Muslim law to the British environment.

Yet, the lack of understanding surrounding these Sharia courts produces concerns about the ongoing “legal and cultural separatism” of Muslims in Britain and Canada. By situating the arrival of Sharia courts in scholarly debates about multicultural citizenship, this paper ultimately argues that these Sharia debates in Canada and the U.K. demonstrate that Muslim groups are claims-makers who request increased group recognition. Their demands for equal recognition, as granted to Canada and Britain’s Christian and Jewish communities, pluralize the public space and contribute to an understanding of multicultural citizenship.

Thus, the questions this research paper will answer are: How do certain Muslim groups’ demands for Sharia courts demonstrate a form of multicultural citizenship? Why did Sharia courts come about in the U.K., but not in Canada? Furthermore, what purpose do they serve for Muslim diasporic communities? Through comparative analysis of two states -- Canada and the U.K. – a deeper understanding will emerge of why many Muslims seek to use Sharia courts in non-Muslim countries.

In order to understand this phenomenon, I will analyze two case studies: 1) the U.K.’s partial recognition of Sharia courts, and 2) Ontario, Canada’s exclusion of Sharia courts from the 1991 Ontario Arbitration Act by ending all faith-based arbitration, including Christian and Jewish arbitration. The U.K. is critical to studying Sharia courts in non-Muslim countries because it reveals one of the most well-established and sophisticated systems in continued usage today. On the other hand, Canada is a good counterpoint to the U.K., illustrating a Muslim group’s failed attempt to use the Canadian legal framework to accommodate itself. In both cases, the right to use these Sharia courts is continually challenged as a threat to the secular system.

#### THEORY

To analyze how Muslims in the West have become claims-makers demanding group recognition, this paper employs Tariq Modood’s theory of multicultural citizenship. Multicultural citizenship is a normative idea of providing communities with minority recognition, while simultaneously allowing them to join an inclusive national identity. According to Modood, “to be a multicultural citizen is to have a double right: to be recognised, and to debate the terms of recognition.” For Muslims in Canada and the U.K., this definition translates into a desire to participate in the public debate about their position and rights, while simultaneously allowing them to join the national identity as equal citizens. In other words, Muslims strive to achieve recognition in societies where they have recently arrived, and continually debate the terms of that recognition, particularly in terms of gaining equal respect to other communities.

Multicultural citizenship furthermore refers to the *process* of claims-making pursued by Muslims, not simply the demand for legal recognition of Sharia bodies requested by certain Muslim groups. Modood argues that it is more vital that Muslims are made to feel a part of the national group, rather than asserting that Muslims aim to acquire legal recognition of Muslim institutions. He expounds that Muslim groups’ freedom to practice their beliefs in an equal manner to other religious groups is integral in pulling them into a multicultural citizenship.

Modood also defines “Muslim” as a distinct group identity that has emerged in the wake of large-scale immigration to Europe by Muslims from South Asia, North Africa, and the Middle East. Despite their cultural heterogeneity, Muslims are viewed as a

single unit in external perceptions of their demands, goals, and practices. Nonetheless, it is the political processes of negotiation that define their membership in this unit, as new groups invariably insert themselves into new cultural landscapes by defending their right to practice differences. According to Modood, Western Muslims have emerged as *political* categories by debating the terms of their recognition, as well as by seeking equal treatment to other social communities. Modood furthermore notes that British Muslims increasingly identify as Muslim before Pakistani or Bangladeshi, revealing that religious identity increasingly trumps ethnic heritage for many Western-born Muslims. Like their British counterparts, Canadian Muslims likewise face characterization as a singular unit despite their immense diversity, largely due to the post-9/11 political attention toward Muslim communities. Canadian Muslims also possess membership in an overarching Muslim group identity that is today requesting special recognition and attention in order to achieve a multicultural citizenship.

Nevertheless, although the majority of Muslims are not seeking legal recognition of faith-based arbitration, certain Muslim groups are seeking some form of religious, political, or cultural recognition as legitimate members of the national debate. Thus, the argument of this paper is primarily concerned with the process and negotiation of claims-making by British and Canadian Muslim groups through their advocacy for Sharia courts. As a recently-arrived group to the U.K. and Canada, Muslim immigrants occupy an insecure place in relation to the dominant society and are continuing to re-negotiate the way Muslims can debate their right to include themselves in the land.

## SHARIA

One of the core reasons for the opposition against Sharia courts is the confusion surrounding the term Sharia itself. Many non-Muslims link Sharia with certain criminal practices like chopped hands, polygamy, and public stonings. However, Sharia is more complex concept than what this image suggests. To contextualize its appearance in Western countries, it is imperative to understand what Sharia signifies to Muslims globally. Sharia derives its moral legitimacy from two sources: 1) the Quran, Islam's holy book, and 2) the Sunnah, the collection of deeds attributed to the Prophet Muhammad. Literally, the Arabic term Sharia refers to "the path" or "the way to the watering hole," metaphorically indicative of the "path" a Muslim should pursue in his submission to God.

Islam's lack of an ecclesiastical structure indicates no central authority dictates Islamic law, hence Islamic law differs depending on context, and

no single country's Islamic law is the definitive Islamic law. Indeed, although Sharia is viewed as shorthand for "Islamic law," much of Islamic law also stems from fiqh. Fiqh is Islamic jurisprudence determined through the interpretation of the Quran and the hadith. The Quran does not address the multiplicity of modern-day questions Muslims possess about their lives, ergo Islamic scholars employ fiqh to rule on topics untouched by the Quran and Sunnah. Additionally, the weight accorded to the fiqh differs from the weight accorded to explicit prescriptions laid down in the Quran. Muslims understand Quran as an infallible source of moral counsel, and for many Muslims, it constitutes the direct Word of God. Thus, the laws stemming from the Quran are unchangeable. However, legal judgments pronounced through fiqh, or the human-interpreted study of Islamic law, are fallible and contestable. The emergence of fiqh is thus crucial to Sharia's development because it relies on humans to intuit what is lawful. As humans are prone to error, these rulings are not fixed and immutable; they can be re-interpreted by new scholars, and often have been throughout Islamic history. This is vital for non-Muslims to note because it signifies that Islam has an evolving, flexible legal system that is open -- and accustomed to -- reinterpretation.

Most importantly, although concerns are frequently raised about importing Sharia to non-Muslim settings, Sharia does not exist as one neatly codified series of laws capable of undermining or supplanting secular laws. Indeed, due to the diversity of opinions on how to deduce Islamic laws, multiple schools of Islamic jurisprudence have arisen, with conflicting and overlapping ideas of what is lawful and unlawful in Islam. Sharia is therefore constantly written and reinterpreted anew.

## ENGLAND

In the U.K., two different institutions exist to administer faith-based arbitration and mediation according to Islam. The two branches of organizations are called Sharia Councils and Muslim Arbitration Tribunals (MATs). Both serve Muslims in the British community who seek to apply Islam to issues of family or civil law.

MATs recognize British law as the dominant and superseding law of the land, but they assert that Islam can be in productive dialogue with the British legal system. MATs largely work on dispensing Islamic services that are lacking in the secular legal system, i.e. granting an Islamic divorce. MATs are aware they cannot adopt the state's role of providing or dissolving civil marriages, but they see a dearth of institutions serving the growing needs of the Muslim community.

## Muslims in the West: Sharia and Multicultural Citizenship in the United Kingdom and Canada

MATs demonstrate a keen awareness of non-Muslim perceptions of Sharia courts as run by foreign-born religious leaders promoting patriarchal, gender unequal values. As a counter-argument, MATs stress that their courts include individuals -- particularly women -- who are domestically-educated, U.K.-born, and understanding of the evolving position of Islam in British society. MATs throughout England encourage users to strategically use both the civil legal system and the MATs to solve their legal cases. By adopting these attitudes favoring British law, a network of MATs spread across the U.K. have gained official recognition in the U.K.'s legal system.

According to its own literature, the primary objective of the Sharia Councils is to create a "stabilising influence within the U.K. Muslim community" to ensure the community's survival and success. The Sharia courts thus seek to enhance the knowledge of Islam among Muslims disconnected from a Muslim state, and increasingly without guidance on everyday Muslim questions. Moreover, the Sharia courts address questions that would only arise in a non-Muslim setting, such as how a British South Asian Muslim should navigate a marriage to a non-Muslim. Thus, Sharia courts serve a community role for a group that is geographically disconnected from their countries of origin, where they have readily accessible religious instruction. Since the religious information is not widely known in the U.K. and Canada, legal advice on divorce for Muslims is also not easily available. Sharia Councils work to bridge the gap between the legal system and Muslim communities, advising Muslims in a legal environment where non-Islamic values -- i.e., charging interest -- prevail.

Thanks to the alacrity in which Muslim courts furnish a decision, non-Muslims are increasingly gravitating toward MATs and Sharia Councils as well. Although they only constitute 5% of users, non-Muslims find the institution's recognition of oral agreements vital to resolving commercial disputes, and thus more suitable than non-Muslim courts for arbitrating civil disputes. Ultimately, some of the main advantages to Sharia courts are that: 1) they operate on a low budget, 2) the timescale for a resolution is shorter, and 3) the laws of evidence are more lenient.

### HISTORY AND USAGE

The history of Sharia Councils and MATs is linked to the recent shift of Muslim immigrants from "sojourners to settlers." Britain's approximately three million Muslims -- who make up the second-largest faith group in the U.K. -- draw primarily from Britain's former colonies in Pakistan, Bangladesh,

and India. Historically, Muslim migration occurred to fill labor shortages in Britain's textile and steel industries, with the vast majority of migrants being young men from Kashmir in Pakistan and the Sylhet region in Bangladesh. The bulk of migrant men anticipated returning home and therefore did not found the settler infrastructure enabling them to stay. It was only in the 1960s that migrants gained a "self-consciously Muslim" identity accompanying their new permanent settlement in the U.K., enabling them to establish mosques. Along with these mosques, Sharia courts emerged to address the moral questions arising in their new environment.

As British mosques were divided by ethnic, sectarian, and geographic lines, so too were Sharia Councils and MATs. Both of these first materialized as affiliates closely linked to mosques. In many cases, the leadership board of a Sharia Council or MAT was led by an *imam* (religious leader) from a local mosque. Of course, there was a difference in the degrees and depth of affiliation between a mosque and faith-based arbitration or mediation institution. Those institutions seeking to maintain village-kinship ties undoubtedly imported overseas *imams* from Pakistan or Bangladesh to preserve a highly specific sub-community morality.

The first Muslim institutions operated informally and without any legal recognition. At the time, the ruling was only binding if both disputants recognized the authority of the Council vis-à-vis their case. Finally, in September 2008, Sharia courts gained enforcement powers through county courts and High Court under the 1996 Arbitration Act, which allowed faith-based arbitration to occur in the U.K.

MATs have been operational since 1997; however, as non-statutory tribunals, they lacked official standing in the British legal system until recently, when they fell under the Arbitration Act 1996. Today, Sharia courts hold a three-pronged function: 1) to enable religious divorces, 2) to deliver religious rulings, and 3) to resolve disputes between groups of Muslims. One secondary function is to bridge the gap between the Muslim community and the larger non-Muslim community. By offering advisory opinions to both Muslims and non-Muslims on matters related to the Muslim tradition and lifestyle, the courts have been asked to interpret Islam's stance on a range of issues from genetically modified foods to banking and finance. The institutions have taken on an intellectual role by furnishing expert Islamic opinion to non-Muslims and Muslims alike. By publishing legal opinions (fatwas), the institutions have ultimately developed uniquely British Muslim teachings for how a Muslim interacts in a non-Muslim environment.

Still, the preponderance of issues tackled by the courts contend with internal problems within the Muslim community, i.e. issues of divorce or child custody. The types of cases dealt with by MATS are 1) forced marriages, 2) domestic violence, 3) family disputes, 4) commercial and debt disputes, 5) inheritance disputes, and 5) mosque disputes. Despite the diversity of issues the courts have developed competencies in, divorce is the single largest area of concern for Muslims seeking their services.

### USERS

The predominant users of Sharia courts are women who voluntarily seek their services after hearing about them through friends, family, or local *imams* (religious leaders). The process commences with most women contacting the courts initially through telephone, followed by a formal application citing the motivations for a divorce. However, the question arises: why are British Muslim women pursuing Islamic divorces?

One, Muslim marriages are solemnized through religious contracts called *nikahs* that are not dissolved even when civil marriages are carried out. Thus, Muslims may be divorced in the civil and secular law, but their matrimonial bond still exists according to the *nikah* contract. Although many British Pakistanis are born in the U.K., it is still customary for many to go overseas to obtain arranged marriages organized by their extended family. In this way, many Muslim marriages in the U.K. are frequently conducted overseas -- in the countries of origin for British immigrants or children of immigrants -- rendering a civil divorce in Europe immaterial. If a woman returns to Pakistan, her civil divorce documents may not be seen as a valid termination of her marriage as long as her *nikah* continues to state she is married. For this reason, women in the U.K. use the Islamic divorce granted by Sharia courts to return to their country and furnish evidence that the *nikah* contract has been formally dissolved. This also precludes her husband from following her overseas and declaring that they are still married, which many users cite as a common fear.

### CRITICISM

According to anti-Sharia actors like the U.K.'s "One Law for All" movement, British Baroness Cox, and the far right English Defence League, Sharia courts are problematic because they 1) undermine the British legal system and 2) imperil the rights of women. There is an ongoing anxiety among the British far right that recognition of Sharia courts will engender a "Shariacracy" in England,

spurring legal separatism and ghettoization. The common rallying cry around this argument is that a Saudi Arabian-style system of law will materialize, i.e. adulterers will be stoned, hands will be chopped off, and women will be coerced to accept legal traditions that brutally discriminate against their rights. To prevent this from occurring, critics like the British Baroness Cox have proposed the Arbitration and Mediation Services (Equality) Bill to outlaw the legal jurisdiction of Sharia courts in England.

The support of these religious courts varies among Muslims as well. Among the younger generations of Muslims, opinions are generally favorable, as a 2006 survey revealed that 40% of Muslim youth aged 16-24 desired Sharia application in Muslim areas of England, in contrast to only 17% of Muslims aged 55 or older. It is evident that many Western-born Muslim children are more active in demanding religious rights than their overseas-born parents or grandparents. The new generation of British-born Muslims is more assertive in demanding they belong to Britain and are thus entitled to practice Islam in a multicultural, plural society.

### CANADA

Historically, Canada's Muslim population has been small, but in recent years, this has shifted, as Islam is now the fastest-growing religion in Canada. Canadian Muslims constitute approximately three percent of the total population. Although the first Muslim immigrants to Canada entered with little education and sought employment as unskilled laborers, the recent Muslim immigrant population has been highly-educated, affluent, and ethnically heterogeneous. There is no dominant ethnic group which emerges, but the majority of Canadian Muslims -- sixty percent -- live in the province of Ontario, making it the most significant Canadian territory to examine issues facing the larger Muslim community.

Unlike their British counterparts, Canadian Muslims cannot easily be ethnically grouped, as they span from Western Asia to Eastern Africa. Yet, like British Muslims, Canadian Muslims are increasingly seeking legal accommodations of faith-based institutions to administer judgments congruent with Islam. Similar to British Sharia courts, these institutions, if applied in Canada, would apply Islam to arbitration touching personal, family, and private business law.

The establishment of these institutions was a clear possibility in the early 1990s, when the province of Ontario enforced the Arbitration Act of 1991, providing legal weight to faith-based arbitration as a form of alternative dispute resolution. Designed to reduce the case backlog in courts, this

## Muslims in the West: Sharia and Multicultural Citizenship in the United Kingdom and Canada

law enabled Christian and Jewish courts to immediately institutionalize their rabbinical and canon law courts. For example, the Jewish Beth Din courts were now able to settle family disputes and grant women Jewish divorces with state sanction. As long as the Canadian law was still recognized as supreme, both religious and non-religious sources could inform legally binding arbitration rulings. Although Muslims only demanded an extension of the rights awarded to Christians and Jews – effectively, identical rights to practice a religion through religious arbitration – the public interpreted the Muslim demand for Sharia courts as a different demand altogether.

In 2003, Syed Mumtaz Ali, a Sharia scholar and former lawyer, sought to include Muslims in the Arbitration Act. Under an organization called the Islamic Institute of Justice, he launched the Canadian Society of Muslims' movement to establish Sharia Arbitration Courts. Like Jewish Beth Din courts, these Sharia Arbitration Courts would offer Islamic divorces and settle family disputes. Women could act as arbitrators, but more importantly, the courts would give Muslim women the opportunity to design the terms of their marriage contracts, giving them a power hitherto absent in defining their marriage.

However, Ali's critics asserted that he framed the usage of Sharia as an obligatory act for all Muslims. Ali was quoted to have said that Muslims living in the West were obligated to introduce Sharia if the Arbitration Act of 1991 allowed its application. Ali said that the previous hardship in applying Sharia in a non-Muslim setting no longer existed gone when he said, "The impracticality has been removed. In settling civil disputes, there is no choice indeed but to have an arbitration board." Ali's critics misunderstood this statement as an appeal for the Sharia known in the Taliban-ruled Afghanistan. This generated a backlash from those who interpreted his statement as the first step toward the emergence of a parallel legal system that did not recognize the ultimate supremacy of Canadian law. For the ensuing two years, Ontario debated the validity of Sharia in a secular state.

To evaluate matters, Ontario Premier Dalton McGuinty subsequently enlisted the Attorney General Michael Bryant and the Minister Responsible for Women's Issue to study the possibility of Islam falling under the rubric of the Ontario Arbitration Act. In 2004, a report was thereafter commissioned by former Attorney General Marion Boyd analyzing the ongoing feasibility of the Arbitration Act. Termed the Boyd report, in her conclusion she reported that Muslim usage of this Act endangered the "entrenched equality rights in Canada." The report heavily relied on the testimonies

of women's rights groups -- both Muslim and non-Muslim -- to analyze Sharia's viability in the secular Canadian state.

Ex-Muslim women -- defined as women born in Muslim families, but who not only rejected Islam, but publicly spoke out against Islam's treatment of women -- became the most vocal dissenters of Sharia-based tribunals in Ontario. Their opposition hinged on an argument that they had escaped oppressive religious strictures and had not migrated to Canada to re-enter them. A wide range of ex-Muslim women appeared in public to decry the potential arrival of Sharia tribunals. One such woman was Homa Arjomand, an Iranian refugee who linked Sharia's implementation in Canada to draconian Taliban rule, while reiterating her own personal narrative about escaping persecution and hardship under Iran's Islamic laws. Arjomand created the International Campaign Against Sharia Courts in Canada in response to the IICJ's Sharia tribunal proposal. As women who had escaped oppressive Islamic law that hindered women's agency, they sought to rescind any Arbitration Act that limited women's ability to think in their own self-interest.

Following this, the report determined that Islamic legal principles were "inherently gender unequal" whereby Muslim men and women suffered from differential legal protections and practices (i.e., a male's testimony was worth half that of a woman's in an Islamic court). Boyd's report specifically targeted the vulnerability of Muslim women, who Korteweg notes seemingly universally needed the protection of the Canadian state from Islamic legal principles. According to Korteweg, the onus fell on the Canadian government and society at large to ensure that all Canadians could access a set of rules that privileged both genders equally and justly. The Boyd report argued that this was something Islamic legal principles failed to accomplish, unlike their Christian or Jewish counterparts.

Ultimately, the report asked for an "institutionalized oversight and education" of these religion-based arbitration tribunals to ensure that all parties were aware of Canadian legal principles and the limited scope of Sharia vis-à-vis Canadian law. Moreover, it was proposed that judgments made in accordance with Ontario Arbitration Act of 1991 should be collectively re-evaluated to judge their violation of Canadian law. The report did not recommend banning all religious arbitration. Rather, it was in favor of faith-based arbitration regulated through proper oversight and education. Despite these recommendations, Ontario Premier Dalton McGuinty ultimately chose not to implement Boyd's oversight recommendations on September 11, 2005,

but instead prohibit all religious arbitration, including Jewish and Christian.

The result was a removal of all state-recognized religious arbitration. Although a win for critics who sought to protect Muslim women from discriminatory laws, it constituted a setback for Muslim women who viewed state recognition as a means to protect women who would otherwise be coerced to enter informal Islamic procedures.

For example, Islamic divorces could be carried out outside of Sharia courts by an *imam* (religious leader) at a mosque. Muslims who desperately sought an Islamic divorce utilized this service regardless of whether the divorce was legally binding in Canada. Preventing Sharia courts from arising did not prevent these women from acquiring an Islamic divorce. If Ontario truly wished to protect vulnerable Muslim women, then regulating the practice of *khula* (divorce) at Sharia courts would be more effective, but I argue that it would first require the institutionalization of the courts.

In Korteweg's analysis of Canadian Muslim women's perceptions of the Sharia tribunals, she determined that both detractors and supporters voiced a wish for the secular state to help Sharia tribunals apply a fair and just reading of Islamic legal principles. Most often, the requested help would materialize in the form of regulatory state oversight. Korteweg's idea of "embedded agency" (defined as agency that is embedded in religion, a force customarily seen as limiting agency) was visible in the way self-identified Muslim women entered the debate and spoke out against the state's ban on religious arbitration. One Canadian Muslim, Seema Khan, argued that the state's lack of recognition endangered women by not offering protective oversight or regulatory mechanisms to check the power and usage of these tribunals, which would simply move underground. She thus favored institutionalizing the Sharia tribunals in order to gain strategic protection for Muslim women.

## DISCUSSION SECTION

In the discussion section, I argue that British and Canadian Muslims demonstrate that they are equal citizens with a right to resolve disputes through religious arbitration. These groups are accomplishing this goal by seeking rights guaranteed to other religious communities like Jews and Christians. Although critics may frame Muslim requests for Sharia courts as a new demand challenging the secular value of the legal system, it is more accurate to argue that Muslim demands do not go further than those granted to other religious communities. The multicultural citizenship available to Jews and Christians can be extended to Muslims by virtue of a

precedent of pluralism and accommodation.

First, as Modood's multicultural citizenship concerns itself with minority groups receiving equal treatment to other groups, it is imperative to note that Muslim demands for faith-based arbitration are not unprecedented. In fact, the Sharia Councils throughout the U.K. are strikingly similar to the Jewish Beth Din courts. In both Canada and the U.K., Christians and Jews have successfully set up religious courts to serve their communities. The Jewish woman-initiated divorces – *Get* – offered by Jewish Beth Din courts parallel the *khula* – or woman-initiated divorce – that Sharia councils and tribunals grant to women.

Granting religious arbitration to Muslims would thereby only serve as an extension of what already exists for other religious groups. Given this strong accommodative precedent, it is noteworthy that Muslim usage of the Arbitration Acts is so fiercely contested. According to Modood's theory of multicultural citizenship, recognizing Sharia courts forms one example of Muslims asking for equal recognition in line with what previous groups have requested. By extending the right to use faith-based arbitration councils to Muslims, the U.K. demonstrates the value it gives to an equal religious group.

From examining the responses in Canada and the U.K., it is evident that the U.K. is far closer to achieving multicultural citizenship than Canada. By legally recognizing some MATs, England displays a sensitivity to the marginal position of British Muslims today. Nonetheless, the public furor over Sharia courts highlights a wider perception that Muslims are requesting special privileges and therefore marking themselves as a different category needing special accommodation.

This accommodation of *difference* is inherently unpalatable to those who prize the idea of a monolithic, unchanging national culture not threatened by the arrival of a new group like Muslims. Here, I interpret difference as the way Muslims are perceived by some to possess alien customs, practices, and values that might be in opposition to the dominant national practices or values. This engenders tension in many European societies, some of whose members view Muslims as a political category capable of undermining social cohesion with the introduction of new cultural views and practices. Muslims must contend with some external perceptions that they are foreign and somehow imposing a different culture or laws. Yet, the recognition Muslims are pursuing is the same recognition that has been extended to Jewish and Christian communities. The Muslims using Sharia courts thereby see themselves as equally entitled to

## Muslims in the West: Sharia and Multicultural Citizenship in the United Kingdom and Canada

the laws of the land, and capable of producing a Sharia court that acts in concert with the secular system.

On this point that Sharia works alongside the civil system in non-Muslim countries, the proposed Sharia courts in Canada were conceived as an Islamic supplement to the state's legal system, rather than a rival, exclusive system. The proposed founder, Syed Mumtaz Ali, consistently referenced his support for gender equality and the Canadian Charter of Rights and Freedoms. Thus, he envisioned Sharia courts as a distinctly Canadian-Muslim tool to address the needs of Canadian Muslim communities.

In England, the notion that Sharia courts could work in tandem with secular courts was visible in the way the Sharia courts impelled users to rely, first and foremost, on the civil system. On applications for divorce, the U.K.'s Islamic Sharia Council explicitly stated that both foreign and domestic marriages required a civil divorce in order to qualify for a religious divorce. This requirement to use the civil system was important because it demonstrated that the Sharia courts viewed the civil system as a partner to their work, not a rival system. Knowing that Sharia courts cooperated with the civil system illustrated the parallels to Jewish Beth Din courts, and furthermore, underscored how Muslims wished to use Canadian and British legal systems analogously to other religious communities.

Multicultural citizenship is the normative ideal undergirding the argument that Muslims are seeking recognition, as well as the right to debate the terms of recognition. Yet, critics challenged Sharia courts in both Canada and the U.K. on the premise that it harmed women. Canadian and British criticism claimed that Muslim women – unaware of their rights – were socially coerced to enter these Sharia courts. However, according to British legal scholar Samia Bano, who conducted extensive empirical interviews with users of Sharia courts in the U.K., the women who participated in Sharia courts were knowledgeable on Islamic rights awarded to women (i.e., the right to a woman-initiated Islamic divorce). Furthermore, these women viewed their identity as inextricably linked to a Muslim group identity. Muslim women's usage of Sharia courts can be seen as a platform to debate the terms of recognition and challenge dominant narratives of Muslim women as submissive and powerless. Their membership in a Muslim identity group demonstrated Modood's multicultural citizenship, as the women were debating the terms of recognition as willful participants knowledgeable about the legal recourses in both the civil system and Sharia. This challenged the dominant understanding of Muslim women as inherently marginalized, oppressed, or uninformed.

Bano's interviews revealed that women knew certain Islamic injunctions were not fixed in stone, and therefore entered into court negotiations – both in secular and Sharia courts – with strategic knowledge about how to proceed. It is therefore clear that the discourses around Sharia courts are largely being written from the outside, without consultation of the actual users of the Sharia courts.

According to Modood's framework of multicultural citizenship, states can incorporate Sharia courts into the rights legislation granted to other religious communities. Muslim attempts to use Canadian legislation to accommodate their needs reveals a desire to integrate, not separate from the national identity. Furthermore, removing all religious arbitration does not solve the issue or meet the needs of Muslim communities. If Muslim women are deemed to suffer harm because of their group identity, Modood argues that the state can employ regulatory mechanisms to safeguard the rights of vulnerable, such as proscribing objectionable practices, forcing oversight on these Sharia courts, and training adjudicators. If Muslim communities disproportionately witness gender violence – as alleged by Sharia courts' critics --then the ban on Sharia courts does not expunge gender discrimination. It simply hinders a Muslim woman's ability to secure an Islamic divorce, which carries enormous power in the social context she lives in. It is for these reasons that Modood argues that Muslims should not be castigated for practicing difference, but allowed to participate in a multicultural citizenship.

Furthermore, Muslim groups recognize the value of joining a national identity like Canadian or British identity, but the state should likewise recognize the value of the minority group's identity. Citizenship is a dialogic process that necessitates both parties continually accommodating one another. In this sense, Canada failed to bring Muslims into Canadian identity by excluding Muslims from Canadian law. Instead of allowing Muslims to join an inclusive, hybrid, and plural national identity, Muslims became recategorized as a group with discrete, predictable behaviors preventing them from correctly applying Canadian laws to their lives.

Lastly, there exist varying reasons why England, and not Canada, chose to recognize faith-based arbitration for Muslims. One, England's Muslim population is more ethnically and geographically concentrated to the point where non-Muslims have become aware of their group presence. One example is the colloquial renaming of British towns to reflect the large number of Pakistani Muslims living there, i.e. Bradford has become "Bradfordistan," and downtown Manchester famously holds a street named "Curry Mile" known

for its hookah houses, kebab shops, and mosques. Britons are certainly aware that large pockets of Muslims live across England, altering the cultural landscape by introducing Islamic dress, halal food, and prayer institutions in a British environment. For this reason, the Archbishop of Canterbury claimed it was inevitable that Sharia would be recognized in England, simply due to the sheer cultural weight of this Muslim presence, which has already introduced new dress, food, and languages, so why not law?

On the other hand, Canada's Muslim population is largely perceived as voluntary immigrants, in contrast to England's Muslim population that is distinctly postcolonial, and further, a product of a labor shortage scheme to entice former colonies to send laborers to England. Thus, the legal recognition awarded to British Sharia courts may also partly arise from residual postcolonial guilt motivating Britons to incorporate these former colonial subjects.

Finally, the implications of rejecting multicultural citizenship include the exclusion of minority communities whose value is not recognized either individually or as part of a wider national community. As Ontario illustrates, rejecting multicultural citizenship sends the dangerous message to Muslims that they cannot use the law the same way that other religious communities can, and therefore it gives Muslims a special exclusion instead of an equal privilege. Although critics may say that Canada terminated faith-based arbitration for all religious groups – not merely Muslims – the furor and debate about whether or not arbitration could accommodate religious rulings only arose when Muslims asked for inclusion. Lastly, the law might still apply today for Christians and Jews if Muslims had not sought to use it.

## CONCLUSION

In sum, Muslims form a new political category in the U.K. and Canada, reconfiguring the terms of multicultural citizenship and seeking to join the larger national identity. However, obstacles emerge with the ongoing perception of Muslims as privileging the rights of men over women. Critics cite this as the main reason why Muslims cannot – and should not – resolve internal community affairs through private arbitration bodies like Sharia courts. The civil system is viewed as a sufficient venue to serve Muslim interests in places like Canada.

However, the civil system does not address the challenges faced by Muslim communities needing Islamic divorces or other religiously-sanctioned judgments. Indeed, anti-Sharia advocates fail to account for the process of negotiation underway in Canada and the U.K. for recognition of Muslims as

legitimate claims-makers. As many Muslim groups increasingly assert their right to enter the public space, they are carrying demands and dreams to join a collective project of multicultural citizenship, whereby they can ask for recognition and redefine the terms of this recognition.

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## When Food Attacks: A Review of the Food Availability Disparity in Houston

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### Introduction

An individual's choice in food affects his or her health lifestyles and behaviors. What many do not realize, however, is that where someone lives can equally affect his or her health. There are disparities in the availability of food resources and options across different communities. For this study, grocery stores and restaurants, both dine-in and fast food, will be further examined to document the differences between two super-neighborhoods in the city of Houston, Texas: Greenway and the Greater Fifth Ward. There were discrepancies found in the ingredient quality and availability when comparing grocery stores in these two neighborhoods. Likewise, there were major differences in the quality and price of the food served at major restaurants. Consequently, the availability of various food options influences an individual's ultimate decision on what to eat; this directly influences the individual's health.

While there are many social factors that have an effect on food availability, socioeconomic status (SES) plays a major role in limiting or expanding a person's food options and therefore decisions. There are many causes that can affect a community's SES, including income level, unemployment, and education level. SES has a serious impact on an individual's access to grocery stores and restaurants. SES also influences a company's decision to place a certain grocery store or restaurant in a certain location, limiting the type of places available to a person. People of different levels of SES also choose foods based on their budgets. For example, a person of low SES has low-income levels and may choose foods that are cheaper; these foods, consequently, may be of lower quality. A person of higher SES, however, may choose foods that are more expensive, and may be higher quality, because they can afford them.

There are also many social aspects that work in conjunction with SES to influence food and health disparities across communities. In the United States, people of similar ethnicities and cultures tend to congregate and form communities. Not only does this foster support and familiarity, it is also useful in building social capital. Putnam (2000) argues that social capital is a major factor in assessing a person's health. Differences in cultures between neighborhoods can lead to differences in food options available to that community as well as the decisions those people make in purchasing food. The types of food a certain group of people eats affects what a grocery store or a restaurant may sell in an area that

has a high concentration of that culture. For example, the Greater Fifth Ward has a large Hispanic and Black population. These people bring with them a lot of cultural foods that are not seen in some areas, including Greenway, which is predominately Caucasian. These cultural differences in food can greatly influence dissimilarities in health between the two communities.

Other social conditions created by SES can also cause a person to make certain food decisions. Some of the conditions that are most influential include stress, education, and social cohesion of a community. Stress level differences among varying SES communities can affect food decisions. The stress involved in living in a low-income neighborhood often leads to compulsive behaviors among individuals, including overeating (Björntorp 2001). Differences in education also influence the amount of knowledge a community has, especially information on healthy eating and obesity (Pampel et al. 2010). Social cohesion can either positively or negatively affect a community's health. Living in a poorer neighborhood also causes people to focus on the short-term consequences as opposed to the long-term effects of their decisions (Pampel et al. 2010). All of these factors affect the amount of social capital a person can build, which directly affects his or her health.

Another factor that can have social and physical impacts on a community is the travel distance to the nearest grocery store or restaurant. Regardless of SES, people are less likely to go to places that are further away from them. Physical barriers, such as freeways, also affect a person's ability to reach a certain food source. Travel distance and physical barriers can affect an individual's decisions to purchase and consume foods from certain grocery stores and restaurants.

This food gap between communities of different SES levels has a direct effect on each community's health. A rise in the number of poor diets is linked to the dramatic increase in obesity in the United States. Obesity is correlated with the type of food that is available to a person and the decisions that that person makes in eating certain foods. An increase in obesity is also linked to an increase in diet-related diseases such as heart disease. According to Miniño et al. (2007) and the Center for Disease Control, cardiac disease is the leading cause of death in America. An individual's access to food and their subsequent decisions affect the heart disease mortality rate differences between communities.

Components of SES influence certain social factors that can help explain these differences and help provide some possible amendments to fix this food and mortality gap.

In this study, supermarket and restaurant, both fast food and dine-in, availability was assessed in two super neighborhoods in Houston. I observed their overall quality and accessibility and proposed some probable explanations for these food disparities and how this can cause differences in the food decisions individuals make. This study demonstrates that low SES creates social conditions that correlate with fewer and lower quality food options, contributing to poor health behaviors and lifestyles through poor food decisions. Higher SES correlates with more and higher quality food options, allowing those individuals to choose from a variety of healthy foods. These decisions physically and socially influence obesity risk and heart disease mortality rate differences between neighborhoods.

### Literature Review

Previous researchers have documented the relationship between food environment and obesity and, consequently, diet-related deaths. Geographic differences in food availabilities coincide with disparities in retail food environments (Ford et al. 2008). This suggests that low socioeconomic individuals are placed at an even greater disadvantage because of their inability to access healthy foods due to geographic restrictions. Ford et al. also states that individuals exposed to low-quality food providers are more likely to have a diet consisting of low nutritional value and high caloric density. These low-income people are then placed in a position that is extremely prone to weight gain and obesity. Yeh et al. (2006) states that low SES individuals are two and a half times more likely to be exposed to fast food restaurants than those who live in wealthier neighborhoods. Their studies have shown that the number of residents per fast food restaurant and the number of fast food restaurants per square mile are both strongly correlated with obesity prevalence. With the increased fast food density in low SES communities, it makes it harder for these individuals to venture past these restaurants and discover healthier food options. Inagami et al. (2009) also suggested that obesity runs high where there are more fast food restaurants because it is difficult for low SES individuals to afford cars. Those who have cars have more freedom since they can use them to choose from a wider variety of food options.

There has also been a study done in the United Kingdom which states that the cheap foods in these poor areas tend to be more energy and calorie dense with high fat and sugar content (Yeh et al.

2006). These types of food may seem more attractive to an individual because they are cheap and contain a lot more immediate energy than fruits and vegetables. This helps explain why low SES individuals' diets mostly consist of meats and processed foods since they are high in protein and fats, two very energy-dense sources of food. Many low SES people tend to think in short-term consequences as opposed to long-term consequences as well. Thus, it is easy to make a decision that will give someone short-term benefits but can also be detrimental to him or her in the long run.

These specific food choices are not only linked to decisions to consume fast food, but also the prevalence or the lack of supermarkets in certain neighborhoods. Supermarkets tend to be healthier than food stores commonly found among low-income neighborhoods because they are a larger commercial chain and can afford to provide healthier foods at a cheaper price than food stores. According to the Food Trust Organization (2010), there is an uneven distribution of supermarkets in the city of Houston; low supermarket sales and low income are closely related to each other (Figure 1). They have found that there are low supermarket sales in low-income areas because there are scarce supermarkets there to begin with. Thus, people must travel to places that are further away just to purchase foods that are healthier than the food offered at the food stores. Unfortunately, the Food Trust Organization points out that this is not possible for a lot of low SES individuals. Again, many do not own a car and those who do, cannot afford to leisurely use it for grocery shopping. Thus, these people tend to turn to the local food stores that sell lower quality foods at a cheap price because they are more accessible.

An individual's access to food definitely influences their food decisions and risk of obesity and heart disease mortality. A number of other physical and social factors influence this risk as well. Giles-Corti et al. (2003) states that an individual's poor access to an acceptable physical environment contributes to increasing obesity levels. They use the example that many low SES areas do not have sidewalks in their neighborhoods while high SES areas have them. A lack of sidewalks does not encourage physical movement and exercise, a key combatant to heart disease. Low SES individuals are also more likely to engage in sedentary relaxation, especially watching the television, which influences risk of obesity.

An individual's social environment can contribute or detract from obesity as well. Christakis et al. (2007) noted that a person's social distance is equally or even more important than his or her geographic distance with regards to the spread of

## When Food Attacks: A Review of the Food Availability Disparity in Houston

obesity. Geographic distance refers to one's literal distance from others. Social distance is a person's intimate distance from others. For example, Christakis et al. states that a person is not very likely to become obese if his or her neighbor is obese and this individual is not particularly close with the neighbor. If a person's friends and family are obese, however, that person is more likely to be obese simply because he or she interacts with family and friends on a more intimate level. Building social capital with an obese community can actually be very detrimental for one's risk for obesity.

Studies have shown that this environmental influence on food disparities is mostly a North American phenomenon, with the most promising evidence stemming from the United States (Cummins et al. 2005). The relationship between SES and the food and obesity gap is something that is more prominent in the US than in any other country observed, including the United Kingdom, Sweden, and Australia. It is possible that the disparities the United States has created is not restricted to this country, but rather its citizens are more heavily affected by this gap.

### Data and Methods

#### *Super Neighborhood Sources*

Two super neighborhoods in Houston were chosen because they have incredible disparities in heart disease mortality rates. The Texas Department of State Health Services used census data taken in 2000 to create a map of Houston with each super neighborhood's heart disease mortality rate compared with the average Houston rate (Figure 2). According to the CDC, there is an average of 566 deaths per 100,000 people in the county that Houston is part of, Harris County, due to heart disease. According to the figure, Greenway has a heart disease mortality rate that is comparable or even less than the average Houston rate. Almost oppositely, the Fifth Ward has a heart disease mortality rate that is up to 75% above the Houston rate. These two super neighborhoods have drastically different heart disease mortality rates. These neighborhoods also have many SES differences, notably their income, unemployment, and education levels (Table 1).

All of these factors can influence an individual's access to food and also his or her ability to make healthy food decisions. For further and more detailed examination, one census tract from each super neighborhood was explored. Census tracts 4116, in Greenway, and 2115, in the Fifth Ward, were observed. These census tracts were chosen for a variety of reasons. Firstly, both tracts had very apparent ethnic differences. According to US Census Bureau, in 2000, 91.8% of the observed Greenway

census tract was White. On the other hand, 89.7% of the observed Fifth Ward census tract was Hispanic. These ethnic differences suggest that culture could play a role in the food option and decision disparities. These census tracts were also very similar in that their food options were not directly located within their boundaries, but actually just outside in the neighboring tract. This affects the travel distance and accessibility of food resources.

#### *Observations: Grocery Stores*

In this study, geo-coded photos were taken and processed through Jet-Photo to collectively place where each photo was taken on a map. The food resources focused on were narrowed down to grocery stores, including super markets and small food stores, and restaurants, including fast food and dine-in. In Greenway, the closest source to purchase ingredients was a grocery store called Central Market. Central Market is a supermarket that sells only organic food at a relatively expensive price. Allowing only organic foods ensures that Central Market sells the freshest and highest quality ingredients. One of the most notable observations was the wide selection of all ingredients offered. They boast over 700 varieties of fresh produce, more than 100 varieties of saltwater and freshwater fish, and a wide selection of cuts of meats with butchers that are always available to answer any question from a customer. They also never freeze any of their meats, especially their poultry. An individual who lives in Greenway has access to a plethora of foods that are all high quality and fresh.

Another supermarket found was across the street from Central Market and also very close to census tract 4116, Rice Epicurean Market. Although no data was taken from this store, it is notable that Greenway has a high enough SES level for a supermarket this specific to place their store in this neighborhood. Rice Epicurean Market, a supermarket that sells gourmet food, felt that they would generate enough revenue from the individuals in this community to be sustainable.

Census tract 2115 in the Fifth Ward, however, was filled with many small food stores and one supermarket, Fiesta. Fiesta was the closest and only source of fresh produce near the census tract. Fiesta advertised its low prices on its sign out front, attempting to attract a majority of customers, who had low SES, from the area. Unfortunately, the supermarket sacrifices a wide selection and high quality of food for its low prices. While individuals in the Fifth Ward are able to afford these ingredients, the quality of food is much lower than that of Central Market. In a side-by-side comparison, two Gala apples were examined, one purchased from Fiesta and one purchased from Central Market (Figure 3).

The apple from Central Market was larger and looked fresher and more appetizing than the apple from Fiesta, which was smaller, slightly rotting, and had the beginnings of a wormhole on the side. While the Fiesta apple was sold in groups of three for the same price as one of the Central Market apples, the quality of the apple from Fiesta already deters an individual from purchasing it in the first place. A low-income individual who wishes to live a healthy life may look for fresh produce and fall short at a place like Fiesta. This individual, however, cannot shop at a place like Central Market because he or she cannot afford the prices that this grocery store sets.

A person in the Fifth Ward may turn to a local food store that is not only closer, but also may be cheaper than Fiesta. Unfortunately, these food stores sell foods that are less healthy than the foods from Fiesta. The local food stores sold processed and packaged foods that have a long shelf life and sugary drinks, including Rockstar and Redbull, that increase a person's energy. These types of foods are quick and easy to purchase and consume, something that is very ideal for a low SES individual who cannot spend much time preparing his or her meals. Many of the food stores promoted the sale of beer, cigarettes and money orders, things that many people of low SES feel that they need. These food stores contributed to the lack of healthy food resources in the Fifth Ward.

There were also a few meat markets located in the Fifth Ward. Meat markets offered a more affordable alternative to Fiesta as well as more variety of meats. Since the observed census tract was predominately Hispanic, many of the cuts of meat correlated with the types of meat used in traditional Hispanic meals. A combination of low-income and culture influenced the meat market's choice to sell meat that was of low quality. For example, many parts of the cow that were not seen in Central Market were sold in the meat markets in the Fifth Ward. The actual facilities were also of poor quality; the meat was simply packed on ice in one of the markets, Burt's Meat Market. A lot of the meat at the bottom of the pile had freezer burn, while the meat at the top of the pile was not cold enough and began to oxidize. On the contrary, the meat in Central Market was never frozen and placed in a temperature-controlled setting that kept them fresh for longer. Burt's Meat Market also had multiple flies in the store, suggesting a very unsanitary environment for the meat. In order to better market their store to customers, Burt's Meat Market also sold fried foods including boudin and gumbo, two meals that are very high in fat and sodium, on the side. This culmination of unhealthy foods and poor quality meat did not give the community members many healthy food options to choose from.

#### *Observation: Restaurants*

Although the utilization of ingredients to make home-cooked meals is the healthiest consumption option, many people simply do not have the time or energy to invest in the meal preparation process every day. In all levels of SES, individuals purchase foods from restaurants as a more convenient alternative to cooking. In this study, restaurant quality was broken down into two subcategories: dine-in and fast food restaurants.

Both Greenway and the Fifth Ward displayed dine-in restaurants. In Greenway, many restaurants were very expensive; the meal prices ranged from ten dollars for a plate of sushi at Ra, a restaurant that has won countless awards of excellence, to over forty dollars for a rib eye steak sold at Smith and Wolensky's Steakhouse, selected from the top 2% of all beefs noted by the USDA as prime. These restaurants have such incredibly expensive prices because the people who live in Greenway earn a high enough income to afford to eat there. The restaurants in Greenway also generate enough revenue to continue to provide exceptional quality food for its customers. There are also many different dine-in restaurant options for individuals to try, including Chinese, Japanese, and traditional American food.

In the Fifth Ward, however, many restaurants catered specifically to the large Hispanic community. All restaurants observed were local and family owned, selling predominately Hispanic foods. These restaurants did not boast any awards of excellence probably because they did not have high quality ingredients to work with. These dine-in restaurants purchased a lot of their ingredients from the surrounding markets that sold very low-quality items; thus, much of the food prepared was of poor quality. The type of food sold in these restaurants were also telling of their healthiness; many of the meals were traditional Mexican comfort foods, designed to satisfy the customer, but were also high in fat and sodium.

These dine-in Mexican restaurants, however, were not the predominate restaurant in the Fifth Ward; fast food restaurants dominated the surrounding area of census tract 2115. There was a wide variety of fast food, ranging from Little Caesars, an inexpensive pizza place, to Popeye's Chicken, which sold fried chicken and biscuits, two of the unhealthiest but tastiest foods in the Fifth Ward. One of the most popular fast food restaurants was Samburger, a relatively cheap place to order hamburgers and fries. The Samburger offered inexpensive combination deals to individuals, including a burger, fries, and a drink for prices as low as three dollars.

## When Food Attacks: A Review of the Food Availability Disparity in Houston

Oppositely, Greenway only had one fast food restaurant near the census tract 4116: Whattaburger. Whattaburger is a more gourmet fast food restaurant that has a wider and somewhat healthier selection of food. While it definitely still sells unhealthy hamburgers, Whattaburger also provides grilled chicken, fish, and even salad options for the more health-conscious. It also provides more drink options than the Samburger in the Fifth Ward. Samburger's only options were various sodas, all filled with sugar, or water; Whattaburger offers soda, iced tea, water, milk, and orange juice options. While both are chain restaurants, Whattaburger has enough money to open stores in more affluent neighborhoods and attract customers who are willing to pay more for healthier food options. Samburger, however, is located in a poor neighborhood and markets its food at a low price to attract customers. Unfortunately, this also means that Samburger does not generate as much revenue as Whattaburger and therefore cannot afford the same quality ingredients as Whattaburger offers. From these observations of both types of restaurants and supermarkets, it is clear that for low SES individuals, there is a sort of vicious cycle that prevents them from becoming any healthier. They choose from food options that are particularly unhealthy but affordable to them. Since this food is offered at such a low price, the owners of these restaurants and supermarkets must sacrifice the quality of the ingredients used in order to continue to be sustainable.

While the quality of the food is important for influencing individual health, travel distance to these food resources is equally as important. Travel distance can potentially discourage individuals from shopping at certain areas and encourage them to shop or consume food at places that are closer to home, but may be healthier. To observe the disparities between the two super neighborhoods, the travel distance from the census tract to the nearest grocery store was documented. The census tract in Greenway was so small that it was considered one community. Google maps indicated that it takes the average individual living in that community three minutes to drive or eighteen minutes to walk from his or her home to the nearest supermarket, Central Market. The Fifth Ward census tract, however, was so large that it encompassed two communities, Denver Harbor and Port Houston, separated by several railroad tracks. From the nearest community, Denver Harbor, the only supermarket available, Fiesta, was a 4-minute drive or 13-minute walk away. From Port Houston, the furthest community, Fiesta is a 9-minute drive or a 56-minute walk away. One of the largest barriers that separates Fiesta from this census tract entirely, however, is the I-10 freeway. This freeway

greatly discourages travel to the Fiesta and many restaurants simply because people in the Fifth Ward cannot find a way to get across the freeway. Many people in the Fifth Ward own cars to travel to and from work, but few of them have the luxury of using those cars for leisure activities, including grocery shopping. In Greenway, however, many of these individuals can afford to use their cars to go to restaurants and shop for groceries. Thus, even though these people do not have any physical barriers to cross to get to their nearest grocery store, they can still use their cars to explore new, and maybe healthier, food options.

### Findings

While comparing both super neighborhoods, there were very distinct differences in the availability and quality of food options. There are many social factors that can help explain why low SES neighborhoods like the Fifth Ward have lower quality foods. One of the largest influential factors is culture. The observed census tract is a predominately Hispanic community. Thus, many markets and restaurants tailored their ingredients and menus to better suit typical Hispanic meals. While Fiesta is a large supermarket chain that has some sort of uniformity among its stores, local meat markets definitely demonstrated that their meat selection catered to a lot of typical Hispanic meals. This may be seen as something that could promote healthier behaviors because, traditionally, Hispanic food is relatively healthy if cooked correctly. The Hispanic Paradox, which states that newly immigrated Hispanics are actually a lower risk for disease than Caucasians, directly contradicts the fact that this community in the Fifth ward has such a high heart disease mortality rate. Unfortunately, the Hispanic Paradox only pertains to very new immigrants who still cook traditional and healthy Hispanic foods. Over the years, the community in the Fifth Ward has slowly assimilated to the American culture and lifestyle. These people work long hours and are paid very little; this does not leave a lot of time to prepare elaborate meals. Thus, these people turn to the convenience and cheap cost of fast food restaurants. When they do cook, they may turn to comfort foods that have originated from their Hispanic culture to satisfy them. These types of foods are generally tasty because they are high in fat and high in sodium. Many markets, including Fiesta, also sell spices that are high in sodium but very flavorful, as well as pre-seasoned meat for the consumer's convenience. The problem with pre-seasoned meat, however, is that the consumer cannot control the amount of seasoning on the meat. These meats tend to be over-seasoned but tastier and therefore more attractive to the individual.

Seasoned meat also reduces the consumption of vegetables since vegetables are traditionally used to flavor and complement the meat. If the meat is already seasoned with a certain flavor, vegetables are rendered useless in the meal and thus, individuals tend to leave those out.

These types of meals are also typically sold in restaurants because they attract the most customers. Income also affects the type of food sold in restaurants in the Fifth Ward. The restaurants want to sell Hispanic foods that are popular but also inexpensive. These foods tend to be high in fat and low in quality. These appetizing meals use low quality ingredients that are cheaper, allowing the restaurant to maintain their low prices. The high amount of fat and sodium in these foods are particularly unhealthy and can lead to an increased risk in obesity and heart disease mortality.

On the contrary, Greenway is a predominately Caucasian community. While Caucasian cuisine is not necessarily any healthier than traditional Hispanic cuisine, individuals who live in Greenway are more likely to venture out and attempt to make different types of meals because of the enormous variety of food and their ability to purchase these foods. One difference between Greenway and the Fifth Ward is that the supermarkets in Greenway give the option to choose how much seasoning goes on a piece of meat. Central Market states that their butchers are there constantly to better serve the consumer. Thus, the Greenway individuals feel like they have more control over their meat decisions than those who live in the Fifth Ward. A lack of autonomy over multiple minute decisions, such as meat choice, can accumulate and place unnecessary stress on an individual of low SES. This stress can negatively affect a person's food decisions and consequent health behaviors. There are also more supermarkets in Greenway, increasing the variety of ingredient options for an individual. Many affluent people are advocates for healthier eating and living, creating a high demand for organic and gourmet foods. Supermarkets like Central Market sell organic fruits and vegetables as well as whole wheat and whole grain carbohydrates. These healthier options are available to the Greenway community, but not the Fifth Ward. Central Market can afford to purchase these fine ingredients while Fiesta can only purchase lower quality food. This gives Greenway a larger selection of healthy options for those who choose to live healthier lives. In the Fifth Ward, those who attempt to live a healthy life are unsuccessful because they must choose from a range of food options that are all relatively unhealthy.

Greenway restaurants are also influenced by Caucasian culture and high-income level. The high

SES community creates an atmosphere that promotes healthy but delicious food. The restaurants that can serve those types of food are the most successful and reside within Greenway. Greenway consumers expect the highest quality and healthiest foods; restaurants can afford to purchase these ingredients because their customers are willing to pay whatever price it takes to obtain this food. This allows Greenway to enjoy a healthier diet and contributes to a lower heart disease mortality rate.

An individual's travel distance from the grocery store or the restaurant can also influence his or her food decisions. The high SES individuals of Greenway have a high income because their time is more valuable; therefore, they are able to work less but make more money. This gives them more leisure time and disposable income to take their cars and go grocery shopping. Not only are they allowed to purchase more expensive food, but also they can afford to go to the grocery store or to the restaurant whenever they want. In the Fifth Ward, however, families own cars because parents typically work long hours for very little money and need to commute to and from work. Since they have very low income, people cannot afford to take their cars to go grocery shopping frequently. Thus, these people must look for food resources closer to them; these tend to be the unhealthy food stores. The sheer number of fast food restaurants also discourages an individual in the Fifth Ward from taking the time to go grocery shopping.

## Conclusion

There are many socially constructed factors that contribute to the food disparity between Greenway and the Fifth Ward. Stress, education, and social cohesion are three major factors that can influence an individual's ability to make healthy food decisions. There are also social ramifications of living in particular environments that promote either healthy or unhealthy eating. The food disparity between neighborhoods of different SES levels contributes to the amount of social capital that neighborhood can build. Social capital is built through interactions with others and involvement in various social activities within a community (Putnam 2000). The availability of food resources as well as the food decisions people make affect their ability to build social capital and live healthier lives.

Stress is a factor that heavily affects the low SES and mildly affects the high SES individuals. According to Björntorp (2001), stress is one of several factors that can influence abdominal obesity and its related diseases. Low SES people burden a lot of stress stemming from having a low income and struggling to make ends meet. This can cause a person to make poor food purchases. Low SES

## When Food Attacks: A Review of the Food Availability Disparity in Houston

individuals do not have a lot of time to eat and tend to choose fast food options because they are cheap and quick. People in the Fifth Ward may also be less inclined to go to restaurants because it takes longer to prepare the meal than at a fast food restaurant. Since these people are pressed for time, they are less likely to go to a dine-in restaurant. Low SES individuals also carry a lot of stress of wanting to but being unable to purchase healthy but expensive food. These people may wish to eat healthily but are unable to do so because they are financially limited. Low SES individuals are also more likely to participate in sedentary activities (Berry 2007). Thus, they do not get as much physical activity as they need to counteract the unhealthy foods they consume. High SES individuals carry significantly less stress and can spend the time and money to make healthy food decisions. They also can afford and have the facilities built into their environment to relieve stress through physical exercise. Thus, the people who live in Greenway are more likely to go jogging or join a gym than those in the Fifth Ward because neither of those activities is promoted in the Fifth Ward.

Education is another factor that greatly influences food decisions. A lack of nutritional education in the Fifth Ward greatly hinders an individual's ability to make healthy food decisions. Less education also points towards less knowledge of what healthy eating looks like. Thus, people who live in the Fifth Ward may not know what is considered healthy and what is unhealthy. Studies have also shown that low SES people do not know that obesity is a serious health condition and can be linked to diet-related diseases, including heart disease (Pampel et al. 2010). Therefore, low SES communities that exist in the Fifth Ward suffer greatly because they simply do not know how to recognize, combat or even prevent their obesity.

Social cohesion is the greatest factor that influences food decisions. SES affects social cohesion, which either positively or negatively impacts a community's health. For instance, a higher SES community like Greenway has inhabitants that are part of a society that emphasizes health. Thus, these people are more likely to be concerned with what they eat and how much, especially at restaurants where they have limited control of the portion size and preparation methods. Poor neighborhoods like the Fifth Ward, however, have an environment where people are struggling to survive. These individuals are less concerned with what they eat or how much as long as they can eat and it is sufficient. Another phenomenon that predominately occurs in low SES communities is social contagion. Pampel et al. (2010:361) states that obesity tends to follow social networking paths and kind of "cements inequalities in

obesity by SES." Thus, obesity tends to persist in a community where most people are obese; despite individual effort to promote healthy living, these people are more likely to be obese because they live in an obese community. These types of communities are typically found in low SES areas like the Fifth Ward.

These social factors affect the food disparity, which can have effects on social capital. The financial stress of individuals in the Fifth Ward discourages them from being involved in activities that can build social capital, such as dining at restaurants. Fast food restaurants are more appealing to individuals in the Fifth Ward because they provide a cheap and quick way to access food. Not only is this food unhealthy, but it also does not offer the individual a chance to build his or her social capital since there is virtually no space to sit down and interact with others over a meal. These people also cannot dedicate enough time to prepare an elaborate meal since work consumes much of their day. In Greenway, however, people have more leisure time and more disposable income to go to restaurants and have social interactions with their dinner tablemates and even the waiter. The lower stress of Greenway inhabitants fosters an environment that encourages its people to dine at various restaurants and build social capital simultaneously.

One of the largest factors that influence an individual's ability to build social capital is travel distance. In the Fifth Ward, people may not be able to afford to go to these locally owned restaurants that may foster an environment to build social capital. Unfortunately, social capital cannot be built if people do not go to those restaurants in the first place. These people cannot afford to regularly shop at grocery stores either, preventing social capital from forming in that environment. The placement of the I-10 freeway really disconnects the whole census tract from its nearest food sources. The placement of multiple railroad tracks in the middle of the census tract also hinders the accumulation of social capital within the area. The railroad tracks effectively isolate the two communities that reside within that census tract, preventing them from interacting and increasing their social capital. This inability to build social capital is extremely detrimental to the health of the individuals living in the Fifth Ward. The high SES of Greenway, however, creates an environment that allows people to build social capital at restaurants and even supermarkets. The ability of the Greenway individuals to access these food sources gives them the opportunity to increase their social capital even further. This abundance of social capital helps promote healthy behaviors and lifestyles.

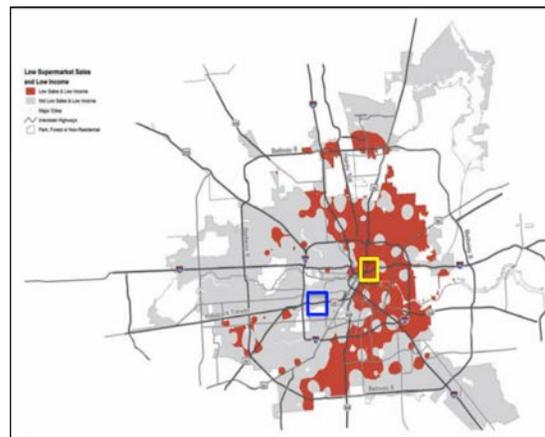
There are disparities in food availability and food decisions made between two super neighborhoods in Houston with opposing SES levels, Greenway and the Fifth Ward. These disparities can be explained by a number of reasons including the distinct cultures and income levels of the two neighborhoods. Physical factors, such as travel distance, and social factors, such as stress, education, and social cohesion of the community, that stem from environments created by specific SES levels, can influence a neighborhood's food options and the food decisions that its inhabitants make. Consequently, the disparity in food options and decisions impacts an individual's ability to create social capital. In the Fifth Ward, the negative effects of low SES create social factors that negatively influence that community's ability to build social capital. On the contrary, the Greenway environment of high SES promotes social factors that positively influence its citizens' ability to build social capital. Longevity is measured not only by physical health, but also by social health. Both diet and social capital influence heart disease mortality rate. It is not only the choices that people make on the types of food they consume, but also the types of behaviors they exhibit, which can either build or breakdown social capital, that can predict their health.

While these health disparities between Greenway and the Fifth Ward are quite alarming, one author, Robert Putnam, takes a bold stand against the breakdown of social capital; he states that while society today does not promote the formation of social capital, it is a society that we have created and thus can fix (Putnam 2000). The Food Trust Organization proposed one possible solution to improve the health disparity. They suggested that leaders of the supermarket industry, government, public health, economic developers and civic sectors congregate and produce a plan that places more grocery stores in disadvantaged areas in Houston. This provides a wider selection of food options for those individuals living in low SES environments.

While this is a step in the right direction, this does not solve the problem of getting people to shop at these grocery stores in the first place. To encourage them to shop at the grocery stores, the government could regulate the number of fast food restaurants per square mile. When people in the Fifth Ward look at their food options, many see fast food as the dominating choice. They lose their autonomy in what foods they can choose from because they have limited options available. Controlling the number of fast food restaurants and implementing new and healthier food sources simultaneously gives these individuals more options of healthy foods and more freedom to decide on what to eat.

In the end, however, low SES communities need the knowledge necessary to make healthy food decisions. Therefore, educating the people, particularly the youth, is extremely important to the success of the community. While it is significant to educate everyone, including adults and elderly, the youth of the community is crucial because they are the future of society. It is important to note that a majority of these policy changes must be implemented concurrently. It is counterintuitive to educate low SES individuals but not provide them with the healthy options they are told they are supposed to eat. Thus, multiple policy modifications must be executed at the same time in order to maximize their effectiveness. While policy efforts can physically transform a community, actual changes in social capital and health must stem from the desire of these individuals to utilize these changes to their advantage. It is with hope that these amendments to a place like the Fifth Ward, in conjunction with the efforts of its people, can promote healthier diets as well as the building of social capital among themselves. While a healthy diet physically decreases one's risk for mortality, it is the building of social capital that is key to one's ultimate health and longevity.

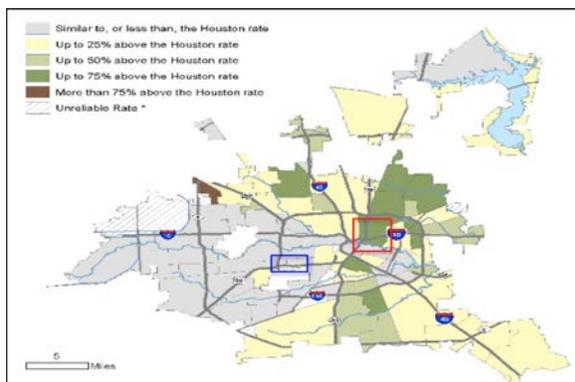
**Figure 1: A map of Houston color-coded to show areas that have low supermarket sales and low-income correlations (shown in red).** Greenway is outlined in blue and the Fifth Ward is outlined in yellow. The Fifth Ward is strongly correlated with low supermarket sales and low-income. Greenway is in the grey area meaning that there is no low supermarket sales and low-income correlation there.



**Figure 2: A map of Houston color-coded based on heart disease mortality rate comparisons to the average Houston rate.** Greenway is outlined in blue

# When Food Attacks: A Review of the Food Availability Disparity in Houston

and is similar to or less than the Houston rate. The Fifth Ward is outlined in red and is up to 75% above the Houston rate.



**Figure 3: Two Gala Apples purchased from Fiesta (left) and Central Market (right).** The Fiesta apple is small, slightly rotting and has the beginnings of a wormhole. The Central Market apple is larger and looks fresher than the Fiesta apple.



**Table 1: Income, unemployment and education level data on Greenway and the Fifth Ward.** Data was taken from the US Census Bureau in 2000. The Fifth Ward has a drastically lower income, higher unemployment rate and less educated individuals than Greenway. The Fifth Ward also has a much higher unemployment rate than the national and even Texas rate. This demonstrates the great SES differences between the two neighborhoods.

\* According to the US Bureau of Labor Statistics, the national unemployment rate for 2000 was 4.0%. The unemployment rate for the state of Texas in 2000 was 4.4%.

	Median income	Unemployment Rate*	% of population with less than High School Education
Greenway	\$96,281	1.2%	3.8%
Fifth Ward	\$28,409	10.9%	70.8%

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