University of Chicago

The Price Effects of Universal Basic Income:

Exploring the Alaska Case

Gabriel Broshy
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Sol Lee

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Abstract

Universal basic income (UBI) has become a controversial proposal for alleviating poverty and increasing economic security. While many studies evaluate the effects of UBI, almost no research evaluates its macroeconomic effects, such as its impacts on prices. In order to assess how a UBI would truly impact its recipients' purchasing power, I evaluate the price effects of the Alaska Permanent Fund Dividend (APFD), a state-wide UBI funded by oil royalties. I implement the synthetic control method to determine if the Consumer Price Index (CPI), an indicator of general prices in the economy, changes differentially in the Anchorage metropolitan region from other metropolitan regions across the U.S. after the implementation of APFD. The synthetic control exhibits no meaningful difference in its

CPI values after the implementation of the policy. These results suggest universal basic incomes do not raise prices, challenging a concern held by some critics of the policy.

1. Introduction

As economic anxiety and frustration with our political system rises, American citizens and experts are exploring bold new solutions to economic problems. One policy prescription that has gained significant attention is the universal basic income (UBI), a policy in which every adult in a given political unit receive equally valued direct cash transfer. The unexpected rise of entrepreneur Andrew Yang's political campaign, which was centered around implementing a universal basic income in the U.S., demonstrates the public intrigue over UBI and its potential significance in our discourse around social and economic policy.[1]

Many randomized control trials (RCTs) have found a plethora of socioeconomic benefits from cash transfers to low-income individuals. However, by randomizing a relatively small number of individuals into treatment and control groups, these studies fail in analyzing how a universal basic income would impact an entire economy. Macroeconomic effects such as changes in consumption, unemployment, and prices affect the amount of purchasing power that a UBI provides. Therefore, investigating these macro effects is critical to understanding how a universal basic income would impact recipients in every way, from their economic security to their health and psychological well-being.

Central to Yang and other UBI proponents' arguments is that the policy would

[1] Villa, L. (2019, November 5). Andrew Yang Has the 'Yang Gang' to Thank for His Primary Power. Retrieved from https://time.com/5718279/andrew-yang-primary-support/

create a multiplier effect, in which people would use their greater purchasing power to buy more things, which would create more jobs, and stimulate the economy.[2] At the same time, others argue that a UBI would disincentivize work. [3]While household-level consumption has been measured in many RCTs of cash transfers, the effects on consumption across an entire economy have not been investigated empirically. Consumption effects across an entire economy would not necessarily be the same, as they are impacted significantly by price and employment effects, which themselves cannot be estimated precisely from an RCT.

One of the critical and underexplored macro effects of UBI is price effects. By increasing citizens' income, a universal basic income would likely increase demand for most goods and services, which would increase prices. Even the policy's biggest proponents, such as Andrew Yang, acknowledge that a UBI would induce inflation.[4] However, the degree of price inflation from a UBI is debated intensely, as opponents argue that such price effects would wipe away any of recipients' gains in purchasing power.[5]

In order to test the macro effects of UBI, I use the Alaska Permanent Fund Dividend (APFD), a state-wide UBI funded by oil revenue. I ask whether the Alaska Permanent Fund affected the prices of goods and services within the state. I propose answering this question through the Consumer Price Index (CPI), which measures changes in the price

[2] Yang, Andrew. The War on Normal People: The Truth About America's Disappearing Jobs and Why Universal Basic Income Is Our Future, p. 98

[3] Continetti, M. (2020). A UBI Would Undermine Work. Retrieved 10 May 2020, from https://www.nationalreview.com/magazine/2019/08/12/a-ubi-would-undermine-work/

[4] Yang, Andrew. The War on Normal People: The Truth About America's Disappearing Jobs and Why Universal Basic Income Is Our Future, p. 183

[5] Archetto, G. (2018, July 16). Implementation of a 'universal basic income' program would be a disaster. Retrieved from https://thehill.com/opinion/finance/397192-implementation-of-a-universal-basic-income-program-would-be-a-disaster

level of a weighted average market basket of consumer goods and services purchased by households. I evaluate whether the CPI changes differentially in the Anchorage metropolitan area from other comparable metropolitan areas after the implementation of the APFD through the synthetic control method.

I hypothesize that the PFD likely increased prices, but not significantly. Theoretically, greater demand should increase prices, but the paper by Cunha et al. discussed in my literature review does not find significant price increases from a cash transfer.[6] Since programs that subsidize a specific item, such as SNAP or housing subsidies, significantly increase demand for such an item, their price increases should be more detectable than that of a UBI. However, because a UBI's price effects would impact all goods and services, it is unclear which policy would induce larger overall price effects.

2. Literature Review

2.1: History of the UBI

The idea of a universal basic income was arguably invented by Thomas Paine at the time of the American Revolution.[7] The idea gained attention in the United States in the 1960s, as prominent voices across the political spectrum endorsed some form of a UBI, from Milton Friedman to Martin Luther King.[8] In 1968, 1,200 economists signed a letter

[6] Cunha, J. M. (2014). Testing paternalism: Cash versus in-kind transfers. *American Economic Journal: Applied Economics*, *6*(2), 195-230.
[7] Marangos, J. (n.d.). Two arguments for Basic Income: Thomas Paine (1737-1809) and Thomas Spence (1750-1814). Retrieved from https://www.academia.edu/2698139/Two_arguments_for_Basic_Income_Thomas_Paine_1737-1809_and_Thomas_Spence_1750-1814_.
[8] Frank, R. H. (2006, November 23). The Other Milton Friedman: A Conservative With a Social Welfare Program. *New York Times*. Retrieved from https://www.nytimes.com/2006/11/23/business/23scene.html

arguing for the US congress to implement a system of income guarantees and supplements.[9] The following year, President Nixon announced the Family Assistance Plan, which offered guaranteed income supplements to poor families .[10] While the bill enjoyed widespread support and was expected to pass, it became mired in controversy over its effects on work incentives and on receipt of traditional welfare programs, failing to pass Congress.[11]

After a period of relative decline, UBI has regained significant attention in the United States in recent decades. Prominent figures across the political spectrum have endorsed the idea in response to concerns about income inequality, as well as the cost and ineffectiveness of current welfare programs.[12] Several eminent technology entrepreneurs have endorsed a UBI on the basis of expected widespread decline and displacement of work from automation, such as Mark Zuckerberg, Chris Hughes, Richard Branson, and Elon Musk.[13] Hughes co-founded the Economic Security Project, which has been funding

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King, M.L. *Where Do We Go From Here: Chaos or Community?* (New York: Harper & Row, 1967)

[9] Bregman, R. (n.d.). Nixon's Basic Income Plan. *Jacobin Magazine*. Retrieved from https://www.jacobinmag.com/2016/05/richard-nixon-ubi-basic-income-welfare/

[10] Moynihan, Daniel P. The Politics of a Guaranteed Income; the Nixon Administration and the Family Assistance Plan. New York, Random House, 1973. pp. 61

[11] Moynihan, Daniel P. The Politics of a Guaranteed Income; the Nixon Administration and the Family Assistance Plan. New York, Random House, 1973. pp. 61

[12] Sheahen, A. (2016). *Basic income guarantee: your right to economic security*. Place of publication not identified: Palgrave Macmillan.
Vinik, D. (20 November 2013). Paul Ryan Should Get Behind This Plan To Give Everyone Free Money. *Business Insider.*

[13] Catherine Clifford, C. (2017, December 28). What billionaires and business titans say about cash handouts in 2017 (Hint: lots!). CNBC Make It. Retrieved from https://www.cnbc.com/2017/12/27/what-billionaires-say-about-universal-basic-income-in-2017.html.

basic income projects across the United States, such as an experiment in Stockton, California in collaboration with the city's mayor.[14]

The policy has especially received a spotlight through the presidential candidacy of technology entrepreneur Andrew Yang. Yang made a "Freedom Dividend" of $1,000 a month for every American adult the centerpiece of his campaign. Yang's campaign garnered a strong base of support, raising $15.1 million from individual donations by Democratic 2019, and placing as high as fourth in national polls.[15]

2.2: History of the Alaska Permanent Fund Dividend

In 1980, Alaska implemented the Alaska Permanent Fund Dividend (APFD), a guaranteed income stipend to every adult resident of Alaska funded by the state's oil revenues. Because of unexpected variance in oil revenues, the fund has varied in annual value from $331.29 in 1984 to $2,072 in 2015.[16] During the years that I conduct the analysis, 1982-1986, the value of the transfer per citizen was $1000.00, $386.15, $333.29, $044.00, and $556.26, respectively. The total amount transferred each year was $470,897,000, $176,98,949.95, $159,726,504.15, $209,842,852.00, and $296,661,801.90, respectively.[17]

The size of the permanent fund has become a critical issue in Alaskan politics. Republican Mike Dunleavy was elected governor in 2018 on the promise of increasing the

[14] Samuel, S. (2019, October 8). A California city gave some residents $500 a month, no strings attached. Here's how they spent it. Vox. Retrieved from https://www.vox.com/future-perfect/2019/10/8/20902839/universal-basic-income-stockton-trial.
[15] Martin, J. (2020, January 24). #YangSurge trends after latest Emerson poll ranks Andrew Yang 4th nationally among 2020 candidates. Retrieved from http://www.newsweek.com/yangsurge-trends-after-latest-emerson-poll-ranks-andrew-yang-4th-nationally-among-2020-candidates-1483803.
[16] Permanent Fund Dividend. Alaska Oil and Gas Association. (2019, November 11). Retrieved from https://www.aoga.org/facts-and-figures/permanent-fund-dividend.
[17] Summary of Dividend Applications & Payments. (2020). Retrieved 9 May 2020, from https://pfd.alaska.gov/Division-Info/Summary-of-Applications-and-Payments

PFD to $6,700 but has been unable to do so because of the cuts to other programs that would be required.[18]

2.3: Research on the Effects of UBI and Price Effects of Other Social Welfare Programs

So far, researchers have primarily tested the effects of income transfers through randomized control trials (RCTs). These transfers often take the form of a conditional cash transfer (CCT), in which receipt of the transfer is conditional to adhering to a certain behavior that is usually related to health or education, or an unconditional cash transfer (UCT), in which receipt of the transfer is automatically guaranteed. One RCT of a one-time conditional cash grant in Uganda found that recipients saw a 41% higher income and were 65% more likely to practice skilled trade than the control group, with even more significant benefits to women.[19] An unconditional cash transfer in Kenya generated significant increases in income, assets, and even psychological well-being.[20] These results have held up in many interventions across Latin America and Africa, as evinced by a meta-analysis of 46 CCTs and another one of 21 UCTs that found significant positive results on a wide array of outcomes, such as household consumption and investment.[21]

While research on cash transfers in developed countries is far scarcer, it also demonstrates promising results on many crucial socioeconomic outcomes. A large,

[18] Sundlee, R. (2019, September 5). Alaska's universal basic income problem. Vox. Retrieved from https://www.vox.com/future-perfect/2019/9/5/20849020/alaska-permanent-fund-universal-basic-income.
[19] Cash Transfers: Changing the Debate on Giving Cash to the Poor. (2018, November 15). Retrieved from https://www.poverty-action.org/impact/cash-transfers-changing-debate-giving-cash-poor
[20] Cash Transfers: Changing the Debate on Giving Cash to the Poor. (2018, November 15). Retrieved from https://www.poverty-action.org/impact/cash-transfers-changing-debate-giving-cash-poor
[21] Kabeer, N., & Waddington, H. (2015). Economic impacts of conditional cash transfer programmes: a systematic review and meta-analysis. *Journal of Development Effectiveness*, *7*(3), 290-303.
Pega, F., Liu, S. Y., Walter, S., Pabayo, R., Saith, R., & Lhachimi, S. K. (2017). Unconditional cash transfers for reducing poverty and vulnerabilities: effect on use of health services and health outcomes in low-and middle-income countries. *Cochrane Database of Systematic Reviews*, (11).

ongoing experiment in Finland found significantly higher self-reported trust in other people and in institutions, as well as and confidence in one's future, one's financial situation, and one's ability to influence societal matters.[22] A recent CCT program in New York City found mixed results. Two years after implementation, participating families enjoyed significant improvements in school attendance, standardized test scores, family preventive health care, and parents' full-time employment.[23] However, in a second iteration of the program, there were fewer benefits in each of these areas, only high school students saw educational improvements.[24] There are currently at least eight UBI experiments analogous to UCTs in varying stages of development across Europe and the United States.[25] So far, there is little evidence on how and why the effects of cash transfer differ by the context in which they are implemented.[26]

By giving the transfer to a limited and randomly selected group of individuals, randomized control trials cannot detect how a UBI would impact an entire economy. Therefore, far fewer studies have tested the macroeconomic effects of a universal basic income. Macroeconomic effects such as changes in consumption, unemployment, and

[22] Kangas, O., Jauhiainen, S., Simanainen, M., & Ylikännö, M. (2019). The basic income experiment 2017–2018 in Finland. Preliminary results.
[23] Riccio, J. A., Dechausay, N., Greenberg, D. M., Miller, C., Rucks, Z., & Verma, N. (2010). Toward reduced poverty across generations: Early findings from New York City's conditional cash transfer program. *MDRC, March*.
[24] Riccio, J. A., Dechausay, N., Greenberg, D. M., Miller, C., Rucks, Z., & Verma, N. (2010). Toward reduced poverty across generations: Early findings from New York City's conditional cash transfer program. *MDRC, March*.
[25] McFarland, K., & McFarland, K. (2017, October 19). Overview of Current Basic Income Related Experiments (October 2017). Retrieved from http://basicincome.org/news/2017/10/overview-of-current-basic-income-related-experiments-october-2017

[26] Hagen-Zanker, J., & Himmelstine, C. L. (2014). What is the state of evidence on the impacts of cash transfers on poverty, as compared to remittances?. *London: Overseas Development Institute*.

prices affect how much purchasing power recipients ultimately receive from a UBI. Therefore, investigating these macro effects is critical to understanding how a universal basic income would impact recipients in every way, from their economic security to their health and psychological well-being.

Skoufias et al. (2008) find similar consumption increases from equivalently valued food and cash transfers, and a similar lack of labor supply effects. The Mexican government randomly gave members of 200 randomly assigned remote villages $20/month in cash or food transfers, or gave nothing as a control group. The researchers found a 15.7-18.3% increase in food consumption and 13.9-17.1% increase in total consumption from the cash transfer relative to control, neither of which are significantly different from the results of the food transfer. Neither transfer significantly affected overall labor participation.[27]

Cunha et al. provide the only study that has empirically examined the price effects of cash transfers. Researchers studying Mexico's PAL program hypothesized that the cash transfer would increase food prices by increasing demand. Prices increased by 1.5% in "less developed" villages, where sellers held greater market power due to fewer sellers and less integration with the regional and global economy.[28] However, in the "more developed" villages, prices decreased by 0.7% and the results were not statistically significant. Overall, prices increased by 0.2% from the cash transfer, which was not

[27] Skoufias, E., Unar, M., & González-Cossío, T. (2008). *The impacts of cash and in-kind transfers on consumption and labor supply: Experimental evidence from rural Mexico*. The World Bank.
[28] Cunha, J. M. (2014). Testing paternalism: Cash versus in-kind transfers. *American Economic Journal: Applied Economics*, *6*(2), 195-230.

statistically significant. The researchers concluded that price effects did not significantly impact consumers' purchasing power.[29]

Jones and Marinescu study the employment effects of the Alaska Permanent Fund Dividend (APFD) using a "synthetic control," the same methodology as this paper. They found that employment rate and labor force participation rate were not significantly different in Alaska from synthetic control states after introduction of the APFD. Meanwhile, the part-time employment rate was significantly greater in Alaska than the synthetic control for most of the post-treatment introduction period, and this difference grows over time.[30] The researchers suggest that unemployment did not change significantly because the "income effect," in which some recipients chose not to work or to work less due to greater earnings, was offset by increased consumption.

Very little research has examined the price effects of other social programs. Researchers find that for every dollar that Pell Grants are increased, college tuition increases by 55 cents. Federally subsidized student loans, which unlike Pell Grants, must be repaid, increase tuition by 70 cents for each additional dollar. As a result, colleges, rather than students gain most of the benefits of the subsidy through tuition increases.[31] As a result of this finding, economist Jeffrey Dorfman argues that the gains of universal childcare would be fully offset by the costs of childcare increasing. He argues, ""When

[29] Cunha, J. M. (2014). Testing paternalism: Cash versus in-kind transfers. *American Economic Journal: Applied Economics*, *6*(2), 195-230.
[30] Jones, D., & Marinescu, I. (2018). *The labor market impacts of universal and permanent cash transfers: Evidence from the Alaska permanent fund* (No. w24312). National Bureau of Economic Research, p. 14-16.
[31]Lucca, D. O., Nadauld, T., & Shen, K. (2015, July). Credit Supply and the Rise in College Tuition: Evidence ... Retrieved from https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr733.pdf)

government provides payments for anything, the cost of that good or service always rises."[32]

2.4: How This Paper Relates to the Literature

I hope to add to the very limited set of research on the macroeconomic effects of universal basic income by evaluating the price effects of the Alaska Permanent Fund. The Mexico PAL study, the only research on the price effects of cash transfers, evaluates price effects on the scale of remote, Mexican villages. In contrast, my paper evaluates price effects on the scale of a Alaska, a large economy in an industrialized nation with a GDP of $47,460,000,000 and almost 750,000 residents. Moreover, my paper evaluates general prices of goods and services, rather than focusing just on food prices. Therefore, it can more fully capture how price effects modify changes in purchasing power from a UBI.

3. Data and Methodology

3.1: Qualitative Research Methodology

In order to understand the theory behind price effects from social safety net programs, I spoke with Bruce Meyer, a professor at the Harris School who focuses on poverty, inequality, and social safety net programs. I asked Dr. Meyer on the economic theory and empirical evidence of price effects from a UBI and other social safety net programs. I also asked about how his economic career affected his general views about such programs.

3.2: Data

[32] Dorfman, J. (2016, October 19). Child Care Won't Get Cheaper If The Government Pays. Retrieved from https://www.forbes.com/sites/jeffreydorfman/2016/10/19/child-care-wont-get-cheaper-if-the-government-pays/#79b409151139

In order to estimate the effect of the Alaska Permanent Fund Dividend on prices, I use the Consumer Price Index (CPI). The CPI measures changes in the price level of a weighted average market basket of consumer goods and services purchased by households. As this "basket" attempts to mimic the goods and services that consumers usually purchase, the CPI is a useful proxy for how changes in prices impact consumers' purchasing power, which is ultimately what I am trying to measure. Moreover, CPI is an easily interpretable figure, as a CPI of 120 indicates a 20% price increase from a given baseline year.

I use the FRED (Federal Reserve Economic Data) from the Federal Reserve Bank of St. Louis as my source of data on consumer price indices. FRED is a reputable source of economic time-series data. It shows the monthly consumer price index for many metropolitan areas across the country. Crucially, these data reach before and after the Permanent Fund Dividend was first received in July 1982. The data are available for 12 metropolitan areas: Anchorage, Los Angeles, Denver, San Diego, Cincinnati, Honolulu, Kansas City, Milwaukee, Minneapolis, Portland, and Pittsburgh. Therefore, Anchorage forms the treated unit, and the other metropolitan areas are candidates for the control group, as will be explained later.

Because the FRED's Anchorage CPI Data was discontinued after December 1986, the study period concludes then. In order to have enough metropolitan areas in the control group, the study period began in February 1978. As the AFPD was first received in July 1982, the study period consists of 107 months, 53 in pre-intervention period and 54 in the post-intervention period, which is nearly nine years.

3.3: Quantitative Research Methodology

I used the synthetic control method, which forms a "synthetic control" group from a weighted average of the 11 metropolitan areas in the control group. This weighted average matches the outcome of interest, CPI, in (Anchorage) in the pre-treatment period (pre-APFD) as closely as possible. We assume that this "synthetic control group," which I assume would continue to have nearly identical CPI values if the policy were not implemented. Therefore, the differences in CPI between Anchorage and "Synthetic Anchorage" after the implementation of the APFD can be attributed to the effects of the policy. As the synthetic control can use different algorithms to minimize the difference in the outcome variable before the treatment period, I use several other minimization algorithms to ensure the robustness of the results.

4. Assumptions and Limitations

4.1: Assumptions

This paper assumes the lack of an "anticipation effect" of the Alaska Permanent Fund. While the bill creating the fund was signed into law in April 1980, Alaskans first received the fund in July 1982.[33] Researchers have frequently cited "anticipation effects," in which people change their behavior in anticipation of a policy that has not been implemented.[34] Therefore, whether price effects would be observed after the signing of the bill or receipt of the benefit is unclear.

[33] About the Alaska Permanent Fund Corporation (APFC). (n.d.). Retrieved from https://web.archive.org/web/20120717052355/http://www.apfc.org/home/Content/home/index.cfm

[34] Malani, A., & Reif, , J. (n.d.). Interpreting pre-trends as anticipation: Impact on estimated treatment effects from tort reform. Retrieved from https://faculty.smu.edu/millimet/classes/eco7377/papers/malani reif 2015.pdf

It also assumes the absence of other factors that would cause Anchorage's CPI to uniquely change after the implementation of the policy. For example, the oil boom that Alaska experienced in the first half of the 1980s may have increased prices in Anchorage from the pre-intervention to the post-intervention period more so than the control cities.[35] If such factors were at play, fully ascribing the post-intervention differences in CPI between Anchorage and the synthetic control to the APFD would be inaccurate.

The paper also assumes that price changes will be visible in the Consumer Price Index and would be reflected a few years after the permanent fund dividend is implemented. This last assumption may be especially difficult, as price effects may only occur very gradually and be difficult to detect.

4.2: Limitations

While synthetic control groups are usually constructed from a set of predictor variables to predict the outcome of interest, this synthetic control group in the main results is only constructed from pre-treatment CPI values due to data limitations. I conducted the analysis at the level of metropolitan areas because Alaska CPI data did not reach back to 1982. At the same time, data on other economic indicators for the Anchorage metropolitan area that we could use to predict CPI, such as GDP/capita, median income, unemployment rate, and a sector breakdown of the economy, were not available as early as 1982.[36] Metropolitan areas whose CPI most closely resembled Anchorage's before the

[35] Lee Falsey, J. (2016). Is Alaska headed toward another 1980s-style recession?. Retrieved 9 May 2020, from https://www.adn.com/businesseconomy/2016/05/31/is-alaska-headed-toward-another-1980s-style-recession/

[36] 2012 Anchorage Indicators. Retrieved 9 May 2020, from https://www.muni.org/departments/ocpd/planning/publications/documents/full%20indicators%20report.pdf

intervention due to random noise would be weighted heavily in the synthetic control. As a result, we cannot be as certain that the synthetic control's CPI values would have continued to mirror Anchorage's if the APFD hadn't been implemented. In turn, the post-treatment CPI differences between Alaska and the synthetic control group may not be entirely due to the effect of the APFD. In order to address this limitation, I run a robustness check with several state-level predictor variable in Section 5.3 and find a similar result. Therefore, this limitation does not seem to affect the results.

The FRED dataset also contained missing CPI values, but the synthetic control method could only be computed if each metropolitan area had the same number of timepoints. So, I filled in these missing values with that city's CPI value from the previous month, or if this was not available, from the next month. However, I am not concerned about these filled in values as a source of bias. As the plots demonstrate, each metropolitan area's CPI changes very little each month and generally follows a predictable trend. Moreover, very few consecutive monthly CPI values were missing.

There is debate over the legitimacy of the Consumer Price Index, which places the validity of my findings into question. The Boskin Commission, a group of prominent economists appointed by the Senate Finance Committee, argued that the CPI overestimated inflation by 1.3% per year before 1993.[37] As a result, CPI may be a flawed gage of the prices that people actually experience in the economy.

[37] Meyer , B. (n.d.). Measuring American Poverty: Statement of Bruce D. Meyer. Retrieved from https://harris.uchicago.edu/files/measuringamericanpoverty.pdf

5. Results

5.1: Qualitative Results

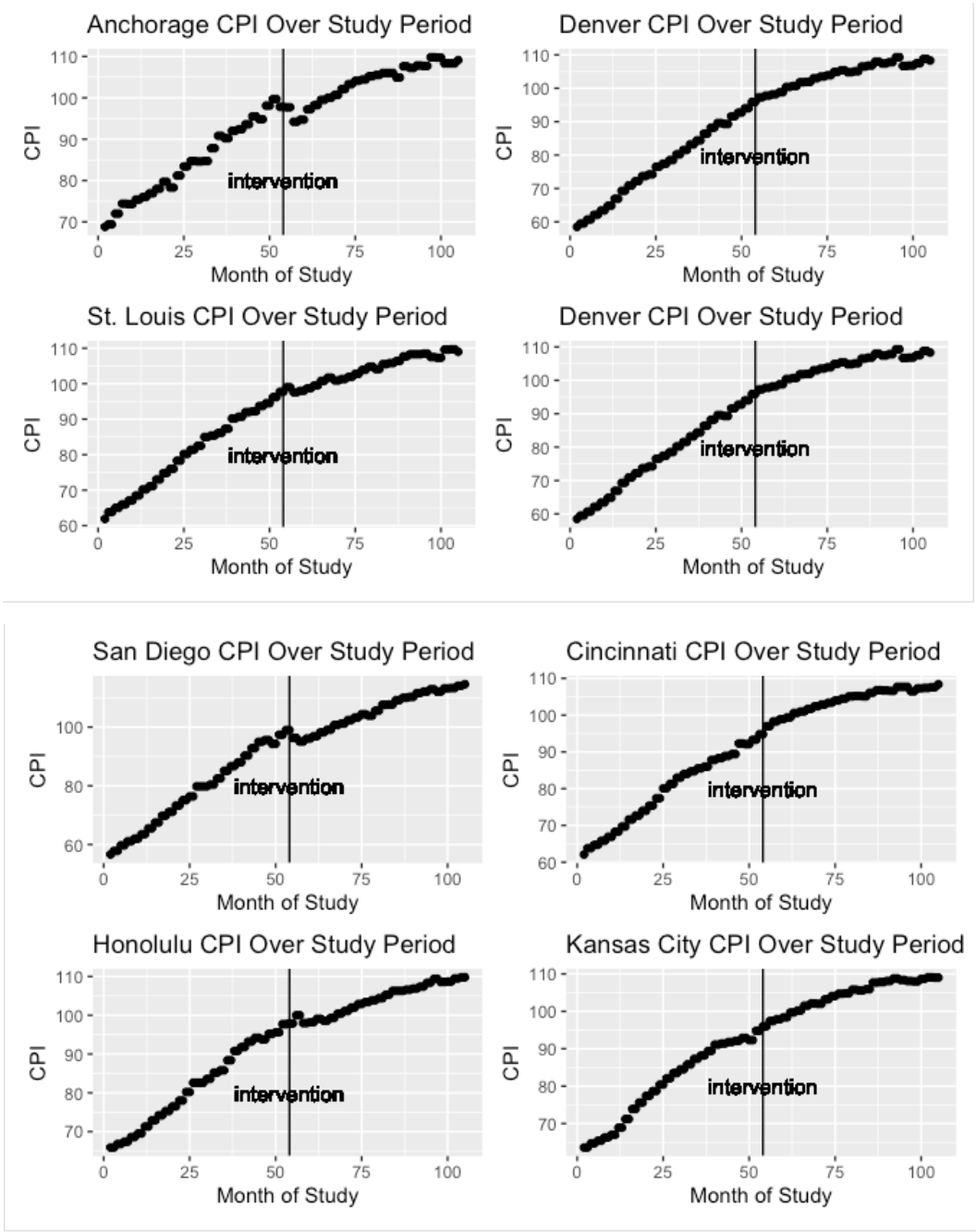
Professor Mayer argues that programs that subsidize specific goods raise prices by inducing demand for such items. “There’s some evidence that SNAP allows local groceries to raise prices. There’s analogous work on housing subsidies, and there’s some evidence that when you raise the amount of subsidies that landlords capture some of that by raising prices. There’s some of that, but that’s a little leakage.” However, because the increase in demand from cash assistance programs would be more spread out, Meyer expressed less concern on price effects from such programs. “It would be harder to detect, but it might in small effects. I wouldn’t worry about that as much as labor supply.”

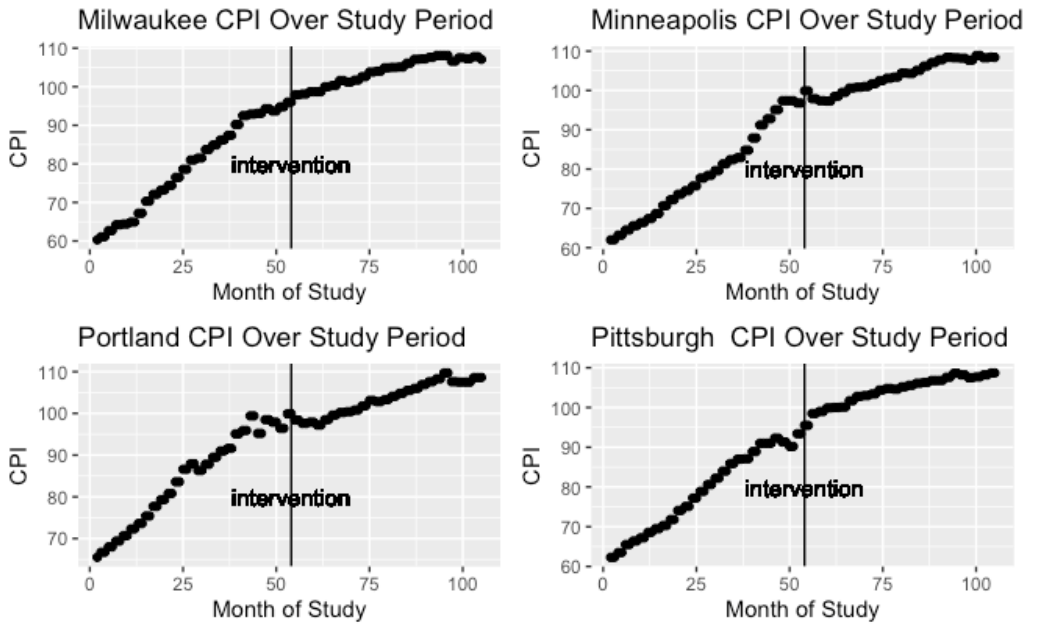
Moreover, Mayer expressed skepticism on UBI and other cash assistance programs. For Mayer, a universal cash assistance program would reduce benefits for particularly needy individuals, and eliminated needed, individualized supports beyond cash. “You either have to target the subset of individuals to provide adequate support for. If you make it universal, rather than targeting those who are disabled, have several kids and don’t have good work options, then it won’t adequately provide for those who [are particularly needy. You need to more carefully figure out who needs help and what help they need. You need social workers and people in state offices who are figuring out what people need-cash, job assistance, educational assistance, childcare benefits. This naive idea that you can have this clean, simple program and that’ll work for everyone-it’s unrealistic.” He argues that instead, we should further tailor benefits to specific individual and family needs. “I’d prefer something closer to the current system-maybe with strengthened assistance offices

across the states and expanding services-is better than blowing the system, which a UBI would do."

4.2 Primary Quantitative Results

Figure A: Plots of CPI for Each Metropolitan Area During Study Period





Several of the trends, including Anchorage's, exhibit a short downward slope in the few months before and after the start of intervention, which was July 1982. This trend maps on nicely to the U.S. recession from July 1981-November 1982. Many argue that this recession was catalyzed by the Federal Reserve's tight monetary policy to counter inflation, which would be expected to lower prices.[38]

Aside from this blip, the CPI generally slopes upward at a rate that appears similar before and after the start of the intervention period in most metro areas, including Anchorage. Therefore, Anchorage's CPI trend does not appear to change differentially from the other metropolitan areas after the implementation of the APFD.

Figure B: Synthetic Control Weights by Metropolitan Area

[38] Sablik, T. Recession of 1981–82 | Federal Reserve History. Retrieved 9 May 2020, from https://www.federalreservehistory.org/essays/recession_of_1981_82

Metropolitan Area	Weight
Los Angeles	0.010
St. Louis	0.007
Denver	0.004
San Diego	0.004
Cincinnati	0.006
Honolulu	0.010
Kansas City	0.008
Milwaukee	0.005
Minneapolis	0.005
Portland	0.936
Pittsburgh	0.005

These results demonstrate what portion each metropolitan area forms of the "Synthetic Anchorage" control group. Portland's weight of 0.936 indicates that it constitutes almost all of "Synthetic Anchorage." This result is surprising, given that each area seemed to exhibit a similar trend in CPI to Anchorage during the study period based on the plots (Figure A). One cause of this extreme weighting may be that the downward blip around the time of the intervention is especially pronounced in both Anchorage and Portland. Portland's CPI trend may more closely resemble Anchorage's since Portland is the only other city in the Pacific Northwest in the analysis.

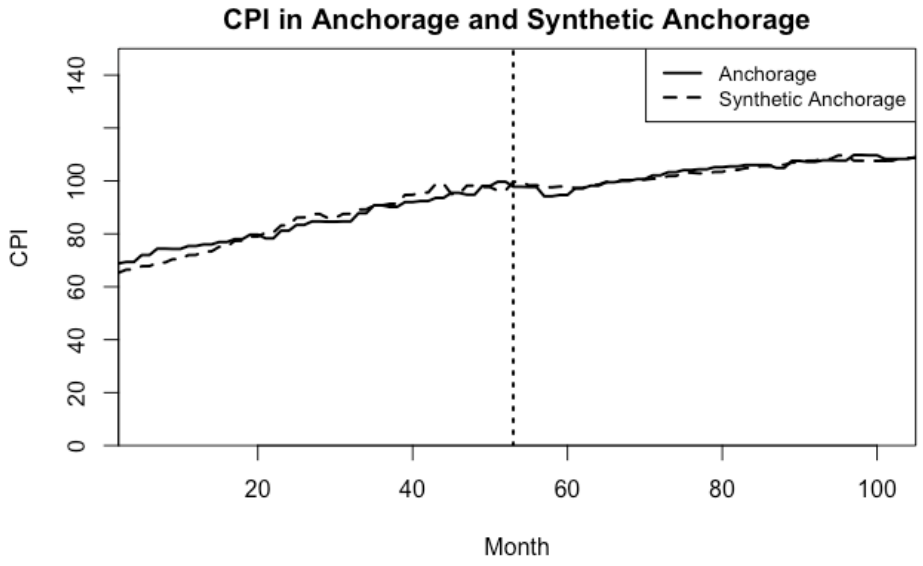
The fact that "Synthetic Anchorage" very closely resembles Portland raises further concerns about the analysis. Just as Anchorage's CPI values may change during the post-treatment for unique factors other than APFD, so too may those of the metropolitan areas in the control group. Taking a weighted average of many metropolitan areas would prevent one city's eccentric results from severely biasing the analysis. However, the fact that Portland dominates the weighted average leaves the synthetic control group's CPI values susceptible to eccentricities of Portland's CPI values in the post-treatment period.

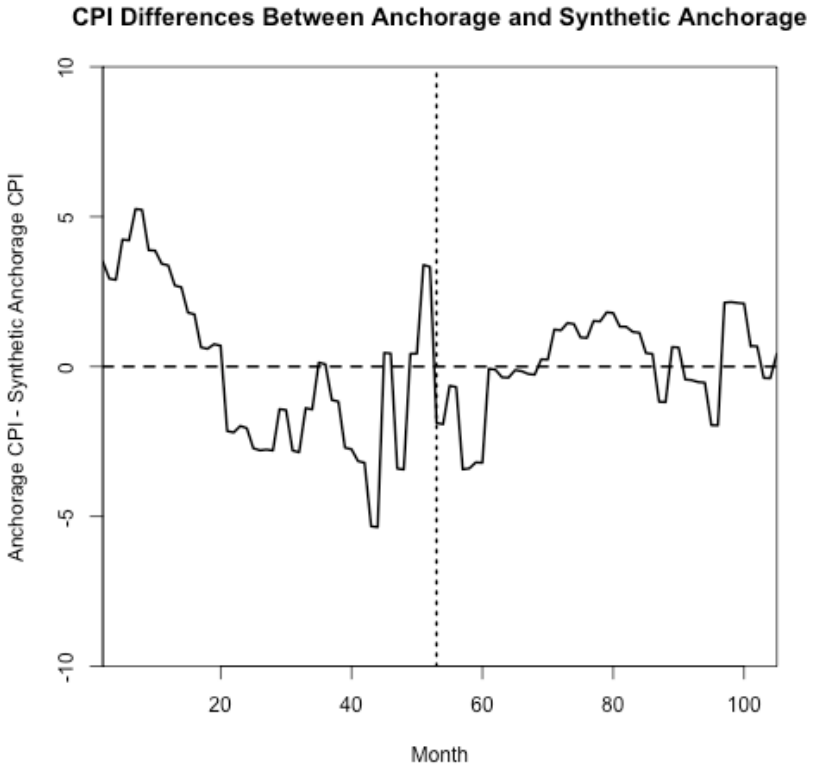
Figure C: Synthetic Control CPI Estimates

Treatment Period	Anchorage	Synthetic Control	Average of Control Group
Pre-Period	84.012	84.000	79.793
Post-Period	103.489	103.437	104.023

As expected, the synthetic control is much closer to Anchorage's average CPI in the pre-treatment period than a simple, non-weighted average of the metro areas in the control group. The synthetic control is also closer to Anchorage's CPI values than the average of the control group in the post-treatment group. Most importantly, Anchorage and the synthetic control group's average CPI's in the post-treatment period are nearly identical. Therefore, the APFD seemed to produce no effect on Anchorage's CPI.

Figure D: Synthetic Control Plots





Note that the vertical line displays when the APFD was implemented, marking the beginning of the post-treatment period. Anchorage and the synthetic control differ by magnitudes of up to 5 in both directions during the pre-treatment period. These differences suggest limitations on how well the synthetic control matches Anchorage's CPI values and trends during the pre-treatment period.

However, Anchorage and the synthetic control are more closely during the post-intervention period. Their greatest difference is about 2.5 and the one with the greater CPI value differs throughout the post-treatment period. Therefore, the results suggest no meaningful impact from the APFD on the CPI in Anchorage.

4.3 Robustness Checks

4.3.1: Robustness Check on Including Predictor Variables in the Model

In order to address the lack of predictor variables in my synthetic control, I run another synthetic control with several predictor variables. These include the metropolitan area's population density in 1980, as well as the state's per capita personal income in 1981 and unemployment in January 1981. Again, these latter two economic indicators are at the state level due to data limitations, which is a cause for concern.

Figure E: Synthetic Control Weights in Model with Predictors

Metropolitan Area	Weight
Los Angeles	0.000
St. Louis	0.000
Denver	0.000
San Diego	0.126
Cincinnati	0.000
Honolulu	0.000
Kansas City	0.333
Milwaukee	0.000
Minneapolis	0.000
Portland	0.541
Pittsburgh	0.000

Predictor Variable	Weight
Income per Capita (State Level)	0.056
Unemployment Rate (State Level)	0.233
Population Density	0.711

Once again, Portland has a very large, albeit smaller weighting. Kansas City and San Diego have much larger weightings under this specification, while the rest of the metropolitan areas have no weighting. In terms of predictors, population density, the only variable at the level of the metropolitan area, is weighed most heavily.

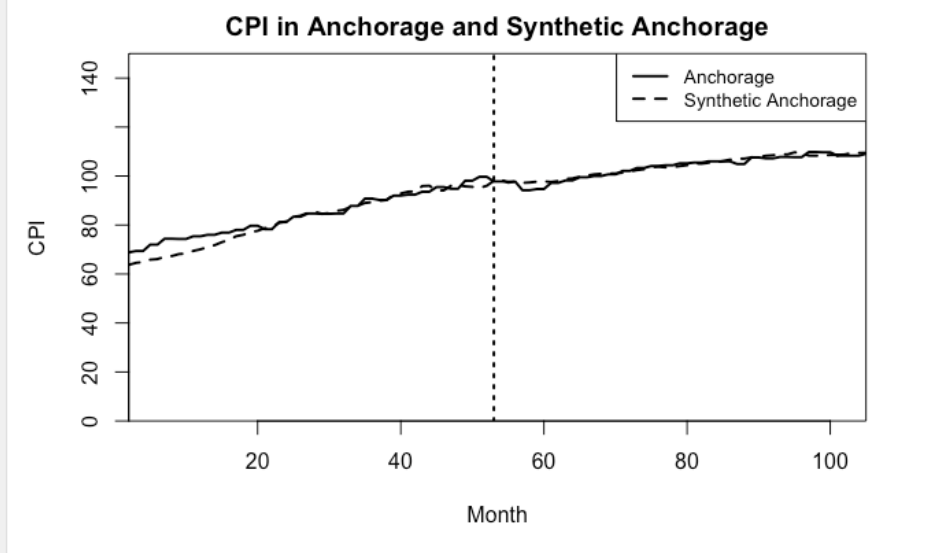
Figure F: Synthetic Control Covariate Balance and CPI Estimates in Model with Predictors

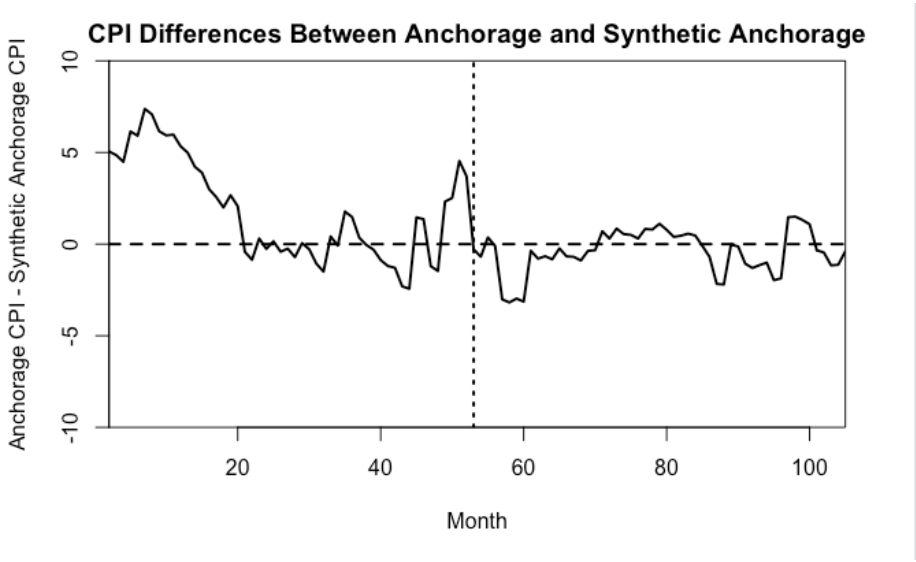
Variable	Anchorage	Synthetic Control	Average of Control Group
Income per Capita	17091	11050.85	11579.82
Population Density	1732	2735.524	4336.191
Unemployment Rate	9.3%	8.29%	7.50%
CPI in Pre-Period	84.012	82.18599	79.793
CPI in Post-Period	103.489	103.905	104.023

The covariates were not particularly well-balanced, which casts doubt on this approach. Moreover, the synthetic control's average CPI in the pre-period is not as close to Anchorage's average CPI as the synthetic control without predictors. Nevertheless, it is much closer than a simple, non-weighted average of the control states.

While the average CPI difference between Anchorage and Synthetic Anchorage in the post-treatment is larger in this model, that difference is still minimal. Therefore, this model the further suggests that the APFD has no effect on prices. Below, the graphs further confirm these results.

Figure G: Synthetic Control Plots in Model with Predictors



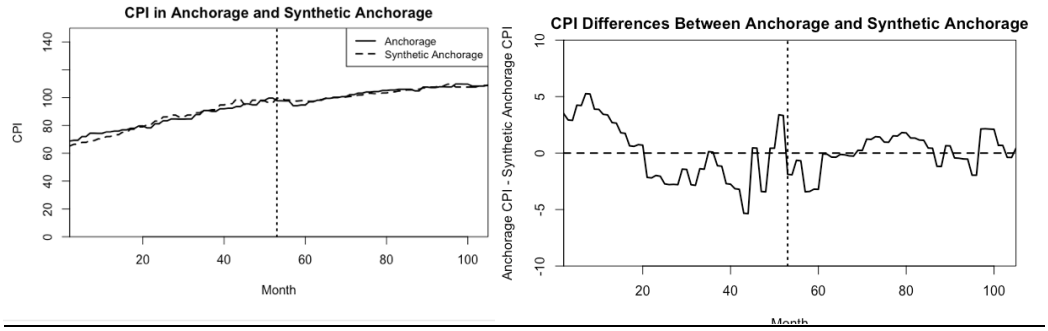


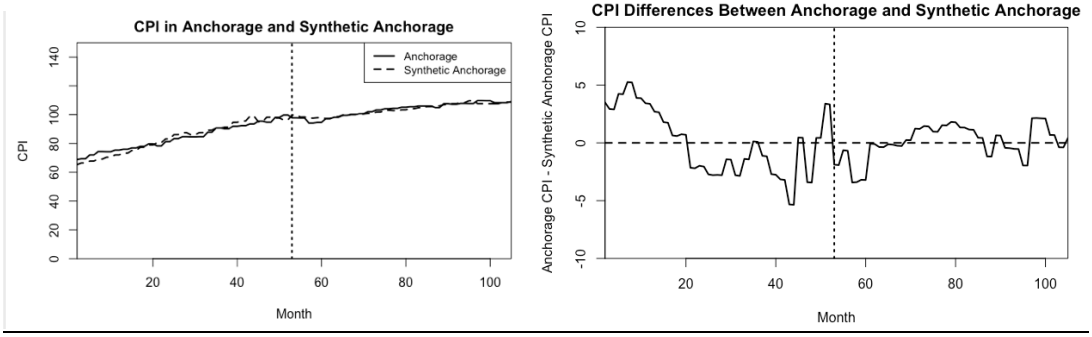
As these graphs confirm, the results are not sensitive to whether predictors are included in the model. Under both cases, the policy has no meaningful effect on Anchorage's CPI values.

4.3.2: Robustness Check on Optimization Algorithm

As the synthetic control can use different algorithms to minimize the pre-treatment difference in the outcome variable between the treatment and synthetic control groups, I use several other minimization algorithms to ensure the robustness of the results. The 'Synth' R package that performs the synthetic control includes eight different options. If fed multiple algorithms, it chooses the one that performs the best. While the default specifications are are "Nelder-Mead', 'BFGS," I show the results when (1) providing all eight algorithms:"Nelder-Mead', 'BFGS', 'CG', 'L-BFGS-B', 'nlm', 'nlminb', 'spg', and 'ucminf," as well as (2) providing the six not listed in the default specification. As shown, the graphs are exactly the same, demonstrating that the results are not sensitive to the optimization algorithm.

Figure H: Synthetic Control Plots with Different Optimization Algorithms





6. Discussion/Policy Implications

My findings challenge a significant criticism from UBI detractors: that the policy would generate inflationary price effects. If such price effects were observed, the nominal value that UBI recipients receive would translate to a smaller true gain in purchasing power. Therefore, all of the aforementioned results from randomized control trials, in which macroeconomic effects are not at play, would likely be overstated. As a result, my results lend more external validity to the results of RCTs studying the effects of cash transfers.

At the same time, this work suggests that policymakers must expand their evidence base for UBI beyond randomized control trials. Universal basic incomes likely have far-

reaching effects on how and how much people work, how much they earn, and what and how much they consume that all impact each other, as well as all the other effects of the policy. Therefore, researchers must focus on the macroeconomic effects of UBI, such as labor supply, consumption, and wage effects. A more detailed analysis of how prices of different goods and services were impacted, and for whom, would also be fruitful. If the policy is initially implemented in different localities or states, as it already has been in Stockton, California, policymakers can more accurately assess price effects, as well as these other macroeconomic impacts.[39] In studying new implementations of the UBI, researchers will be less subjected to the historical data constraints that both Jones & Marinescu and I faced in studying the implementation of the APFD.[40]

7. Conclusion

I tried to empirically investigate the price effects of a universal basic income in order to determine how much the program truly increases recipients' purchasing power. In order to do so, I examined whether the Consumer Price Index uniquely changed in the Anchorage metropolitan area after the Alaska Permanent Fund Dividend (APFD) was implemented in July 1982, as compared to 11 other metropolitan areas in the United States.

Based on the plots, the CPI appeared to increase at a similar rate in the 53 months before and after the intervention period began, with a short, downward blip around the

[39] Holder, S. (2019, October 11). An Early Peek at What Happens When a City Gives Its Residents Money. Retrieved from https://www.citylab.com/equity/2019/10/stockton-universal-basic-income-pilot-economic-empowerment/599152/

[40]

time of intervention in several metro areas, including Anchorage. The synthetic control of the other metropolitan regions showed no meaningful difference in its CPI values from Anchorage in the post-treatment period. As a result, the study suggests that the APFD did not meaningfully affect prices after its implementation.

Even though my paper did not find a significant effect, investigating the macroeconomic effects of universal basic income is an understudied area that is critical to understanding how the policy would impact the lives of its recipients. Finally, we must further investigate how social safety net programs impact prices. A particularly interesting extension of my work would be to analyze if price effects differed under other income transfers, such as a Negative Income Tax or a child allowance. As the debate over UBI rages on, we must cast a wide net in considering how the policy would impact the lives of those who receive it.

References

2012 Anchorage Indicators. Retrieved 9 May 2020, from https://www.muni.org/departments/ocpd/planning/publications/documents/full%20indicators%20report.pdf

About the Alaska Permanent Fund Corporation (APFC). (n.d.). Retrieved from https://web.archive.org/web/20120717052355/http://www.apfc.org/home/Content/home/index.cfm

Archetto, G. (2018, July 16). Implementation of a 'universal basic income' program would be a disaster. Retrieved from https://thehill.com/opinion/finance/397192-implementation-of-a-universal-basic-income-program-would-be-a-disaster

Blank, R. M. (2007). Improving the safety net for single mothers who face serious barriers to work. *The Future of Children*, 183-197.

Bloom, D., Miller, C., & Azurdia, G. (2007). Results from the Personal Roads to Individual Development and Employment (PRIDE) Program in New York City. *Administration for Children and Families*

Bregman, R. (n.d.). Nixon's Basic Income Plan. *Jacobin Magazine*. Retrieved from https://www.jacobinmag.com/2016/05/richard-nixon-ubi-basic-income-welfare/

Cash Transfers: Changing the Debate on Giving Cash to the Poor. (2018, November 15). Retrieved from https://www.poverty-action.org/impact/cash-transfers-changing-debate-giving-cash-poor

Catherine Clifford, C. (2017, December 28). What billionaires and business titans say about cash handouts in 2017 (Hint: lots!). CNBC Make It. Retrieved from https://www.cnbc.com/2017/12/27/what-billionaires-say-about-universal-basic-income-in-2017.html

Continetti, M. (2020). A UBI Would Undermine Work. Retrieved 10 May 2020, from https://www.nationalreview.com/magazine/2019/08/12/a-ubi-would-undermine-work/

Cunha, J. M. (2014). Testing paternalism: Cash versus in-kind transfers. *American Economic Journal: Applied Economics*, *6*(2), 195-230

Dorfman, J. (2016, October 19). Child Care Won't Get Cheaper If The Government Pays. Retrieved from https://www.forbes.com/sites/jeffreydorfman/2016/10/19/child-care-wont-get-cheaper-if-the-government-pays/#79b409151139

Frank, R. H. (2006, November 23). The Other Milton Friedman: A Conservative With a Social Welfare Program. *New York Times*. Retrieved from https://www.nytimes.com/2006/11/23/business/23scene.html

Gaskell, A. (2018, March 5). Does A Universal Basic Income Discourage Work? Retrieved from https://www.forbes.com/sites/adigaskell/2018/03/05/does-a-universal-basic-income-discourage-work/#6b84a477541b

Gibbons, Robert D., and David E. Coleman. *Statistical Methods for Detection and Quantification of Environmental Contamination*. John Wiley & Sons, 2001, p. 205-206

Hagen-Zanker, J., & Himmelstine, C. L. (2014). What is the state of evidence on the impacts of cash transfers on poverty, as compared to remittances?. *London: Overseas Development Institute*

Holder, S. (2019, October 11). An Early Peek at What Happens When a City Gives Its Residents Money. Retrieved from https://www.citylab.com/equity/2019/10/stockton-universal-basic-income-pilot-economic-empowerment/599152/

Jones, D., & Marinescu, I. (2018). The labor market impacts of universal and permanent cash transfers: Evidence from the Alaska permanent fund (No. w24312). National Bureau of Economic Research, p. 14-16

Jones, D., & Marinescu, I. (2018). *The labor market impacts of universal and permanent cash transfers: Evidence from the Alaska permanent fund* (No. w24312). National Bureau of Economic Research

Kabeer, N., & Waddington, H. (2015). Economic impacts of conditional cash transfer programmes: a systematic review and meta-analysis. *Journal of Development Effectiveness*, *7*(3), 290-303

Kangas, O., Jauhiainen, S., Simanainen, M., & Ylikännö, M. (2019). The basic income experiment 2017–2018 in Finland. Preliminary results

King, M.L. *Where Do We Go From Here: Chaos or Community?* (New York: Harper & Row, 1967)

Lee Falsey, J. (2016). Is Alaska headed toward another 1980s-style recession?. Retrieved 9 May 2020, from https://www.adn.com/businesseconomy/2016/05/31/is-alaska-headed-toward-another-1980s-style-recession/

Lee, J. C., Daniel, A., Lieberman, R., Migliozzi, B., & Burns, A. (2019, June 14). Which Democrats Are Leading the 2020 Presidential Race? New York Times. Retrieved from https://www.nytimes.com/interactive/2020/us/elections/democratic-polls.html

Malani, A., & Reif, , J. (n.d.). Interpreting pre-trends as anticipation: Impact on estimated treatment effects from tort reform. Retrieved from https://faculty.smu.edu/millimet/classes/eco7377/papers/malani reif 2015.pdf

Lucca, D. O., Nadauld, T., & Shen, K. (2015, July). Credit Supply and the Rise in College Tuition: Evidence ... Retrieved from https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr733.pdf)
Marangos, J. (n.d.). Two arguments for Basic Income: Thomas Paine (1737-1809) and Thomas Spence (1750-1814). Retrieved from https://www.academia.edu/2698139/Two_arguments_for_Basic_Income_Thomas_Paine_1737-1809_and_Thomas_Spence_1750-1814_.

Marangos, J. (n.d.). Two arguments for Basic Income: Thomas Paine (1737-1809) and Thomas Spence (1750-1814). Retrieved from https://www.academia.edu/2698139/Two_arguments_for_Basic_Income_Thomas_Paine_1737-1809_and_Thomas_Spence_1750-1814_

Martin, J. (2020, January 24). #YangSurge trends after latest Emerson poll ranks Andrew Yang 4th nationally among 2020 candidates. Retrieved from http://www.newsweek.com/yangsurge-trends-after-latest-emerson-poll-ranks-andrew-yang-4th-nationally-among-2020-candidates-1483803

Matthews, D. (2019, December 16). Mitt Romney and Michael Bennet just unveiled a basic income plan for kids. Retrieved from https://www.vox.com/future-perfect/2019/12/16/21024222/mitt-romney-michael-bennet-basic-income-kids-child-allowance

McFarland, K., & McFarland, K. (2017, October 19). Overview of Current Basic Income Related Experiments (October 2017). Retrieved from http://basicincome.org/news/2017/10/overview-of-current-basic-income-related-experiments-october-2017

Means-Tested Programs: Determining Financial Eligibility Is Cumbersome and Can Be Simplified. (2001, November). Government Accountability Office

Meyer , B. (n.d.). Measuring American Poverty: Statement of Bruce D. Meyer. Retrieved from https://harris.uchicago.edu/files/measuringamericanpoverty.pdf

Moynihan, Daniel P. The Politics of a Guaranteed Income; the Nixon Administration and the Family Assistance Plan. New York, Random House, 1973. pp. 61

Pega, F., Liu, S. Y., Walter, S., Pabayo, R., Saith, R., & Lhachimi, S. K. (2017). Unconditional cash transfers for reducing poverty and vulnerabilities: effect on use of health services and health outcomes in low-and middle-income countries. *Cochrane Database of Systematic Reviews*, (11)

Permanent Fund Dividend. Alaska Oil and Gas Association. (2019, November 11). Retrieved from https://www.aoga.org/facts-and-figures/permanent-fund-dividend

Release Tables: Personal Consumption Expenditures by State, Annual. (n.d.). Retrieved from https://fred.stlouisfed.org/release/tables?rid=391&eid=216084

Riccio, J. A., Dechausay, N., Greenberg, D. M., Miller, C., Rucks, Z., & Verma, N. (2010). Toward reduced poverty across generations: Early findings from New York City's conditional cash transfer program. *MDRC, March*.

Sablik, T. Recession of 1981–82 | Federal Reserve History. Retrieved 9 May 2020, from https://www.federalreservehistory.org/essays/recession_of_1981_82

Samuel, S. (2019, October 8). A California city gave some residents $500 a month, no strings attached. Here's how they spent it. Vox. Retrieved from

https://www.vox.com/future-perfect/2019/10/8/20902839/universal-basic-income-stockton-trial

Sheahen, A. (2016). *Basic income guarantee: your right to economic security*. Place of publication not identified: Palgrave Macmillan

Skoufias, E., Unar, M., & González-Cossío, T. (2008). *The impacts of cash and in-kind transfers on consumption and labor supply: Experimental evidence from rural Mexico*. The World Bank.

Summary of Dividend Applications & Payments. (2020). Retrieved 9 May 2020, from https://pfd.alaska.gov/Division-Info/Summary-of-Applications-and-Payments

Sundlee, R. (2019, September 5). Alaska's universal basic income problem. Vox. Retrieved from https://www.vox.com/future-perfect/2019/9/5/20849020/alaska-permanent-fund-universal-basic-income.

Villa, L. (2019, November 5). Andrew Yang Has the 'Yang Gang' to Thank for His Primary Power. Retrieved from https://time.com/5718279/andrew-yang-primary-support/

Vinik, D. (20 November 2013). Paul Ryan Should Get This Plan to Give Everyone Free Money. *Business Insider.*

Wiederspan, J., Rhodes, E., & Shaefer, H. L. (2015). Expanding the discourse on antipoverty policy: Reconsidering a negative income tax. *Journal of Poverty*, *19*(2), 218-238.

Yang, Andrew. The War on Normal People: The Truth About America's Disappearing Jobs and Why Universal Basic Income Is Our Future