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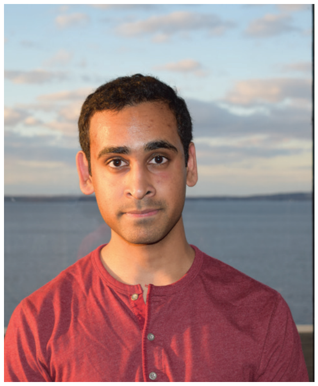

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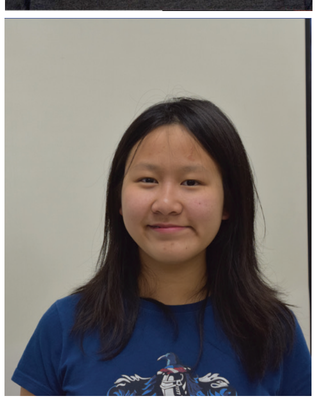


Madeleine Jones

artist

Letter from the editor

Dear Reader,

The staff of Equilibrium and I are enthused to present the sixth volume of University of Wisconsin-Madison's undergraduate journal of economics. While the nature and style of this publication varies greatly across issues, our core purpose remains unchanged—to showcase and summarize the work being done by researchers in Madison and our network of accomplished alumni across the globe. Our writers and editors, budding economists whose interests span the fields of research that can broadly be categorized under the banner of economics, produced all of the content within this publication and worked hard to make it accessible and engaging.

Going into its sixth iteration, Equilibrium has established itself as a staple product of undergraduates within the Department of Economics, with the potential to extend its influence throughout the campus community. It is my hope that as this publication matures, Equilibrium can be used as a means to deliver uniquely empirical and scientific answers to the diverse set of issues that we face—and serve as a testament that in a time of half-truths, clickbait, and poorly presented statistics—there are students willing to roll up their sleeves and do the math.

I would like to thank Susan Hering, our undergraduate advisor whose knowledge, advice, and passion makes this publication possible, as well as Amy Wang, who preceded me as editor-in-chief and guided us going into this issue.

Sincerely,

Neil Patel
Editor-in-Chief

Special thanks to:

Professor Ken West
Barbara Widder-Lowry
Professor Marzena Rostek
Johnna Sundberg
Elizabeth Foste
The Undergraduate Staff

table of contents

features

Can raising the minimum wage improve health outcomes? 6
Twenty-first century domestic healthcare policy

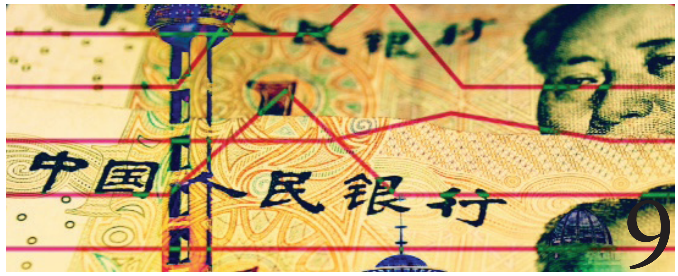
Slam dunk or sunk? 15
An analysis of escalation of commitment and sunk costs in NBA draft order

Briefing: The Transpacific Trade Partnership 22

in conversation

Barbara Widder-Lowry 12
Accomplished alumna with a distinguished career in retail

Johnna Sundberg 32
Recent alumna working in international development



9 Modeling the unexpected
An investigation of price disparity within Chinese Stock Markets

18 Capital in the Arab World
Effect of income inequality on growth in the Middle East and North Africa(MENA)

29 Caution: washout ahead
A look at the gas tax

25 Marzena Rostek
Professor of Economics

Can raising the minimum wage improve health outcomes?

Twenty-first century domestic healthcare policy

Research by Hasan Nadeem | Written by Connor Thellman

People value their health. As measured by gross domestic product, the United States values health almost twice as much, on average, as the other twenty-nine countries in the Organisation for Economic Co-operation and Development. For those who can afford excellent insurance or services in the United States, the offerings are at the forefront of medicine, with much of the world benefitting from the industry's breakthroughs. Yet, despite the United States' status as the world's top healthcare spender, it paradoxically does not rank highly in the World Health Organization's rankings of health systems among other global health system rankings. Its surprisingly average rankings are largely attributed to an overcomplicated system with high administrative costs, high rates of disease like obesity, limited healthcare access, and insurance removing financial burden from the patient and provider. As a remedy, the Affordable Care Act was created in 2010 and passed in 2012 to curtail costs as well as improve access to and efficiency in healthcare.

The Affordable Care Act (ACA) has had a substantial impact on the healthcare system, but it is not the only attempt to improve health outcomes in the United States. A few of the major stipulations in the ACA were expanding federal healthcare provisions like Medicaid, requiring employers of a certain size to offer insurance, prohibiting insurance discrimination based on preexisting conditions, allowing coverage to young adults up to age 26, offering an online marketplace to compare insurance offerings, and mandating that individuals purchase insurance. The overarching goal of the ACA is to increase the number of insured individuals to drive down costs and improve health outcomes, yet it is not the only way these goals might be achieved. Public health officials have long effected policy, initiated public awareness campaigns, and improved the environment surrounding people so that they can lead healthier lives. The Food and Agriculture Organization of the United Nations believes that establishing more nutritious food systems is key to improving global health outcomes. If a major facet of healthcare access in the United States is limited personal finance, then it may intuitively seem that offering more money to those having trouble affording insurance, especially in states that did not expand Medicaid, could help achieve this same goal of improving health outcomes. However, an increase in the minimum wage could also cause people to lose government benefits as they start making more money, undoing positives that the minimum wage increase may have had. This uncertainty in deciding whether a change in policy may do more harm than good is where economic research comes into play.

The Minimum Wage and Healthcare

Hasan Nadeem is a senior at UW studying economics and biology, and he has written a thesis on the effects of increasing minimum wage on healthcare access and utilization. When deciding on his thesis topic, he says "I followed my interests, and it led me to this intersection." Growing up surrounded by healthcare, Nadeem had a deep interest in healthcare provision. After exploring a second set of interests in economics and policy, he began to see an intersection between healthcare and economics. His interest in the minimum wage lies in his philosophy of societal responsibility: "Our markets have inefficiencies, and we have to solve those inefficiencies the best we can." As 2016 is a presidential election year, Nadeem is also interested in the political implications his research might have on the discussions surrounding the minimum wage. He is disappointed in "how easy it is to have an opinion without being informed," and believes that "data should be the driving force behind political decisions."

Nadeem begins his research with an informative history on the minimum wage, which has been historically controversial. The federal minimum wage was introduced in 1938 in some sense as a public health measure to protect women and minors. Now, the minimum wage is seen more as a mechanism to diminish poverty and give poorer, low-skilled workers capital. When adjusted for inflation, the minimum wage fluctuated from about $4.50 from 1940-1950 to $9.00 from 1955-1980 to $6.50 from 1985-2015. Once the minimum wage is raised, the real value, or what someone can buy with a given amount of money, typically declines because of inflation. Currently, the real value of the minimum wage has declined to a point that in the past has led to an increase to keep up with inflation. For the past 35 years, policy makers have increased the minimum wage every 10 years, and the last increase began in 2007. The controversy of raising the minimum wage, or even having one at all, lies in basic economics, which posits that any wage floor below equilibrium leads to less employment and inefficiency in an economy. As producers have to pay more in wages, it is believed that they will have to balance their budgets by hiring fewer workers. However, as Nadeem explains in his paper, this area of research is still hotly debated by economists because of the mixed results found in the data. Although Nadeem believes that "the minimum wage is our social responsibility, and we must make sure it is effective," his paper does not take a stance on the validity of a minimum wage, but rather investigates its public health implications.

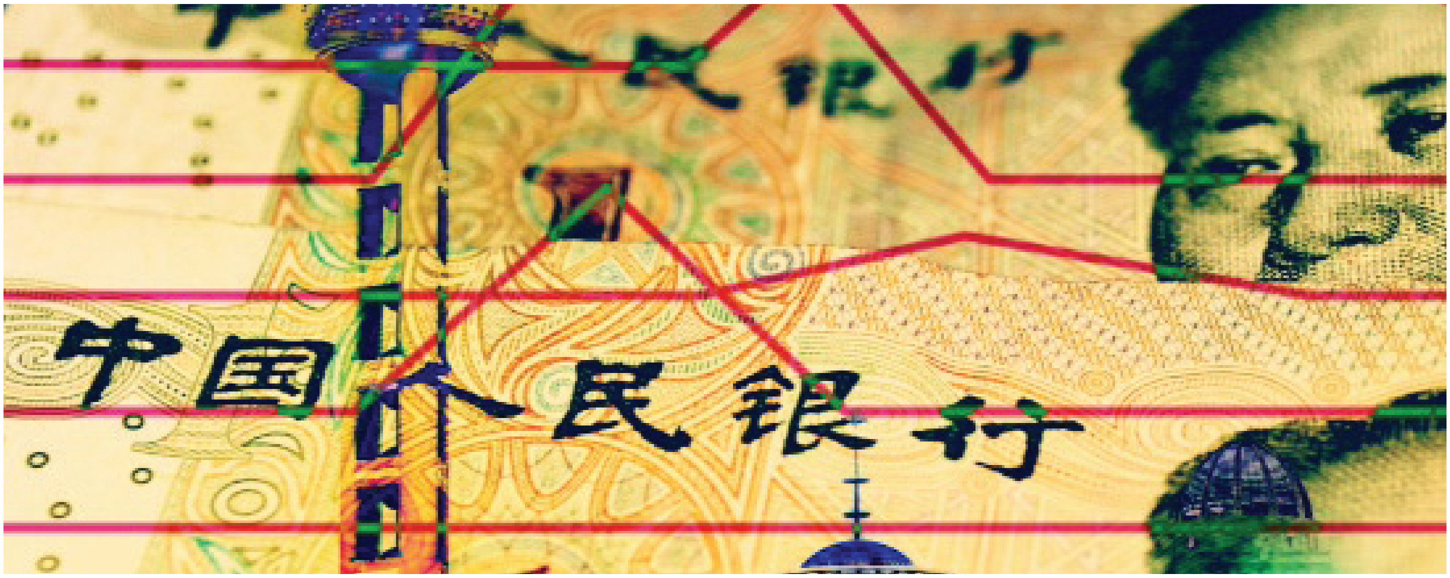
To investigate how the minimum wage has affected healthcare access in the past, Nadeem examines the effects of previous minimum wage increases on three healthcare system metrics. These metrics include data from the Behavioral Risk Factor Surveillance Survey and the American Hospital Association Annual Survey. The three metrics he studied were the proportion of uninsured people, about 12 to 15 percent, the proportion of people who had to forgo healthcare services because of costs, about 10 percent, and how many times people utilized outpatient medical services, which is essentially non-emergency preventative medical care—about two per year. He uses data spanning from 1999-2012 to measure the effect of increasing the minimum wage from $5.15 to $7.25 from 2007-2009. His methods, built on a previous paper by Kelly McCarrier, PhD, et al., use a linear least squares regression line—essentially a best fit line—to measure how much the minimum wage might

explain the three variables of interest. He accounted for several factors across states that may have also had an impact on the three metrics: unemployment levels, Gini coefficients that measure income distribution, number of hospital beds per capita and personal health expenditures per capita. When controlled for, these other factors, or covariables, help to make Nadeem's data more robust, as they disentangle other possible explanations from changes in the three healthcare system metrics.

Nadeem's data show that a 10 percent increase in the minimum wage significantly increases the insured population, does not impact those with unmet medical needs because of costs, and significantly increases outpatient medical care utilization. According to his results, there could be 11,000 more Americans insured and about 3,000,000 more outpatient care visits attributed to a 10 percent increase in the minimum wage. Current discussions surrounding an increase in the minimum wage call for much larger increases than 10 percent. Nadeem extrapolated his findings to see what a federal minimum wage increase to 15 dollars could mean in his metrics. He finds that in the year 2012, raising the minimum wage to 15 dollars could have resulted in a 12.7 percent increase in insured Americans, 0.3 percent decrease in people forgoing care because of costs and almost 0.4 more outpatient care visits per person. Aside from the possible biasedness of the surveys methodologies and other possible covariables, Nadeem believes his data to be reliable and robust. So, according to the data, raising the minimum wage does more good than harm as measured by a few important healthcare system metrics. In the future, however, research will have to take a new direction with its variables and covariables because, as Nadeem puts it, "The ACA creates a whole different landscape."

This data is descriptive of national level policy, but it also finds support in data at a local level. A few communities with high costs of living have passed Living Wage Ordinances (LWO) to help their lowest wage earners feel less financially burdened, and researchers have investigated the public health implications of these policies. The first of these investigations was performed in San Francisco by Rajiv Bhatia, MD, MPH, and was also the first ever Health Impact Assessment (HIA) performed in the United States. HIA's quantitatively describe the impacts of community-wide decisions like new developments or changes in policy from a neutral standpoint, and they are becoming an increasingly common tool used in local and state policymaking. Dr. Bhatia's study estimated that the LWO in San Francisco would significantly reduce minimum wage earners' sick days and depressive symptoms and increase their children's odds of graduating from high school by about 0.34. These results do not necessarily apply to other communities, especially those with low costs of living, but have been used in discussions surrounding passage of LWO policies in states that allow local governments to pass them—not all of them do. This research supports Nadeem's findings that an increase in the minimum wage has positive effects on healthcare metrics.

Nadeem's creative research using national surveys is representative of how any complicated problem begins to be understood: thoughtful investigation. Building on the work of others, Nadeem answered questions that can influence policy at a local or national level. He hopes that his research can, in a broader sense, "shed light on the fact that the policies we discuss actually effect people and how they live their lives. There are so many sides to policy, and this research only begins to scratch the surface of how and why people are affected by those decisions." His advice for others seeking to make an impact in the world is that they "follow their interests. It is impossible to stay motivated unless you are doing something that is meaningful to you."



Modeling the unexpected

An investigation of price disparity within Chinese Stock Markets

Research by Kanyuan Huang | Written by Morgan Klaeser

"Well, with what's going on in China right now..."

Undoubtedly we've all heard this phrase as it's muttered by an aunt at a family reunion, a bright politician, or an engaging history teacher. For the past few decades, China has been one of the top countries leading global economic growth alongside the United States.

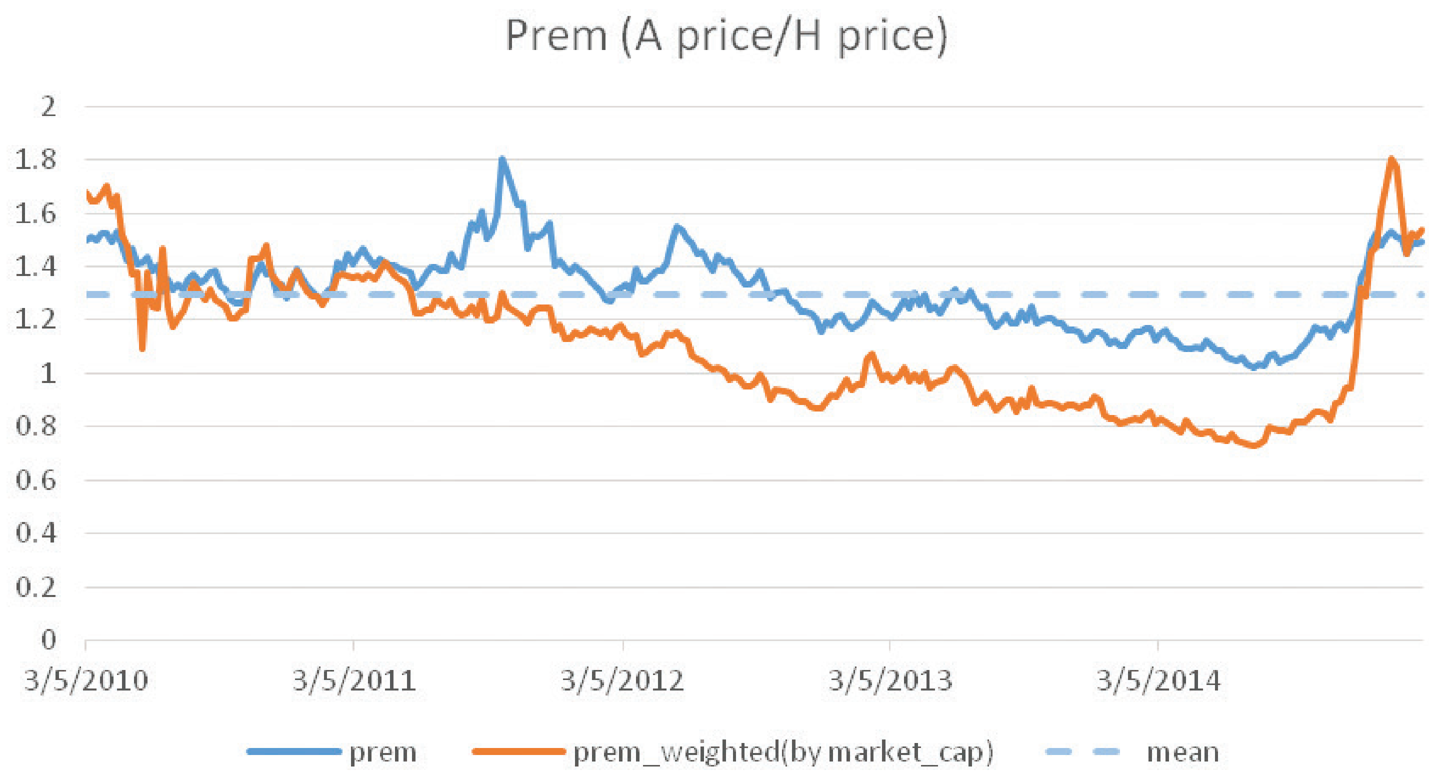
The 1980's hosted a shift from China's collective model to a more liberal mode of stock exchange. Since then, there has been a peaked interest in the behavior of the Chinese stock market.

	Exchange Location	Main Investor Group	Number of Companies
A Shares	Shanghai/ Shenzen	Domestic	2000+
B Shares	Shanghai/ Shenzen	Foreign	108
H Shares	Hong Kong	Foreign	181

Within the Chinese stock market there are two major exchanges, the Hong Kong Exchange and the Shanghai Stock Exchange. The latter is located on the mainland and serves as the primary version of shares available to domestic investors. Seventy-eight percent of the total daily volume of Shanghai trading can be accredited to individual investors. Shares that are traded in this market are referred to as "A" shares, to abbreviate and differentiate them from "B" shares (Shanghai-Shenzhen listed stocks that are traded solely with foreign currencies) and "H" shares (listed in the Hong Kong Exchange).

As of May 2015, there were fifty-seven Chinese companies whose stock was listed on both mainland Shanghai Shenzhen Exchange as well as the Hong Kong Exchange. One would intuitively assume that these identical shares would summon an identical price. In fact, this is far from the truth. A shares are swapped at a thirty percent price premium over H shares.

To clear any confusion, a price premium is a disparity between the actual selling price of a share and its expected value or benchmark price. So considering that A and H shares have the same dividend policy, it is intriguing that such a price disparity exists.



Several theories exist as to why this may be. According to the theory of differential demand, the price disparity exists because different groups of investors reveal different patterns of demand for the dual-listed stock shares. The liquidity hypothesis, a second explanation that has been offered, blames higher liquidity in the mainland market. The logic here is that investors may prefer liquid shares to less liquid or illiquid counterparts. There are also several macroeconomic factors that could explain the price disparity such as currency appreciation or growth in M2 markets. (Note: M2 is the aspect of a money market which includes not only savings, but also time deposits and mutual funds). UW-Madison graduate Kanyuan Huang tackles this mystery with regression models, examining relationships between prices, market conditions, currency health, and dividend ratios to delve deeper into the proposed theories of price disparity.

To examine the theory of differential demand, Huang tests a series of A to H share ratios. In this theory, excessive demand for the mainland shares is manifested in the price premium. If this A/H ratio increases (when available A shares increase), the A share price decreases, and the disparity decreases. According to the differential demand hypothesis, the relationship between the price premium and the A to H share ratio is negative. Huang finds that indeed the logic behind the differential demand theory fits the data well. The correlation is -.034—negative—as well as statistically significant. However, Huang points out a major issue with the model. As the ratio increases by one percent, the actual price premium decreases by .034 percent. To increase by one percent, every dual-listed firm would have increase the supply by just over 280 million new mainland shares, a feat that is highly unlikely.

The liquidity theory predicts that the ratio of A to H trading volumes will correlate positively with the mainland Hong Kong price premium. The results are supportive of this idea, with a positive correlation of statistical significance. Here too, the coefficient does not meet the criteria for economic significance. A one percent increase in the volume ratio corresponds to a premium increase of .0047 percent, or essentially, zero. Disparity in liquidity is deduced to a small component of disparity in price.

In Huang's next test, specific attention was given to the B shares. In the opinion of many, B shares could serve foreign investors as a substitute for H shares. B shares were originally open to solely foreign investors. After 2001, domestic investors were permitted to use foreign currencies to trade. However, the government of China capped foreign currency holdings at fifty thousand American dollars per individual, restricting their access to this seemingly available market and effectively surrendering it back to foreign investors.

In effect, the price of B shares affects the AH premium. As the price of B shares increase, foreign investors shift towards purchasing H shares, pushing the price upwards, and lowering the premium. Huang's analysis proved to be statistically significant and showed that a change in the B share index results in a 3.27 percent decrease in the AH premium.

Huang also tested the theory of market capitalization, which states: "Foreign investors prefer large companies over small ones because it is easier to acquire credible information." The theory implies that as a firm capitalizes on a market, the price premium will decrease as foreign investors start to buy the firm's share in the Hong Kong stock exchange. Huang found a positive correlation at .0025, meaning that larger firms will have higher AH premiums. However, it does not give insight into investor preferences, and at a ten percent size test, is not statistically significant. The positive coefficient can be attributed to higher mainland dividend yields, leading to a higher premium with a higher A value in the numerator of the ratio.

As far as macroeconomic factors are concerned, Huang's regression analyses suggest that the condition of the mainland markets vs. those of Hong Kong do have an impact on the price premium. With a statistically significant t-value of 11.24 and positive correlation of .044, the regression result accredits 1.76 percent of the increase in price premium to an improvement in the mainland market conditions. While testing currency appreciation, Huang found that as Chinese currency (RMB) appreciated by one percent, the price premium decreased by 1.67 percent. In the last two years, RMB has depreciated by about four percent, and this could potentially explain about ten percent of the increase in the price disparity.

Kanyuan expresses particular interest in different investment opportunities in China that deal with demand-side factors. Alongside his expected market factors, he also ran a unique test that dealt with an event in recent history, the implementation of the Chinese Connect.

Prior to November 17th, 2014, mainland shares were only open to domestic investors, which includes Chinese national individuals and specific institutional foreign investors (who had to be authorized under the Qualified Foreign Institutional Investor's program). This "Connect" provides foreign individuals investment opportunity in the mainland share. Though a quota was implemented to restrict fund flow, this link improved the trading for dual-listed Chinese companies (Goldman Sachs 2014).

Huang's Connect test yielded statistically significant results at a 1 percent level (t=2.61). The regression model's result implied that after the Hong Kong-Shanghai Connect, the average price premium between mainland and Hong Kong shares increased .74 percent. This is not necessarily due to institutional factors, and could also be explained by behavioral factors. Huang writes "the increase in AH price premium could be mainly due to speculative trading activities in the mainland shares market by domestic investors, as many are not qualified to invest in Hong Kong shares even after the new policy."

Kanyuan Huang designed several precise, appropriate tests to try and obtain more information as to what may cause such blatant gaps in pricing across Chinese stock markets. The given theories were, for the most part, relevant and did explain price disparity to some degree. It is clear that fluctuation in currency has a significant effect on the price spread, but still unclear is the effect that the Connect will have on the price premiums. These premiums are an aspect of the Chinese stock market that provides opportunities for further creative research.

A conversation with an alum...

Barbara Widder-Lowry

Ms. Widder-Lowry retired in 2006 after a 34 year career in the apparel and retailing industries. Upon graduation from UW-Madison, Barbara moved to Chicago to join the Executive Training Program of Carson, Pirie, Scott & Co. She held several product management positions and discovered a love of retailing and the evolving science of supply chain management. A management position with Chesebrough Ponds & Co. took her to New York City in 1976. She served as the Sr. Brand Manager for Health-Tex, Inc., the largest American childrenswear company and the newly acquired division of the multi-national consumer product company. Focusing on design, product development and international sourcing, she founded her own apparel company, Genuine Kids, in 1980. The company designed, developed and manufactured a complete line children's clothing and accessories. An expansion into retailing, led to the opening of over 150 Genuine Kids stores throughout the United States and Canada. After 14 years as a successful entrepreneur, she sold her business to Oshkosh B'Gosh, Inc. and moved to Wisconsin to lead a global expansion of the company. She served as Sr. V.P. of Product Development, Design and Sourcing for Oshkosh B'Gosh from 1994-2006. Since retiring, she has taught several courses on international sourcing and supply chain management at UW-Stout. Ms. Widder Lowry served as president of The Paine Art Center, The Regional Domestic Abuse Center, The Mercy Health Foundation and The Boys and Girls Club.

Written by Neil Patel

Please tell us about yourself, including an overview of your education and career. How deliberate were the academic and career choices you made as a young woman?

I'm born and raised in Wisconsin and my Badger blood runs very deep. We're a 4-generation UW family and our parents made sure that all six of us went to Wisconsin.

I'd love to say that my career choice was deliberate, but like many people, my professional life was an ordinary journey of small steps. My first job out of UW was with a major department store and it gave me broad exposure to the retail business. It was the perfect place for me, as I loved the process of building product assortments and analyzing consumer choices. A move to NYC and the opportunity to work for a pioneer in the clothing business changed my life. I became the brand manager of a large childrenswear company learning all facets of the apparel business-design, manufacturing, sales, marketing and research. Within a few years, I used this experience to start my own clothing company.

When you were a student at UW-Madison, why did you choose to study economics? If you were assigned to help undergraduates decide whether Econ was a fit major for them to declare, what would you advise them to take into consideration?

My interests always included Economics and Political Science and I wasn't sure what I wanted to do professionally. I felt that a strong grounding in both the theoretical and applied aspects of economics would give me a solid foundation for many careers. Studying accounting and finance at the School of Commerce, as the Business School was known back then, seemed a bit too narrow for me.

I would enthusiastically encourage any undecided undergraduate to major in Econ. In studying this social science, you learn how to think critically, solve problems and gain an understanding of how businesses and consumers behave. These are skills that can be applied to a wide range of industries.

When you studied Economics, as a female you were in a pronounced minority of those majoring in the field. If you were a female majoring in Econ here today, you would STILL be in a pronounced minority. Why do you think we see this gender disparity in our field and why has it changed so little while other fields have improved in this? Do you have thoughts about whether or how we might change this now?

There were not many women studying Econ when I was at Wisconsin and very few women in mid and upper management during my corporate career. I think that the gender disparity continues because today's undergrads are very job focused and they don't see this major leading to one specific career.

I think that expanding the internship opportunities is a great way to get more women into Econ. These real world experiences give undergrads confidence and an understanding that the marketplace is wide open for Econ majors.

In what ways did your training in economics aid you in your career? Can you identify what may have been your most important "take-away" from your Econ courses at UW-Madison?

The International Economics courses I took exposed me to the challenges of developing economies and how they navigate the micro-macro issues in the short and long term. My career spanned the time when the apparel and textile business moved from the southern United States to developing Asian countries, so my econ training helped immensely.

I understand that you are involved in a number of philanthropic efforts. Could you please explain which organizations you are or were involved with and your roles in them? What counsel might you have for students regarding the importance of community and/or philanthropic engagements?

Since retiring, I've had the opportunity to work with a number of local philanthropic organizations serving in leadership roles for an Art Museum, A Domestic Abuse Agency, a Health Foundation and the Boys & Girls Club. Board service is a great way to play a role in an organization's direction and have a substantial and ongoing impact on your community.

What is it about the apparel industry and retail that interests you and kept you driven? Please feel free to include both joys and challenges of working in retail and, especially, the apparel industry.

The apparel and retail industry is so interesting because it's a perfect integration of a consumer product and the supply chain. The product design cycle in the clothing business is very fast compared to other consumer products. Whereas the auto industry works 3-5 years out and a typical cosmetic or food product's development timeline is 12-18 months, clothing companies typically design, develop and ship product to a retail floor in just 3-6 months.

Working in a fast paced environment with very creative people was a great joy and helping a factory in an emerging part of the world succeed was very satisfying. Continually inventing new products that filled an entire retail store was an awesome experience.

The challenges were many. Worldwide sourcing allowed everyone access to great factories and textiles, so there were virtually no barriers to entry. Your competitors were constantly changing and the vertical integration of the clothing business made your customers, (i.e., Macy's, Kohl's and Nordstrom's) your competitors as well.

The price pressure on children's clothing was intense. Consumers think that kids clothes should cost much less than adult clothing but don't realize that the costs are almost the same to make a kids jean as it does to make an adult jean. There's a small savings in the cost of fabric, but all the other costs are the same (labor, packaging, shipping, distribution etc.) To keep costs down, childrenswear companies pioneered many new factories in a greater number of developing countries. Keeping our quality standards high across a widespread sourcing network was always a challenge.

Apparel continues to be a deflationary product with the consumer expecting to pay less every time they buy something new. The pressure on costs is constant and yet, consumers are always looking for fresh product and "newness". Here's another challenge…. a product with almost immediate obsolescence at an ever lower price.

Over the course of your career, what changes have you seen in the apparel business? What do you see in the near future?

Changes: the movement from owned and operating factories in the US to a global sourcing network, the reduction of tariffs and the elimination of trade barriers (NAFTA, WTO), the vertical integration of design, sourcing and distribution- direct to the consumer i.e., The Gap, Victoria's Secret, Carter's, the development of a highly efficient supply chain and the increased speed of new products to market, and the widespread use of technology i.e., CAD design, robotics, teleconferencing.

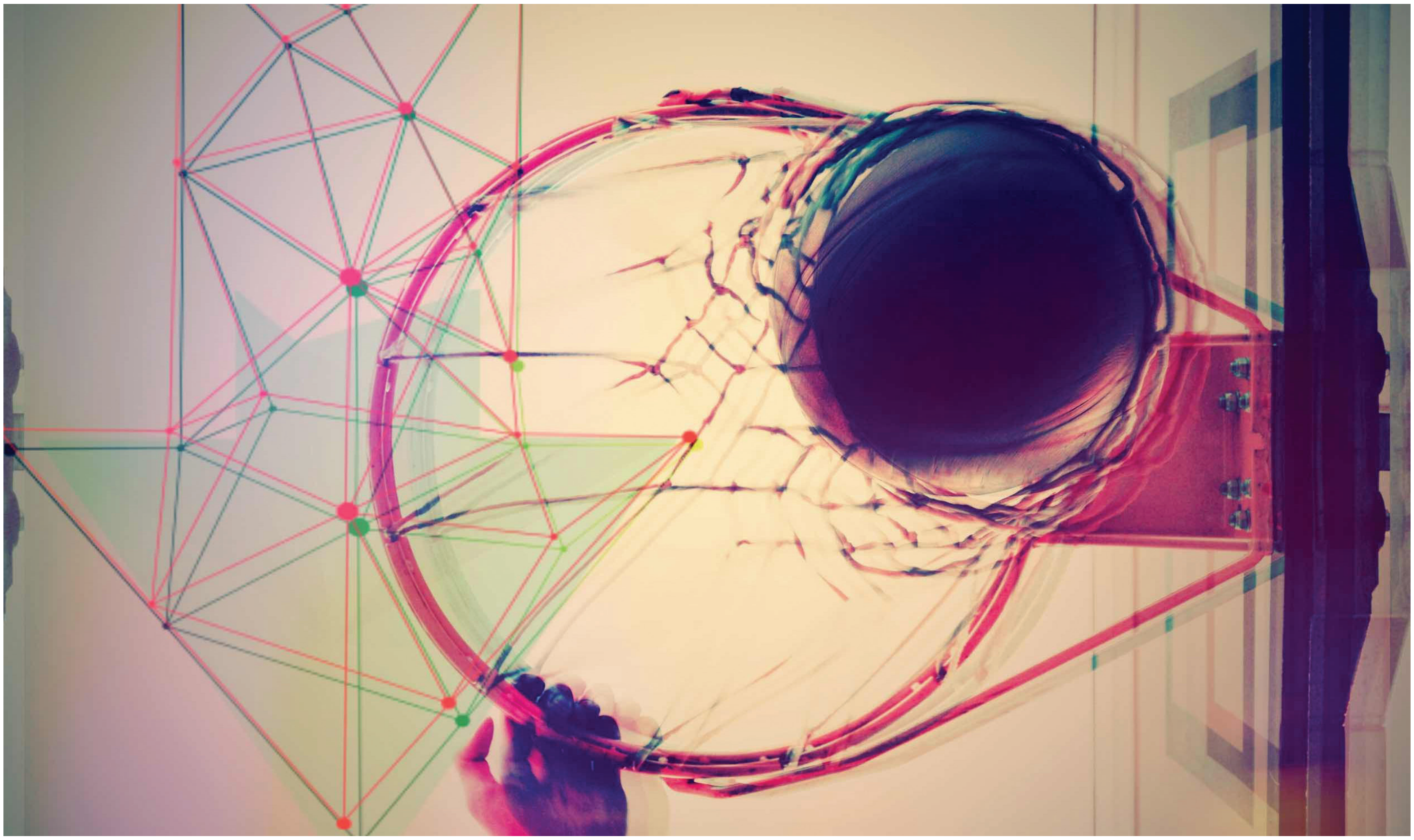
The future is very interesting. E-Commerce, the Internet and the willingness of consumers to buy clothing online now offers an additional, highly efficient channel of distribution. This presents a new opportunity for clothing brands and stores alike. The apparel landscape will increasingly be dominated by mega brands with global exposure such as Ralph Lauren, Zara and Nike.

Do you have any advice for students who will be pursuing careers in business roles similar to yours?

I would advise all students and young grads to get involved in some philanthropic activity. Through this participation, they get a sense of the local nonprofit landscape and learn what their community values.

As an entrepreneur, I would encourage students to not overlook working for small or mid-size companies in their careers. Large organizations tend to have very narrow job descriptions and employees are highly focused making it difficult to see how the whole business operates. I started out at a very large multi-national and then worked for smaller and smaller firms before starting my own company. That breadth of exposure gave me the knowledge and confidence to take that step. Go for it. It's fun to take risks!

Slam dunk or sunk?



An analysis of escalation of commitment and sunk costs in NBA draft order

Research by Bill Kluender | Written by Joshua Anderson

Every summer, in an event televised in front of countless viewers, sixty crucial decisions are announced to the public. These decisions, made after days, weeks, and even months of careful calculations and analysis, will be put to the test day in and day out under the scrutiny of millions for several years to come. Believe it or not, these decisions are not matters of government policy or international diplomacy, but rather are the picks that make up the National Basketball Association (NBA) Draft. The NBA Draft consists of two rounds, each of thirty picks. Increasingly, teams are using Basketball Analytics, a form of data analysis, to aid in decision-making. Managers are now realizing that their decisions are analogous to those made by economists. They expend resources in order to reap some future benefit. The foundation of economic theory states that a firm should not operate where marginal cost exceeds marginal benefit. However, NBA teams often appear to violate this by allowing players who underperform to play. This escalation of commitment may be caused by the influence of a sunk cost: the draft pick.

Staw and Huang, in a 1995 study, used NBA data from 1985 to 1989 to model the effect that draft order has on playing time as a player's career progresses. The variables included accounted for whether the player had been drafted in the observed year, whether the player was injured, winning percentage, draft order, and a summation of on-court statistics. Scoring (an on court statistic), trade, and injuries were shown to have the largest effect on playing time. Draft order was, in fact, statistically and economically significant, with significance decreasing as a player's career progressed. However, nothing was included to measure development of players as a result of increased playing time. The more you play, the more you improve, and therefore you will play even more. Because this was not accounted for, the study results may be biased. UW-Madison student Bill Kluender decided to model this omitted variable in order to build upon Staw and Huang's research.

He used data from the 2005 to 2009 seasons of players with careers of at least two seasons. Staw and Huang defined two seasons as a "noteworthy NBA Career," and Bill maintained this definition. This initial sample was decreased from 300 to 202 players when a floor of five minutes of playing time per game was implemented to remove a skew towards zero. In total, 922 years worth of data was used from basketball-reference.com. Lastly, only the first five years of any player's career were included. Kluender decided that after five years a player is a "known good" and therefore draft order should no longer have an effect on playing time.

What makes a sunk cost, and does a draft pick qualify as one? Staw and Huang outlined several indicators of sunk costs with strong effects. If a decision was made publicly, freely, was irrevocable, or linked to other values or intentions of the decision maker, then it will likely become an influential sunk cost. Upon analysis, the decision of a draft pick fits these qualifications. It is made publicly: it is televised and well documented. It is made freely: management can make a free decision, as long as the player picked is eligible to be drafted. A pick is irrevocable: the draft is an annual event with a finite number of picks, and once a pick is made it is final. Lastly, the draft pick is influenced by personal values: it is chosen by a small set of team officials each with their own motives and biases. Therefore, according to Staw and Huang, a draft pick is likely an influential sunk cost.

Kluender decided to use an OLS regression to model playing time, similar to the models used in Staw and Huang's research. Five models were constructed, one per year of the players' careers. The variables used are covaried, meaning that the values used occur in the same year as the predicted output. This output, or independent variable, is playing time in minutes per game. Through logical reasoning, analysis, and research, Kluender chose several variables to include in the model. These were a post penalty, a summation of on court statistics, draft order, a trade penalty, an injury penalty, wins, age, and a foreign experience penalty.

Players of different positions are sized differently, have different playing styles, and have different on court expectations. It is reasonable to assume that a variable accounting for position may be significant in a model of playing time. Through analysis and testing, Kluender discovered that the only significant difference in positions was between post players and non-post players; all other position statistics and interaction terms were insignificant. The assumption used here is that post players are larger, and therefore experience fatigue sooner and will play less. Thus, a negative adjustment was incorporated for those players in post positions.

Perhaps the most obvious factor in the time allotted to a player on the court is that same player's performance during games. If a player performs well he will, logically, receive more playing time in the future. This is the rationale behind the "on court statistics" included in the model. These statistics are comprised of free throw percentage, three point percentage, points, rebounds, blocks, assists, steals, personal fouls, and turnovers. Kluender expected personal fouls to have an especially strong negative correlation due to the possibility of "fouling out". Fouling out is when a player commits the maximum number of fouls allowed in one game (five) and cannot continue to play. A defense statistic and two-point percentage statistic were initially included, but were removed due to multicollinearity and insignificance. Furthermore, this data is per 100 possessions. Increasingly, basketball data is being presented in this manner as it is more standardized and accounts for teams with different playing styles.

When a team trades for a player, they have no involvement in the initial sunk cost of the draft pick expended upon said player. Thus, decisions regarding playing time should not be affected by it. Using this information, Bill accounted for trades with a trade penalty. If a player was traded at some point during the year, the new coach will not be biased and therefore the player should receive less playing time, all else equal. No players in the data used were traded in their first year. Subsequently, this variable was excluded from Model 1.

If a player is substantially injured during the season, it is expected that they will play fewer minutes per game. An injury penalty in the model accounts for this. This dummy variable only applies, however, to players who have missed at least one fourth of the season due to injury. This ensures that all injuries are "substantial."

The record of a team, whether they have been winning or losing, may have an impact on coaching decisions regarding playing time. If a team is winning consistently, they will most likely focus less on development of young players and more on winning in the current period. If a team is winning less they may be more willing to play young players in order to develop them and see rewards in future seasons. In essence, as wins increase the discount rate of development increases as well. As a result, a negative correlation between wins and playing time per game should be observed.

An age variable and a foreign experience variable were included in the model to capture the development of a player. As a player increases in age, the potential return on investment is lower for the coach and management. Kluender predicts that a team will spend more time developing a young player as opposed to an older player, and therefore there will be a negative correlation between age and playing time. The foreign variable is used to account for the development of a player that has already occurred in a foreign league. This variable is a penalty, meaning that players drafted from foreign leagues will receive less playing time because of a lack of bias.

Lastly, the draft order variable was included in the model to measure the possible bias displayed by coaches and managers. Inputs for draft order range from one through sixty, and a negative correlation is expected. This means that players drafted earlier will play more, all else equal. Initially, a round variable was included, but no significant difference was found between the 30th and 31st picks (the last pick of the first round and the first pick of the second round).

After Variance Inflation Factor (VIF) testing and the removal of the defense and round variables, a model was produced with no signs of multicollinearity. The model proved promising, with adjusted R-squared values in the high 60s. Most of the variables used were statistically significant in all five models. The four most constantly significant variables were Free Throw Percentage, Points, Assists, and Personal Fouls. Therefore, these should be the best predictors of playing time, which is consistent with the notion that they represent desirable on court performance. Injury, trade, and wins performed as expected. As time progressed, the wins carried less significance, consistent with the idea that development is overlooked when winning, but five years into a career a player has already been developed. Kluender performed outlier tests and residual analysis to ensure the structural integrity of the model.

As predicted, draft order carried statistical and economical significance, with said significance decreasing over time. This agrees with the logic that, as a manager or coach distances himself from the initial expenditure over time, he is less affected by the sunk cost. According to the results of Bill's model, a sunk cost does in fact exist in the NBA. A player drafted 30 picks earlier, will play 4.2 minutes per game more than another player all else equal. This effect, although substantial, is much smaller than that seen by Staw and Huang in 1995. This led Kluender to two possible conclusions; either this model more adequately addresses the variables involved, or teams have improved in their ability to avoid the effect of the sunk cost.

Still, Kluender admits areas for improvement for future research. Collection of more data would help further confirm the results. Although he addressed development as a factor in playing time, there may be more ways to do so. For example, variables that account for college or overseas statistics and even perhaps raw athletic ability may assist in capturing the development of a player. The defense statistic was removed from the model, but Kluender posits that inclusion of a variable that somehow accounts for defensive ability should improve the results. Lastly, further research should account for the opportunity cost of playing one player over another.

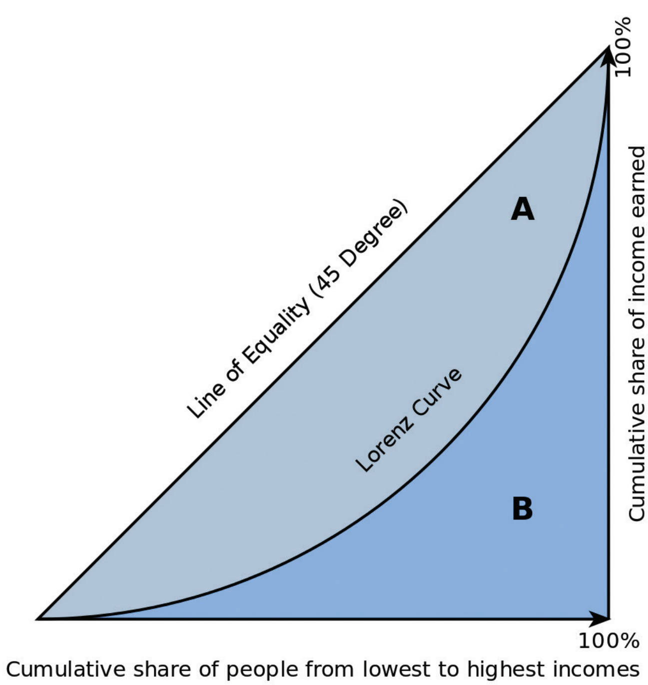
NBA teams are relying more on data analysis to make decisions on the court, and the results of this model support this notion. As analytics become more important and widely used in the NBA, will sports executives utilize more automated methods to make decisions? Conceivably, just as investing has seen increases in the use of computer algorithm controlled decisions, basketball will see the same. Furthermore, perhaps this model can assist in evaluating businesses, investors, and other decision makers mitigate their inevitable biases. It is definite that data analytics will continue to have an increasing impact in decision making throughout the world.

Capital in the Arab World

Effect of income inequality on growth in the Middle East and North Africa (MENA)

Research by Kevin Koscak | Written by Zachary Legge

Saudi Arabia did not surprise the world when it announced on January 2nd that it had executed 47 convicted death-row inmates, as the practice has become routine for the kingdom with the third highest execution rates in the world; only this time, it braced for backlash given the nature of one of the deaths. He had been prominent Shi`ite and Arab Spring Cleric, Sheikh Nimr al-Nimr, a Saudi Arabian arrested in 2012 on charges of sedition. The cleric was known for voicing opposition to the Sunni-dominated monarchy, speaking for the kingdom's Shi`ites who say they face marginalization both economically and socially. Violent backlash in the form of protests and harsh rhetoric which have erupted in the wake of his execution signals the present unresolved conflicts familiar from the Arab Spring movement. A revolutionary wave of protests and demonstrations that began in Tunisia in 2011, the movement was marked by democratic uprisings in Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Morocco, Syria, Yemen, and other countries throughout the Middle East. Demonstrators made calls for more civil liberties and economic opportunity; principally, they requested a solution to the deeply entrenched inequities of the time. African Development Bank Economists Mithuli Ncube and Charles Leyeka Lufumpa report that citizens in the Middle East and North Africa (MENA) region demanded not only more economic and political inclusion but an end to institutionalized socio-economic inequality perpetuated by "elite" dynastic rule.



The poster child of the movement, Mohamed Bouazizi, a Tunisian man who shocked the world with his self-immolation in 2011, was deeply frustrated with the severe lack of opportunity for economic advancement. Five years later, leaders of MENA in the post Arab Spring era continue to address the challenge of economic inequality where a main source of the issue comes from the level of a country's income inequality. Not to be confused with wealth inequality, we say a country experiences income inequality when the distribution of income is split unevenly among the population. Although one might initially think that reducing income inequality is a noble goal, economists like Robert Barro, author of "Inequality and Growth in a Panel of Countries," caution this may not be optimal to a country's long-run growth rate.

Digging deeper into the issue, Kevin Koscak, an economics student at UW-Madison, in his paper "Effect of Income Inequality on Growth in the Middle East and North Africa" modifies Barro's regression framework to accommodate for the analysis of economic growth specific to MENA. In particular, Koscak wishes to see if an inherent relationship exists between the level of an economy's income inequality and its long-run per capita growth rate. By doing so, he helps address a challenge central to the prevailing discourse in post Arab Spring MENA: a country must weigh the benefits of pursuing action to reduce income inequality with any negative effects redistributive policies such as taxes and transfers may have on its long-run economic outlook.

In his research, Koscak employs the Lorenz Curve, a graphical representation of the distribution of a country's income, to investigate the issue. Since every country experiences some degree of income inequality, we focus on the severity of inequality, identified by the Gini coefficient, a number between 0 and 1—with 0 indicating full income inequality and 1 the opposite. Developed by the Italian Statistician Corrado Gini in 1912, it is found by taking the area between a country's Lorenz curve and a Lorenz curve depicting full income equality divided by the sum of the two areas. For example, America's post tax and transfer Gini coefficient in 2013 was 0.42, the highest among any developed nation while Switzerland had the lowest in the group of developed nations at 0.31. Koscak uses precisely this tool as an indicator for income inequality in MENA, but warns it may not produce the most accurate picture given some countries like Lebanon and Libya have only recently started collecting relevant data to give coefficient estimations. Even worse, estimations are either incomplete or missing entirely for some Persian Gulf states such as Iraq, Oman, and the United Arab Emirates, and even if the relevant data are available, they may not be completely reliable. Households may not return government-administered surveys, the principal source of data in MENA, at a high frequency nor at a desirable level of accuracy. These surveys also fail to account for the massive presence of guest workers in the region, especially prevalent in the Arabian Peninsula, who anecdotally experience the worst cases of inequality. However, Koscak proceeds using the mean of the Gini coefficient across five year intervals from 1971 to 2013 in an attempt to minimize both measurement and sampling error, capturing an overall picture of income inequality for every period. Beyond sampling error, the claim that income inequality by itself affects growth presents a challenge to test since income inequality generally operates through four media: credit-market imperfections, politics, socio-political stability, and savings rates. To isolate income inequality as a random variable, Koscak must purge it of each relationship. Credit-market imperfections reflect the fact that due to asymmetric information and limitations of legal institutions, some people in the loanable funds marketplace are "liquidity-constrained," meaning they do not have full access to credit to optimize consumption and savings decisions. Often, a person's access to credit depends on his or her initial level of assets and income. Consequently, poor people tend to forego human capital investments that pay relatively high rates of return. Therefore, government income transfers from rich to poorer segments of the population would expand human capital investments, raising average productivity of investment. In this way, a reduction in income inequality would increase a country's growth rate. However, if the capital markets and legal institutions improve as the country becomes wealthier, then reducing income inequality through redistribution may see diminishing returns. In his analysis, Koscak controls for the prior year level of per capita GDP and human capital measured by primary school attainment as a percentage of the population.

The second apparatus through which income inequality affects a country's economy is its politics. As a general rule, when the mean income in an economy exceeds the median, democratic countries tend to see majority voting favoring redistribution. Then, more inequality motivates redistribution through the political process which distorts economic incentives and causes a lapse in productivity, eventually leading to a decrease in growth. Also, if more economic power concentrated at the top translates to more political power, then resources used to influence government could otherwise be used for production which constitutes a reduction in growth.

However, most countries in MENA do not have political power uniformly distributed and instead have a group of ruling elite. For instance, Jordan's constitutional monarchy inherently does not allow for majority rule. Additionally, countries which do hold elections may not honor the results, such as Egypt, whose 2011 parliamentary elections were dissolved. Koscak uses ordinal data, namely rule-of-law and democracy indices to control for their effects on growth, but notes that they are somewhat unnecessary given all countries in MENA have similarly low scores (with the exceptions of Turkey and Israel). In fact, in one regression, Koscak drops these variables altogether. More consequential to growth in the region, considering the current state of affairs, is a country's level of stability. Economists generally think inequality in an economy encourages the relatively poor part of the population to commit crime and engage in social disruption, such as riots, thereby wasting resources such as time and energy on non-productive efforts, in addition to government resources spent in an effort to regain control. Moreover, if the government can no longer guarantee the protection of private assets, then investment falls drastically. All of this combines to constitute a large reduction in a country's growth rate. Indeed, the outbreak of violent revolts as part of the Arab Spring movement exemplifies the socio-political unrest theory.

Even though income inequality was only part of a host of causes for the revolutions, the high degree of income inequality indirectly led to a huge fall in growth for many Arab countries through its effect on instability. Koscak crucially controls for this variable by including ordinal data from Uppsala University's UCDP/PRIO armed conflict database, which ranks a country's individual level of conflict from 0 to 2, and sums the scores over the five year intervals.

The final operator Koscak must consider is the savings rates theory, which suggests a negative relationship between income inequality and growth, since if savings rates rise with income, then a reduction in income from the top-earners would decrease investment. Thus, the author adds savings rates as a control variable and this is not unique to MENA. Other variables he accounts for that are not mentioned above are the inflation rate, fertility rate, trade, resources, and foreign aid. Koscak asserts that since many countries in MENA rely on exports as a relatively large percentage of GDP, one must consider a country's openness to trade in addition to the natural resources available. On the other hand, many countries like Iraq and Afghanistan rely on foreign aid to maintain normal operations, which undoubtedly affects growth in a positive direction. Accounting for all these factors, Koscak finds that, for both rich and poor countries, inequality by itself has no statistically significant relationship with long-run per capita economic growth. Variances of the estimations are too high to produce a rigorous result, but this may be due to the sampling error mentioned above and the diverse nature of income inequality in the region. One may also point to the absence of some countries commonly associated with MENA in the research, such as South Sudan, Djibouti, Eritrea, Somalia, and the territory of the Western Sahara due to missing not only Gini coefficient estimations but most or all time-series data from 1970 to 2005.

Despite the lack of statistical significance, however, income inequality displays a strong negative relationship with growth. In one analysis, a one unit increase in the Gini coefficient is estimated to have an 11 percent decrease in economic growth. However, note that we cannot conclude this result was not just a fluke. Instead, the data show a convincingly strong positive link between a country's savings rates and its growth rate. An increase in investment by one percentage point of GDP is associated with an increase in an economy's per capita growth rate by .22 percentage points, and the probability this result is happenstance is very low. Robert Perotti, Professor of economics at Universita' Bocconi, found similar results in "Income Distribution, Political Instability, and Investment" (1996), where he argued that because earners at the top end of the distribution save more than those at the lower end, income inequality as a determinant of growth may most strongly work through the savings avenue and accordingly have a positive relationship with growth. On the other hand, the economist hypothesizes that inequality sparking socio-political unrest severe enough to cripple a country's economic functions would have a negative relationship with growth. Given these offsetting effects, it is no wonder why the data suggest no statistically significant relationship.

It would appear then that a disparity of income has no inherent role to play in shaping the growth rate of a nation in general. Policymakers must consider the country-specific cause-and-effect role inequality plays before pursuing redistribution through taxes and transfers. For some countries experiencing instability, the negative relationship between income inequality and growth associated with socio-political unrest may outweigh the other operators, making it wise to lower income inequality to quell protests and resume economic activity, while for other countries not experiencing instability, this may only lead to a significant drop in investment.

Briefing: The Transpacific Trade Partnership

Written by Michael Orlowski

On October 5, 2015, 12 Pacific Rim nations reached the largest trade agreement since the establishment of the World Trade Organization in the 1990s called the Trans-Pacific Partnership, or TPP. The agreement will lower tariffs on more than 18,000 goods and services, as well as establish labor, intellectual property, and environmental standards between the parties, which are Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam. The provisions will not go into effect until 85% of the countries ratify the agreement.[1]

The Peterson Institute for International Economics estimates the complete ratification of the deal will raise cumulative exports of member countries by $1.025 trillion dollars every year, with $357 billion coming from an increase in American exports. The Institute projects the export increase to result in a $131 billion boost in American net income.[2]

While the benefits seem too good to pass up, there are many with strong reservations, including labor organizations, pharmaceutical companies, advocates for public intellectual property rights and environmental groups.

Labor Unions: TPP Another Blow to Blue Collar Jobs?

Labor unions, which typically represent the interests Americans employed in the manufacturing sector, argue that the TPP will hurt the American worker in two ways.

First, opponents argue the TPP fails to adequately prevent currency manipulation, which concerns labor unions. If a country keeps their currency at an artificially low value in comparison to the dollar, dollar valued goods become comparatively more expensive. The change in the relative price hurts manufacturers of dollar valued goods, as well as their workers. Labor unions are concerned TPP doesn't do enough to prevent currency

[1] "Twelve Countries Reach an Agreement on Trans-Pacific Trade," The Economist, October 5, 2015, http://www.economist.com/news/finance-economics/21671151-tpp-now-faces-hard-road-passage-national-legislatures-twelve-countries-strike-ambitious

[2] Christopher Harress, "Trans-Pacific Partnership Deal Could Raise US Income By $131 Billion Annually, Endanger Manufacturing Jobs," International Business Times, January 25, 2016, http://www.ibtimes.com/trans-pacific-partnership-deal-could-raise-us-income-131-billion-annually-endanger-2278611.

manipulation among member countries. They are right. While the TPP discourages currency manipulation and increases reporting requirements, such measures come with no threat of recourse. Whether it is the place of TPP to regulate currency, whether the effects of currency manipulation are as large as worriers claim, or whether rules exist in other international agreements like the G20 or the IMF that already perform this task, is less clear. Secondly, according to the Economic Policy Institute, a labor union sponsored think tank, the retooling in the economy necessary to take advantage of gains from trade will decrease the demand for labor in the United States, and push American wages down, as well as hurting the prospects for workers who cannot easily retool.[3]

To understand this argument, suppose TPP eliminates barriers to trade so that it becomes cheaper to purchase Malaysian made toys in the U.S and cheaper to purchase airline tickets sold by American firms in Malaysia. The American toymakers become pilots, because their toy making company filed for bankruptcy and the airline industry is booming. For opposite reasons, Malaysian pilots become toymakers. Consequently, both goods are cheaper, demand has increased, but so has quantity, so everyone has the same income but goods and services are cheaper, making everyone better off. This is the economic retooling necessary for gains from trade.

There are two potential problems with this example. First, not every toymaker can easily (or possibly) learn to fly, and then is left out of the job. Secondly, airlines, which are more capital intensive than they are labor intensive, require less work for each unit of capital than toys. Meaning that there are less pilot jobs available for a given capital stock. Consequently, some toymakers will be richer, because their salary working for the airline will allow them to buy more goods because the goods themselves are cheaper, but other toymakers won't find work at all, and will thus be much worse off.

Because America has a highly efficient financial system and a large capital stock, it has a comparative advantage in capital intensive industries. Because of our already high standard of living, the United States has a comparative disadvantage in labor intensive industries. Consequently, this particular incongruence will happen across the economy, and will not balance out. Therefore, according to the Economic Policy Institute, 'retooling the economy' will make things cheaper, and create some great jobs, but the demand for labor will decrease, increasing unemployment and lowering wages.[4]

While it is not clear the degree to which the identified effect actually happens, how wealth will be redistributed in the economy after TPP is a serious policy consideration. It is also important to remember that not all goods or services can be traded. To use the above example, suppose the rich new pilots can afford to go out to eat more often, increasing the demand for prepared food, and causing the displaced toymakers to open restaurants. In any case, TPP will likely cause transition for some American workers.

Copyright Considerations

Other groups take issue with the intellectual property protections of TTP, contending that they strongly favor corporations and unfairly deny consumers with less capital access to material which might otherwise be public.

For example, Doctor's Without Borders, an international organization that relies on cheap generic drugs to treat the world's poor, worries that a provision of TPP will make it possible for pharmaceutical companies to hold on to their patents longer across borders. In particular, TPP provisions that allow 'evergreening', the practice of renewing patents upon the discovery of a new use for a drug, and a 5 year minimum patent length on biologics, a drug type defined by its unique production process, worries those concerned about rising drug costs.[5]

[3] Josh Bivens, "The Trans-Pacific Partnership Is Unlikely to Be a Good Deal for American Workers," The Economic Policy Institute, April 16, 2015, http://www.epi.org/publication/tpp-unlikely-to-be-good-deal-for-american-workers/.
[4] lbid.
[5] Tim Fernholz, "Under the TPP, America's insanely high drug prices will be an unappreciated export," Quartz, November 9, 2015, http://qz.com/543385/under-the-tpp-americas-insanely-high-drug-prices-will-be-an-unappreciated-export/.

On the other hand, it is important that TPP does not disincentivize innovation. Making patent lengths too short might lower the exorbitant amounts spent on pharmaceutical research that have led to breakthroughs in modern medicine. The optimal patent length is a frequently studied topic in economics, and the right balance is far from clear.

Another group worried about TPP's intellectual property provisions is Electronic Frontier Foundation. According to their website, extension of intellectual property rights to life plus 70 years are too restrictive, and that such provisions only serve the corporations, like publishing houses, and do nothing for author incentivization. Conversely, protecting the interests of media corporations should increase the amount they pay creators for their work. Once again, TPP faces the task of finding the optimal protection time.

TPP and Geopolitics

TPP has largely been viewed as means for the United States to assert influence in the Pacific Region. President Obama, a key supporter and negotiator of the agreement said of TPP:

> When more than 95 percent of our potential customers live outside our borders, we can't let countries like China write the rules of the global economy. We should write those rules, opening new markets to American products while setting high standards for protecting workers and preserving our environment.[6]

In effect, the President views TPP partly as a measure to counter China's influence in the Pacific. China is not a member of TPP, and likely won't be; TPP contains provisions for limiting currency manipulation and competitiveness requirements for State Owned Enterprises which could have a significant negative effect on the Chinese economy.

Besides the intangible effects of increased American influence in the Pacific Region, China faces export losses of about $100 billion annually according to the Peterson Institute for International Economics, should TPP go into effect.[7]

As a result of this potentially detrimental deal, China has several responses. According to Peter Yu, a political science professor writing for Fortune, the primary and expected response, especially in the near term, is to do nothing. Since TPP has not yet been ratified and put into effect, it's impacts are minimal. However, according to Yu, China does have two active alternatives. First, China could increase its involvement with ASEAN, a regional trade organization that does not include the United States, in an effort to provide an alternative to the American backed TPP. Also, TPP has the ability to undermine U.S-Chinese relations, possibly delaying the pace of agreements on climate change, nuclear non-proliferation, and other important international problems. TPP is clearly not without risks of an unfavorable response from China.[8]

In sum, TPP is a highly controversial piece of legislation. The gains in efficiency and potential growth offered by the agreement are difficult to dispute. However, it is hard to determine whether such gains are worth the cost.

[6]Barack Obama. 2015. Statement By The President On The Trans-Pacific Partnership. https://www.whitehouse.gov/the-press-office/2015/10/05/statement-president-trans-pacific-partnership.

[7]Cary Huang, "It's the geopolitics, stupid: US-led TPP trade pact less about boosting economies than about containing China's rise," November 6, 2015, http://www.scmp.com/news/china/policies-politics/article/1876024/its-geopolitics-stupid-us-led-tpp-trade-pact-less-about.

[8]Peter K. Yu, "How China's exclusion from the TPP could hurt its economic growth," October 19, 2015, Fortune, http://fortune.com/2015/10/19/china-exclusion-tpp-economic-growth/.

A professor profile...

Marzena Rostek

After attending only two lectures of Professor Rostek's Game Theory class, I decided to drop it. Don't get me wrong, her teaching methods, apparent from day one, are engaging, enlightening and interesting to say the least. However, I was simply overwhelmed with fear of competing with the students in class, and quite honestly, there were one too many math and economics double majors in that lecture hall. According to student ratings, Game Theory is deemed to be one of the most difficult advanced economics elective offered at UW-Madison. Also according to student ratings, Professor Rostek is one of the best lecturers to take up this challenging class with. Luckily, I had the pleasure of engaging in an insightful and inspiring conversation with Professor Marzena Rostek.

Marzena Rostek is currently a Professor of Economics at UW-Madison. Her passion for this subject is evident through her extensive research on related topics such as Market Design, Microeconomic theory, and Finance. Her multi-faceted papers tackle the behavioral aspect of decision making and integrate the complex mathematics and econometrics required to explain such behavior. Presently, she is working with Semyon Malamud, a Swiss Finance Institute Associate Professor at Lausanne, to prove that there is an efficiency based argument for decentralized markets. "This is one of the most exciting projects I have worked on", says Professor Rostek. This excitement, coupled with her passion for human interactions in markets, is manifested through the answers she has provided during the interview. Needless to say, I have come to regret dropping a wonderful opportunity of expanding my knowledge and pushing my limits with the guidance of such an intelligent woman.

Written by Razan Aldagher

Tell us the story of how you got interested in Economics and who inspired/motivated you to enter this vast field.

I was attracted by Mathematics and was drawn by questions that had to do with how people interact and how they make decisions in market context and interactions in general. I'm from Europe, and unlike the US, in most European countries you need to declare your major in the application process. It was quite challenging actually. I read a few social science textbooks and realized that the way economics textbooks explained human interactions made me feel like I was learning something that got to the core of how things really are. It was a natural language to me and I was immediately drawn to it. It was the right choice for me because economics gives you an enormous freedom in questions and methods. Economics will always be an important discipline with a fresh supply of new problems which is part of the market value of an econ degree. Economics breeds on how institutions and markets change and we live in a very exciting time due to all the technological changes. By choosing economics, you are choosing a path with a constant potential to grow, you are choosing to be part of the future — always.

There are multiple differences in using Bitcoins vs credit cards to carry out transaction, including security, refunds and processing fees. The first cryptocurrency has been around since 2009, and has gained traction, but not enough to be used by an average consumer. Why do you think that is the case?

Part of it is just inertia. It is inevitable that digital currency will become important in the future. We are at an early stage of a process; we can't fully understand the complete set of possibilities that digital currency will bring. It is similar to the introduction of a personal computer a few decades ago...At the same time we do know that the transition to a digital currency will be much more than eliminating the physical medium of exchange. The key potential from investing in digital currency is that its value will be different depending on the context and the financial activity, and this is an indication of where markets are going. What is exciting for us economists is that at this point, markets are ahead of economic theory and traditional economic analysis has been about markets we call centralized. So imagine a physical or an online marketplace in which all buyers and sellers exchange all units at the same price and for the same medium of exchange. We have pretty advanced and mature-- very deep theories-- of centralized markets. But if you look at what has happened in markets for the past 20 years or so, trade of financial assets as well as goods, has shifted away from public centralized exchanges towards alternative trading venues. So a more accurate description of the global markets structure is a network market, and we don't yet understand how the counterparts of decentralized markets theory look like. In light of the existing traditional theories, decentralized markets and network markets are viewed as a friction. But once we start thinking about it, there seems to be a disconnect between the view of the decentralization as a friction and where markets are going right now.

With the current trend of decreasing oil prices, and Saudi Arabia pumping large amounts of oil into the market, and having lifted sanctions off of Iran's market, what do you think the strategy will be for US crude oil producers?

This is actually a very subtle question. Aside from the usual forces of demand and supply, and aside from the strategic interactions, what is going to be important here is the political outlook and how the key countries will incorporate their expectations on the political aspect itself and not just their expectations on economic variables. I am curious myself to see how this will play out in the long run.

This semester you are teaching Game theory-- one of the most (if not the most) difficult econ electives on Campus. Students who take this class love challenging themselves and often enter the course with a certain affinity towards the topic. In such a subject, the professor can either make the student love or hate the class depending on the teaching method. How would you attempt to make this class more exciting and what strategies do you use to have the students engaged?

I was not aware of the reputation of the course as hard. It is a privilege to be teaching game theory and I don't take it lightly. Econ 521 is an honors electives intended for undergraduates with some econ background but I tend to waive the requirements in order to attract more students who are not necessarily econ majors. I have had students who major in engineering, computer science, physics, even biology and geography. This produces a diverse group of students with different backgrounds. My class is very interactive and they all bring different ideas and this creates something very unique in terms of the final output. The core principle that I use in every single lecture is that I try to make the students discover the ideas by themselves; I drop hints, build on students' suggestions and sometimes I let them hit dead-ends. But when they see that they discovered an idea that was awarded a Nobel Prize a few years ago, it makes me so proud, and it works every time! I really care about the class being interactive, even though it's more than 70 people in the room, there are always students who are willing to speak up. Throughout the course we learn various methods to make predictions and techniques to predict outcomes in behavioral and strategic interactions in games. I try to make sure that students do not take any method for granted. So as soon as they become comfortable with a new technique, I point its limitations through examples. Ultimately, my hope is that they will develop a habit of looking creatively for the most effective method for a particular strategic interaction rather than using an algorithm for solving problems. I know that some people think that Game Theory relies on heavy math, but the main challenge is logic and not mathematics. To help students, I give them some tools through a list of 100 true or false questions that I have designed for the semester. I also teach students to successfully construct examples and counterexamples. And during few weeks I can see that they are able to produce beautiful counterexamples in the classroom. I am hoping this is something they carry beyond the course. This requires some confidence building also because you are defining something and you have many degrees of freedom and some students are more comfortable with questions that are well defined; there is a steps-based logic that they will be following, but model building gives you more flexibility but is also more challenging. So they develop confidence throughout the course which is part of the econ 521 training.

We have witnessed in this 2016 Democratic debate that Senator Bernie Sanders has been advocating for a paid family leave, similar to those that have been implemented in Europe for years now (Norway and Sweden to name a few). Being a mother for a beautiful 14 month old daughter, and a very successful and driven tenured professor, do you feel the necessity of having paid leave? In other words, how do you manage your time between work and home?

First of all my daughter brings me a lot of joy and this projects on everything that I am doing. I consider a paid leave to be a very personal choice and many parents may choose not to stop working. I was in the office until the last day, quite literally, and I was on skype with students and co-authors a couple of days after my daughter was born — I really cared about maintaining continuity at work and this was something important to me and it was completely feasible given the nature of my work. But what I do think is very important is giving new parents a more flexible schedule if the nature of the work allows it. The arrival of a child is a very important event in anybody's life, it is a very heavy moment and it is important to let the parents fully absorb this happiness — to fully internalize it. I think the employers know that we are the ones who are obsessing on how to organize our time to be part of these exciting and consuming projects and at the same time be the best parents we can. Facilitating the transition towards a different schedule is essentially what it comes down to produce a more energized, happy and loyal employee. I do think that giving people an option to take a paid leave or allowing for a more flexible schedule that does not require time commitment, but allows for substituting your time throughout the day—or night— is very important.

This year, our theme is focused on women in Economics. Can you tell us about the nature of your involvement with this organization? And what are some difficulties that you have faced (if any) as a woman as you have advanced in your economics career?

Some of the most intellectual and impressive people I have interacted with in high school, college and graduate school were women. Quite honestly, it never occurred to me, even remotely, that my gender would be related to what we are doing professionally. Until at some point at the end of graduate school when I heard people talking about the issue. My view is as follows: if you don't know what to make of the whole women in sciences or women in econ discussion, grow thick skin! Focus on what is really important to you, what your ideas and dreams are and pursue them. Don't let distractions get into your head. I am of course aware of the women in economics initiative and we are all very excited that the initiative took off and it appears to be a huge success. On most campuses these organizations are run by students and this informal format seems to be the most effective and impactful way to create a platform to share ideas with them and get them involved. Here at UW, we are lucky to have Susan Herring and Maria Muniagurria who have created an interactive community on campus. We are very proud and supportive of their work and efforts.

Do you have any advice for students who are currently majoring in economics? Anything that they should do that you have not maybe taken advantage of when you were an undergraduate?

One hundred years ago when I was in college, I didn't really have access to information and there is an element of luck for how things turned out for me; I happened to be in the right place at the right time. Today students have better access to information. My advice for students is to not to wait for luck. Think about what you want to be in 5 or 10 years from today; take advantage of the resources that we have on campus-- we have fantastic career services. And also, reach out to faculty, we are happy to talk to students. This is why we are here, we love interacting with you. We all have some experience that we can share and maybe part of it will be useful for you, but also talk to other people who have worked on something that is related to what you are thinking about. Passing your experience to others who want to learn is perhaps the most valuable source of information.

I had a female student come by my office and after talking to her I asked her "what is next for you?" She said that she is thinking about applying to graduate school for economics but she thought it would be "really competitive". I told her to go for it and I hope she is reading this article, but what was going through my head was that we were only in the third week of classes and I can already tell that she was one of the most brilliant people in the room. Of course applying to graduate school is competitive, plus this is econ, a degree that is valued in the market, so of course the application process is competitive. But it is not any less competitive to other people than it is to you! I strongly encourage you to try and chase your dreams!

Caution: washout ahead

A look at the gas tax

Written by Sidney Beaumaster

Amid positive signs in the United States economy, much attention has been on the fall in oil prices. The impact of shifting oil prices, auspicious or adverse, has been difficult to interpret for those following the ticker tape down and there's little denying the eyebrows the drop has raised recently. The drop has pulled gas prices down to lows not seen in years, leaving consumers and wholesalers with extra change in their pockets and providing the economy with much-needed liquidity. With transportation as the second largest cost after housing for Americans, and steady wage stagnation across the labor force, dropping gasoline prices certainly help lighten the burden on consumers and allow the consumer to pump money into other sectors of the economy. While the savings for consumers have come at a time when the economic recovery tank was running on fumes, low-cost oil has had adverse effects in other corners of the national and world economy. From the unsettling future, faced by both oil-producing states and countries, to the concern of urban sprawl and the environmental impacts, there is one thing for certain: low gas prices have not been enough to help maintain income to pay for infrastructure costs faced by the federal, state and local governments.

To meet federal infrastructure costs, the United States has historically relied largely on the federal gas tax. The declining prices have spurred conversation amongst economists, and some brave politicians, for the need to raise the federal tax on gasoline with still not enough revenue to cover all costs. The current federal gas tax has not changed since its passing in 1993 at 18.4-cents per gallon, lagging far behind inflation. Each year since, the government's purchasing power has diminished, caused by inflated construction costs and decreasing revenue brought in by the tax. With the evident accumulation of repairs needed on the United States infrastructure and roads, combined with added savings for consumers on fuel, many mainstream economists are arguing now is the time to raise the gasoline tax.

There was no such talk in Washington to raise the tax this December, but President Obama did sign into law a 5-year, $305 billion transportation funding bill after a longstanding bipartisan effort to fix and expand America's crumbling infrastructure. Funding for the new law will come from gas tax revenues but will require substantial offsets from other areas of the federal budget. Increasing the current tax has, not surprisingly, garnered little support amongst politicians.

Apart from the general aversion to raise taxes on any commodity as unsexy as fuel, those opposed address its unequal weight on rural communities and its regressive nature, affecting low-income households disproportionately. This is not to say the design of the tax could not be made to be progressive, as discussed in Gilbert Metcalf and David Weisbach research titled Design of a Carbon Tax, but its political hurdles are high. Increased cost of living is also cause for concern but it is valuable to consider that consumers and producers share, to some extent, the burden of a tax and in this case, as a higher gas tax discourages gas consumption, the price of gas would drop and land partially in global markets. Harvard economist Greg Mankiw, who has been a proponent of the pigouvian increase, has pointed directly to the tax incidence arguing with a tax increase "the price of gas to consumers would rise by less than the increase in the tax. Some of the tax would in effect be paid by Saudi Arabia and Venezuela." With oil and gas trade being so internationally connected, international, along with national producers, would in effect pay some of the tax. Further discussion of this effect has brought to light the positive political-economic ramifications internationally, lessening dependency on imported energy sources.

At the peak of high gas prices, which were derived from high oil prices, the high cost was in many senses acting in the same way as a gas tax. In the case of a tax, instead of the added revenue going to oil producers, it would get put into the pockets of consumers, governments and the environment in the form of savings. Instead of allowing consumers to increase use of fuel consumption today, the federal government should be embracing some of this newfound opportunity to save with an increased tax. What low gas prices today promise is an opportunity, if taken, to shift some of the added disposable income consumers gain into long run planning and economic benefits. Although the current price drop in oil barrels seems bottomless, gas prices will presumably increase again in the future, which is why bankrolling the savings of today with investments in infrastructure, future cost will be less damaging to consumers and federal and state budgets. Furthermore, and perhaps more importantly, artificially increasing the sticker price of fuel for consumers corrects inefficient market outcomes of driving, acting as a practical carbon tax.

Outside the obvious aim to meet transportation costs at the government level, the negative externalities associated with driving at its current price understates the social cost. There are many costs associated with driving not paid for by consumers at the pump, at the car dealership nor from current federal and state taxes. As co-author of Freakonomics and University of Chicago professor Steven Levitt points out, negative externalities included in driving not paid directly by the consumer include costs associated with traffic congestion, accidents with cars or pedestrians, use of infrastructure and emitted pollutants that contribute to global climate change. When the price of driving is below market equilibrium, consumers will in turn "over" drive because they are not internalizing the full cost of driving. A substantial increase in the gas tax would effectively work to correct this market failure by increasing the cost to drive for the consumers to a more accurate level. This would then align private incentives to the real, or social cost of driving.

Many economists have tried to account for the social cost of the externalities. Traffic congestion is the most apparent evidence for too many cars are on the roads, it also could be that not enough roads have been built. Whether it be a demand or supply side imbalance, taxation could help alleviate traffic. According to the report released in 2014 by The Centre for Economics and Business Research and INRIX, based on a variety of metrics the average cost of congestion to households owning a car was around $1,700 a year compared to a $6,000 a year deadweight loss to those in Los Angeles. INRIX also stated, "The overall economic impact is greatest in the U.S. where the estimated cumulative cost of traffic congestion by 2030 is $2.8 trillion- the same amount Americans collectively paid in U.S. taxes last year." With each additional driver added to the road, or each dollar not spent on building more roads, there is deadweight loss in fuel and productivity. Congestion slows down commutes, meaning less hours to work and more hours of emitted pollutants that damage the atmosphere.

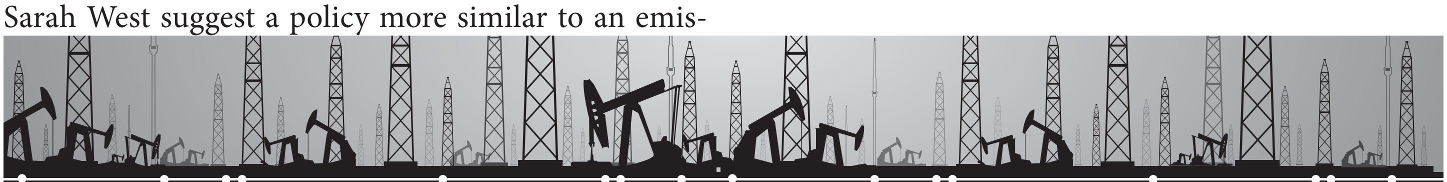
Another negative externality unpaid at the pump are the accidents between cars and pedestrians. Research by Aaron Edlin and Pinar Mandic, professors at the University of California, Berkeley and the University of Minnesota, suggests each additional driver increases the insurance cost to other drivers by an additional $2,000. They argue that there is an increased probability of having an accident when there are more cars on the road. Intuitively, decreasing the number of cars on the road, according to Edlin and Mandic, would result in fewer accidents.

There are also many positive environmental effects associated with decreased cars on the roads and incentives for more fuel-efficient modes of transportation, this may be the most urgent implication for a more serious tax on fuel use. Cornell economist Shanjun Li points to this assertion, continuing to say that "fuel taxes may be a more effective measure of reducing gasoline consumption or inducing consumers to adopt more fuel efficient vehicles than previously thought." The burning of gasoline emits several pollutants, one of which is carbon dioxide and a leading cause of global climate change. These emissions would have the potential to be cut significantly and slow down climate change if the price of polluting was accounted for at the pump. According to a report published by the U.S. Environmental Protection Agency, the social cost of carbon dioxide emissions was estimated at $37 per ton. Other reports, such as Stanford scientists Moore and Diaz, recently released a study with an estimate of $220 per ton. While the exact cost is difficult to pin down, currently drivers don't pay any price directly for global climate change. Higher gasoline taxes, perhaps as part of a broader carbon tax, would be the most direct and least invasive policy to address environmental concerns. Unlike slow-reacting regulations on automakers, such as the Corporate Average Fuel Economy standard (CAFE,) a gasoline tax would start working immediately and show changes in emissions measurably.

Other suggestions have been made to improve the current flat tax on gasoline. Working on a percentage base has been suggested but economist Don Fullerton and Sarah West suggest a policy more similar to an emissions tax would be the most efficient means to reduce emissions. They propose an emissions tax that depends on pollution control equipment (PCE,) engine size and fuel type. Vehicles with more efficient miles per gallon would be rewarded. This "vehicle-specific" gas tax or "mileage-specific" vehicle gas tax would more quickly and effectively change consumer behavior, according to Fullerton and West. Denvil Duncan and John Graham of Indiana University have advocated for replacing gasoline taxes all together with a user fee based on the number of driven miles. With the emergence of GPS and Internet connection in vehicles, implementation is not far off from being possible. This idea is far from being politically accepted with concerns revolving around privacy and high short-term costs.

Offering a clear policy in regards to the fuel tax is complex, but the simple fact is that the current system is just not sustainable. Those in favor of increasing the gas tax see benefits that would not only help finance a struggling infrastructure budget, but may also decrease dependency on foreign oil and support a real effort to reduce carbon emissions in the United States. A gas tax seems like one of the most practical systematic changes to foster savings and to account for the unpaid costs of infrastructure, roads, driving and the environment. The notion of a gas tax is not perfect by any means, but the complexity and difficulty of designing an ideal, fair tax should not prevent policymakers from trying. At the very least, we need to start thinking up ideas to pay back the mounting debt we owe our most important ally—the environment. It has been over 20 years since we have had action on the federal gas tax; we cannot afford to wait another 20 years.

Remembering the road of life has many costs, even if it is not paved with gold, requires all of us to stop and smell the exhaust we produce and pay the toll cost now before the ferryman collects us all. Pay upfront or pay later, but pay we will as a society for ignoring the road signs warning us of the bridge washout in highway funding and rising externalities.



A conversation with an alum...

Johnna Sundberg

Although a recent alumni, Ms. Johnna Sundberg's already significant achievements during and after her undergraduate experience speak greatly of her work ethic and embodiment of the Wisconsin Idea.

Specifically, Ms. Sundberg has begun developing professional experience in East Africa, Rwanda in particular, within the fields of international development and public service. Currently, she is a Princeton in Africa Fellow working with the organization Spark MicroGrants. Princeton in Africa serves to match college graduates with organizations working across Africa for yearlong service placements. These fellows work on and help improve various public service initiatives such as education, public health, water access, alternative energy and others. Spark MicroGrants enables communities by helping them to plan and conduct proper implementation of social projects.

Originally from Minnesota, Ms. Sundberg graduated in August 2015 from the University of Wisconsin – Madison with a bachelor's degree in political science and economics with a math emphasis. During her time at the University of Wisconsin, she explored economic development and completed public service projects working with developing communities internationally in Tanzania and Kenya and domestically in Philadelphia.

Written by Amrit Hundal

Tell me a little bit about your journey into economics. Why did you choose to major in the field? Was it an easy decision to make or were there multiple factors you considered?

When I entered UW, I wanted to pursue a career in policy, specifically related to international affairs. Naturally, I decided to major in political science, but I also wanted to major in economics to add a different lens to study these issues and to further develop my quantitative skills. I quickly started to really love my economics major. My interest in international affairs and economics led me to pursue a career in international development.

As a student of political science during your undergraduate studies, did you feel studying economics complemented your political science studies?

See above! I can't really answer #1 without also answering this question. To expand though: Both majors have really complemented each other and the overlap between some classes—although from different perspectives—has helped me understand course material more thoroughly.

What was your favorite economics course or professor? On the other hand, is there some economic concept(s) / subject matter you wish you had more exposure to as an undergraduate?

I loved my Development Economics course taught by Professor Muniagurria. Although I had done a lot of reading on my own about international development, Development Economics was the first time I got to be hands on with development datasets and further develop my data analysis skills and also discuss issues in development in an academic setting. I also really enjoyed Economic Forecasting with Professor Hansen. Even if you don't plan to have a career in forecasting, it is still extremely useful to gain more experience with statistical programming. In fact, I use statistical programming in my current job! During undergrad, I really wish I had more economic research experience. I spent three semesters away from campus (in Zanzibar, Tanzania; Nairobi, Kenya; and Washington D.C.), so I ended up not being able to do a senior thesis. I'm now trying to take on some research projects in my current job. I'm lucky that I have this option in my current position.

From my preliminary research, it seems you have an affinity for learning languages. What languages are you currently pursuing? Where is your interest derived from?

Currently, I'm brushing up on my French and making an attempt at learning some Kinyarwanda, which is the local language in Rwanda. During the first three months of my fellowship while I was in Uganda, I also tried to learn some Acholi, one of the most widely spoken languages in Uganda. I also learned Swahili while I studied abroad and I continued studying Spanish throughout the first two years of undergrad. I really love learning languages because it offers travelers an entirely different perspective on culture than you can get if you only communicated in English the whole time. It is also respectful when traveling to at least know some basics ("thank you" in the local language goes a long way)!

I came across some of your articles for The Cap Times, did you ever consider journalism? Can you speak to your advocacy for student debt refinancing and any challenges you faced from political opposition?

I have toyed around with journalism and it might be something I'd like to pursue in the future, but for now I am content with continuing to follow where my fellowship takes me. The article was actually written as a side project at one of my internships when Senators Warren and Baldwin introduced their student loan-refinancing bill in Congress. Although it got media attention, like many things in Congress it failed to pass. It is promising though that the 2016 presidential candidates have been talking about and proposing their own solutions to this issue.

What other extracurricular experiences during your undergraduate experience seem most poignant to you now?

My study abroad experiences and my time in D.C. have really helped shape my career. While I was in Africa, I had the opportunity to intern at a microfinance organization and learn about development from the perspective of Kenyans and Tanzanians, which has been invaluable to how I view development issues. The International Studies Department D.C. Internship program introduced me to many different career options in international affairs in D.C. and gave me the chance to work at one of the biggest grant-making and advocacy foundations for international issues in the United States. Besides study abroad, I also really enjoyed my involvement in my sorority and with Amnesty International on campus. Amnesty introduced me to advocacy and through both organizations I met a lot of people I am still in contact with today.

What of your economics, math emphasis background has helped you win the position you are currently holding?

Although I love economic theory, the higher-level economics courses with stricter prerequisites really helped develop my quantitative skills that I use in my job today. There is a strong need for people with solid statistical skills in the development sector and many of the jobs for international staff require experience with statistical software. Furthermore, my background in Econometrics has really helped me take on higher-level, more interesting projects within Spark.

Uganda seems to be experiencing a time of particular unrest, especially among the youth, concerning potential corruption within election processes. Yoweri Museveni has claimed victory in recent election despite concern for voter fraud. How is this climate interrupting or otherwise affecting your work?

I actually moved from Spark's Gulu, Uganda office to Spark's Rwanda office in Musanze. In Uganda, though, Spark stopped all visits to the field for three weeks (before, during and after elections) and also cancelled work the week of the election. Even before the election in November and December, staff were becoming frustrated because local politicians would use Spark's meetings with communities to campaign, knowing that a lot of community members would be present. I also was trying to get data from the 2014 Census in one of the districts we were working in, but was unable to because the local bureaucrats did not really have any work to do during campaign season and thus were not coming into work.

The Uganda Communication Commission initiated a 24 hour social media shut down as per direction of Uganda's Electoral Commission. However, with the use of virtual private networks (VPN), Ugandans were able to bypass these restrictions to voice their support for or disinterest in particular candidates. How does the usage of social media vary in Uganda and how effective of a communication method does it prove to be?

Every Ugandan I know is active on Facebook and Whatsapp. WhatsApp is particularly useful because people will form really large groups and be able to send out warnings or updates, and then everyone informs all the other groups they are a part of. In summary, social media is a great way to quickly update a whole town, district or even country.

How do advocacy programs and non-profit organizations provide tangible aid to low-income communities in East Africa or specifically in Uganda? Describe the differences in the microfinance process within your work in the United States and East Africa?

In Uganda, a lot of NGOs fill the space where traditionally government would provide services (education, health, etc.). Since you gave me the chance though, I want to talk a little more about Spark's model. Spark partners with vulnerable communities and then works closely with the communities as partners to help them choose a project, write a proposal and then provide support as needed during project implementation and two years after implementation is finished. Spark focuses on capacity building, including trainings on government advocacy, gender, leadership, and project-specific trainings. Spark's process is unique because the community decides what project would be best for them, unlike the traditional aid delivery model. The projects must be communal in nature and benefit everyone in the community. The goal is to empower communities and it is really amazing to be a part of the process and see it first-hand. Of course, Spark's model is only one possible tool, and so is microfinance. Microfinance is often described as a magic bullet type of solution, when in reality it is a good intervention but it won't solve poverty by itself. When I interned with a microfinance organization in a Nairobi slum, I saw a lot of people really benefitting and who were really able to leverage their microloans and do amazing things. However, for many it was a source of financial security allowing for consumption smoothing, but won't help them escape the poverty trap. In addition, in order to reach the most marginalized populations, for example women who live in slums, microfinance organizations rely heavily on donations making it difficult to become truly self-sufficient. In the poorest communities, loans and the interest that comes with them are so small (think a couple of dollars max) that it is almost impossible to cover staff and office expenses based on the interest alone. So, although I think microfinance is definitely an important intervention that has helped millions, like almost every other "solution" to poverty and development it is only one of many interventions.

Any advice or considerations you'd like to leave for current econ students?

With an economics degree you can follow a lot of different career pathways. Take advantage of this and try on a lot of careers for size! I came in to UW thinking I wanted to work in policy, but now I am really enjoying my work in evaluation, which uses a lot of data analysis skills, with Spark. Also, take classes outside of Economics too. Another class I really enjoyed and found useful was an Introduction to R-programming class in the statistics department. One of my other favorite classes was an introduction to modern literature course I took my freshmen year.

If you're specifically interested in following a career in economic development, then be sure to study statistical skills. The competition is pretty fierce for these jobs, but Economic majors have an advantage because of our strong statistical backgrounds and quantitative skills. There is a lot of need for this in the development sector. Also, it is crucial to have experience in a developing country. Take advantage of this through Wisconsin's great study abroad program. It is also a chance to see if development is really what you want to pursue and to network with people already working in the sector. Languages are also really important and you should try to achieve an intermediate level of the local language of the region you are interested in or working in. For me, this was East Africa so I chose Swahili. It probably won't break your application if you don't have a region-specific language, but learning a language also shows you know the cultural context of the region you are working in and that you probably have experience interacting with people from the region.

Equilibrium is made possible by the students who have researched, written, designed, edited, and created each word and every page.
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