Universal Cash Transfers and Income Inequality: Evidence from the Alaska Permanent Fund Dividend

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Abstract

As automation and artificial intelligence reshape labor markets, unconditional cash transfers have gained attention as a potential policy response to rising income inequality. In this paper, I investigate the effects of universal cash transfers on income inequality, using the introduction of the Alaska Permanent Fund Dividend in 1982 as a natural experiment. I focus on total household income inequality using data from the Current Population Survey. Using the synthetic control method, I find that Alaskan income inequality fell after the introduction of the dividend, a reduction of 0.02 in the Gini Index that is not statistically significant. I show that this decrease is consistent with the mechanical effect the policy should produce on its own, which suggests that behavioral responses have a negligible effect on income inequality.

JEL D31, D63, J18

Keywords: Alaska Permanent Fund, Income Inequality, Universal Basic Income

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1 Introduction

Income inequality in the United States has risen sharply in recent decades: Heathcote, Perri, Violante, and Zhang (2023) document that the ratio of average household earnings in the top decile to those in the middle decile grew from 3 to 4.5. Recent advances in artificial intelligence threaten to accelerate this trend: Brynjolfsson, Chandar, and Chen (2025) document declining employment among early-career workers in occupations most exposed to AI, raising concerns that the technology's gains and losses will be distributed unevenly. Some point to Universal Basic Income as a possible answer to these issues.

Universal Basic Income is a type of universal cash transfer in which the state pays every individual a minimum level of income, typically set to cover basic needs. The effects of these transfers on an economy's income inequality, however, are ambiguous. On one hand, a transfer of the same size to the entire population should mechanically lower measured inequality. On the other hand, individuals may adjust their behavior along several dimensions once they start receiving these transfers. For example, income effects from the transfers can lower household labor supply, and if this reduction is concentrated among lower-income households, inequality may rise. Moreover, savings decisions can be different between different parts of the income distribution. Dynan, Skinner, and Zeldes (2004) find a strong and positive relationship between lifetime income and savings. With this, the top part of the distribution would, over the long run, enjoy significantly higher capital income, further increasing inequality. I investigate this tension using the Alaska Permanent Fund Dividend as a natural experiment.

The Alaska Permanent Fund Dividend program was implemented in 1980, funded by revenue from the state's oil exploration, which took off after the discovery of large reserves in 1968. The fund was created out of concern for future generations, who would not share in the same windfall since oil is a non-renewable resource. In 1982, the Alaska Permanent Fund Dividend (APFD) began distributing payments, with the first transfer equal to $1,000 per resident. On average, an Alaskan family receives $3,900 yearly, and the dividend reached an all-time high (in nominal terms) in 2022, when each resident received $3,284.

The Alaska Permanent Fund Dividend is a useful setting to discuss the effects

of universal cash transfers. It is one of the longest-standing universal cash transfers programs that have existed, permitting the long-run estimation of the effects of these transfers. Moreover, it differs from UBI interventions that perform randomized control trials, as these usually exist on a smaller scale and would have negligible general equilibrium effects.

This paper examines the impact of the APFD's universal cash transfers on income inequality. Holding behavior fixed, the direct effect of the transfers is to reduce income inequality. Alongside this mechanical effect, however, the transfers may change behavior in ways that raise income inequality instead. Two examples are heterogeneous savings decisions and behavioral responses in labor supply. Consistent with this possibility, Kozminski and Baek (2017) found that the introduction of the APFD increased income inequality, suggesting that the behavioral effects were strong enough to more than fully offset the expected mechanical reduction in income inequality. This tension between the mechanical and behavioral channels motivates this paper's two goals: (i) estimate the total effect of the APFD on income inequality, and (ii) decompose that total effect into the portion driven by the mechanical transfer and the portion driven by behavioral responses.

To answer these questions, I draw my primary data from the Current Population Survey (CPS) for the period 1976–2000. I chose this dataset because it meets two requirements: it identifies U.S. states clearly, and it provides income data for the pre-treatment period. With the household income information contained in the CPS, I compute inequality measures for all U.S. states. I use the Gini Index as my measure of inequality throughout the main body of the paper. My income definition comprises all forms of household revenue, including labor, capital, and business income.

First, I examine how Alaskan income inequality would mechanically respond to the introduction of the APFD transfers, assuming no behavioral response from the population to the additional income. To do this, I conduct a simulation exercise to examine the impact that the APFD would have had on inequality if all other income sources remained fixed at the levels they were during the pre-APFD period. By doing so, behavioral responses are held constant, and any variation in inequality comes from the natural shift in the income distribution. The results show that APFD

payments reduce the estimated Gini Index by approximately 0.02 on average. I call this the mechanical effect of the policy. To put this effect into perspective, the Gini Index for the U.S. was 0.367 in 1982, rising to 0.404 by 2000, the end point of my analysis. Therefore, my estimated mechanical effect is roughly half the size of the nationwide increase over the same period.

Then, to obtain the total effect of the APFD, I employ the synthetic control method. I gather data from all other U.S. states to construct a synthetic version of Alaska, and I also estimate a placebo distribution by assuming that other states were treated at the same time as Alaska. Overall, the estimated difference between Alaska and the synthetic is negative, meaning that the APFD decreased inequality in Alaska. The difference is small, however, averaging -0.02 throughout the period, and it stays roughly within the bounds of the placebo distribution. Moreover, the estimated inequality trajectory follows the mechanical effect closely, so I am unable to reject that the change in inequality is due only to the raw shift of the income distribution, as opposed to behavioral changes from the transfer. Although previous research finds some behavioral responses to the transfers (Jones; Marinescu, 2022), these seem to matter little for the overall effect. My estimated effects match the mechanical effect predicted from the payments, implying that behavioral effects are close to zero.

This paper contributes to the literature in two ways. First, it contributes to the literature on the effects of universal cash transfers, specifically studies that use the APFD as a case study (Chung; Ha; Kim, 2016; Kozminski; Baek, 2017; Jones; Marinescu, 2022; Berman; Reamey, 2016). Second, the policy analyzed in this paper is closely related to Universal Basic Income, which is often discussed in political debates and is the focus of a large body of economic research (Banerjee *et al.*, 2020; Hoynes; Rothstein, 2019; Gibson; Hearty; Craig, 2020; Wilson; McDaid, 2021).

Specifically, this paper lies at the intersection between Jones and Marinescu (2022) and Kozminski and Baek (2017). The research question of this paper is similar to the one investigated in Kozminski and Baek (2017); however, I make three main improvements. First, my empirical strategy, using the synthetic control method, produces plausibly causal estimates by comparing the trajectories of Alaska and the constructed synthetic based on other U.S. states. Second, my computed mechanical

effect provides some insight into the source of the changes the APFD caused in Alaskan income inequality. Third, I show evidence that the 1986 Tax Reform Act is a probable driver of the results reported by Kozminski and Baek (2017). I do this by showing that changes in the tax code due to the tax reform had an asymmetric effect on Alaska due to transfers from the APFD also contemplating children, who were now required to file their tax returns.

This paper is organized into seven sections, including this introduction. Section 2 presents the institutional framework of the APFD. Section 3 presents the data. Section 4 discusses the empirical strategy. Section 5 reports and discusses the results. Section 6 compares my findings to the previous literature. Section 7 concludes.

2 Institutional Framework

Shortly after Alaska became a U.S. state, large oil reserves were discovered in the North Slope region on state-owned land. The state later leased the land to private companies for exploration while retaining a royalty share of the proceeds. Initially, the state used this revenue to fund infrastructure and social programs, but politicians soon proposed creating the Alaska Permanent Fund, which would save a share of the oil revenue instead of routing it into public spending.

The fund started with an allocation of $734,000 and grew to $80 billion in managed assets by 2020. Its main objective is to generate income for current and future generations of Alaskans. Its resources come from state oil royalties and the returns on the fund's investments. In 1980, the Alaska Permanent Fund Dividend was created, with the first payments distributed in 1982.

To receive the dividend, Alaskans must apply before the annual distribution, which typically begins in October. The program requires applicants to have been residents of Alaska throughout the previous year. Few circumstances disqualify an applicant, the main one being a felony conviction or incarceration during the previous year. For most of the dividend's history, a steady 90% of applications were paid, with the share falling to around 85% after 2020.

Figure 1 shows the history of APFD payments in both nominal and real (2000) dollars. As noted above, the first payment totaled $1,000 in 1982, and the all-time

high occurred in 2022, when a large "energy relief payment" was added due to high energy prices. The dividend amount is calculated based on the number of eligible applicants and half of the statutory net income averaged over the previous five fiscal years.

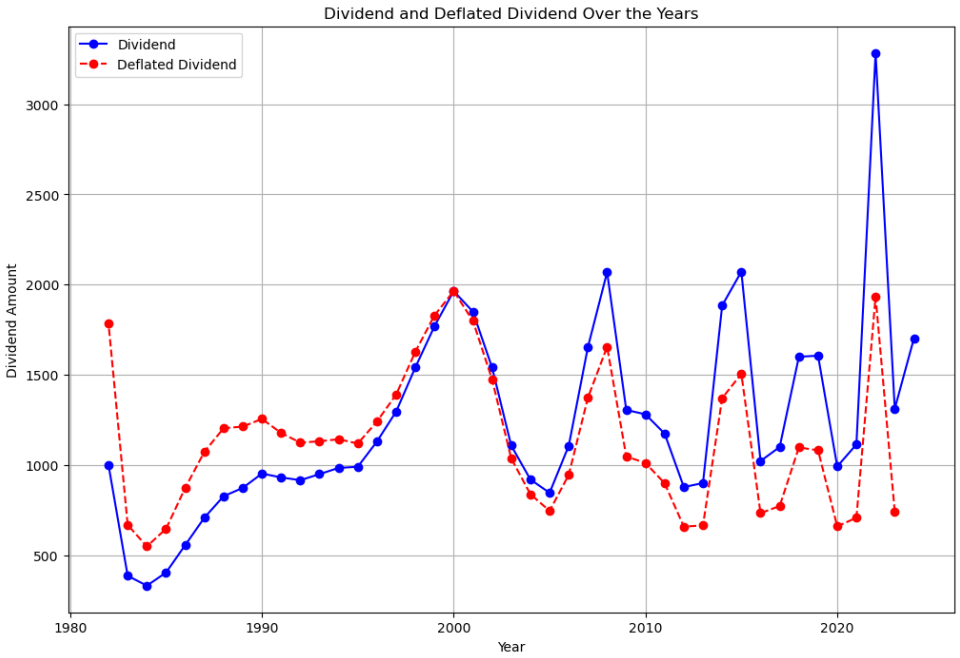


Figure 1: Dividend payments, in nominal and real (2000) dollars.

Notes: The solid line is the nominal APFD payment per resident in each year; the dashed line is the same payment deflated to year-2000 dollars using the CPI from U.S. Bureau of Labor Statistics (2025). The dividend amount is calculated based on the number of eligible applicants and half of the statutory net income averaged over the previous five fiscal years.

One important detail is that the APFD has no age eligibility requirement. This means that parents can apply on behalf of their children. Consider a household with two adults and one child: in a year like 2020, the family would receive around $3,000, though this figure could exceed $6,000 in other years. Therefore, even though the payments may look small in a UBI context, they can matter a great deal for a household's finances.

In a survey of around 1,000 Alaskan voters, Harstad (2017) finds that around 40% of respondents reported that the dividend made a great deal of difference in their lives. Moreover, 27% of Alaskans interviewed stated that they saved most of the dividend, while 24% stated that they spent most of it. A final statistic from the survey is that 85% agreed that many people spend the transfer on basic needs.

Two features of this setting matter for the analysis that follows. First, the divi-

dend is universal and equal across individuals, including children, so its mechanical effect on the income distribution is well-defined and computable. Second, the payments are large enough to matter for household budgets, particularly for larger and lower-income families.

3 Data

I collect my main data from the Current Population Survey (CPS), jointly administered by the U.S. Census Bureau and the Bureau of Labor Statistics. Specifically, I access the CPS data through the Integrated Public Use Microdata Series (IPUMS) (Flood *et al.*, 2024). I restrict my attention to the Annual Social and Economic Supplement (ASEC) waves of the CPS, which provide detailed measures of household income. From the CPS, I gather information on household size, family income, and other socio-economic characteristics. I deflate all monetary values using the CPI from U.S. Bureau of Labor Statistics (2025), expressing all values in year-2000 dollars. The time series starts in 1976 and ends in 2000, with the end year chosen arbitrarily.

Three main data requirements guided the choice of the CPS. The first was the presence of a variable that identified the state in which the individual resided. Second, the dataset had to contain both income information and household size. Third, the dataset had to include information for the years before the introduction of the APFD.

I focus on the total family income measure of the CPS. It sums all income sources across every household member, including but not limited to labor income, capital income, and transfers. This differs from the individual-level measures typically used in the literature, since it includes every household member. Heathcote, Perri, Violante, and Zhang (2023), for example, measures individual income across the United States. Measuring total family income matters in this setting because the APFD can be claimed by any resident of Alaska, including children. The aggregate effect of the transfer on family income is therefore of particular interest.

With the deflated family income data, I compute the Gini Index for each year and state of the United States. I weight the observations using the survey weights

provided in the ASEC. Figure 2 displays the estimated values for Alaska (in blue) and the other U.S. states (in shaded gray), together with the average Gini Index across all U.S. states.

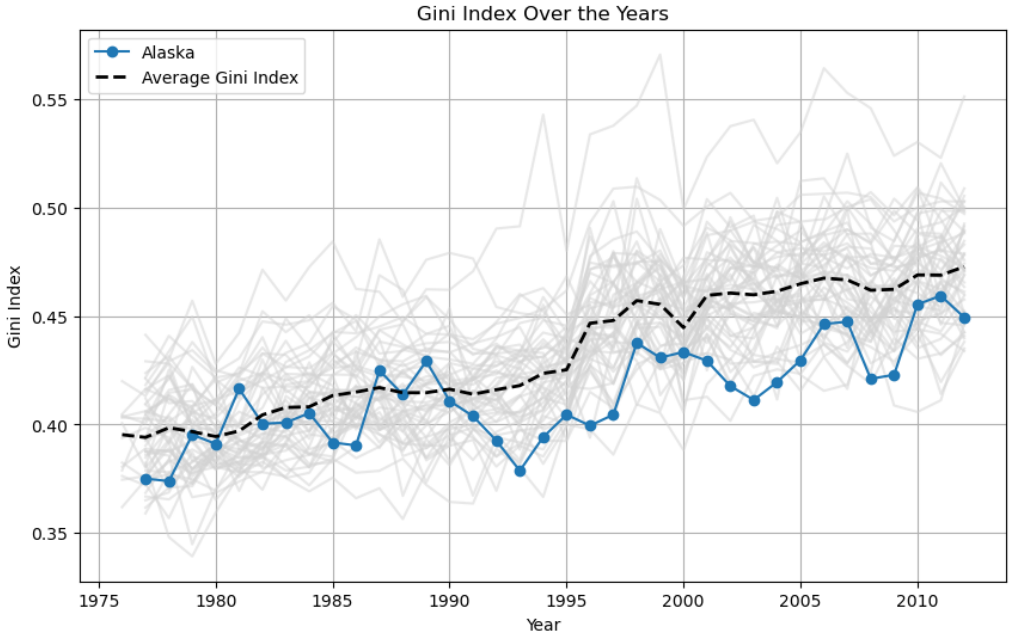


Figure 2: Gini Index Time series.

Notes: Each series is the Gini Index of total family income for one state and year. Alaska is in blue, the other U.S. states are in shaded gray, and the dashed line is the average Gini Index across all U.S. states. The total family income measure of the CPS sums all income sources across every household member, including but not limited to labor income, capital income and transfers. All monetary values are deflated to year-2000 dollars using the CPI from U.S. Bureau of Labor Statistics (2025), and observations are weighted using the survey weights provided in the ASEC.

Although the CPS satisfies the data requirements of this research, it is not without caveats. The first is that the pre-treatment period is short, while the synthetic control method performs best with rich pre-treatment data. This problem cannot be solved using the CPS alone, since there is no way to separately identify Alaska before 1976. Second, the CPS is not designed to be representative at the state level, which can bring into question the internal validity of the results shown in this research. I address this by validating my measures against those computed using data from the American Community Survey and the Census. Moreover, for the mechanical effect, sampling should be of lesser concern, since the distribution is fixed in that analysis.

4 Empirical Strategy

I focus on two parameters of interest: the total effect of the policy and the mechanical effect that shifting the income distribution generates. I denote them τ_t and μ_t, respectively. I also denote the behavioral effect of the policy as θ_t. This **behavioral effect** is the change in the income distribution that results from adjusting behavior after the introduction of the APFD. One example is a change in labor supply decisions. I decompose the effects of the program as follows:

$$\tau_t = \theta_t + \mu_t \tag{1}$$

In the following sections 4.1 and 4.2, I propose the empirical strategy to estimate μ_t and τ_t, while the behavioral effect θ_t can be backed out through the two estimated parameters.

4.1 Mechanical Effect

A useful first step in the analysis is computing the expected effect of the APFD transfers on the income distribution of Alaska. I ask what the mechanical effect of the transfers on inequality would be, excluding any behavioral responses from the population, such as changes in labor supply or savings.

The ideal setting to calculate the mechanical effect of the APFD would be having two time series: one in which Alaska does not receive the payments, and one in which Alaska receives the payments but households do not behaviorally respond, as if they receive the transfer and burn it without drawing utility from it.

Therefore, I propose the following method. Let Y_{it}^{1981} be the household income of family i in 1981, which is repeated for every t, and reflects the income of Alaskan families right before the introduction of the APFD. I fix the income distribution in 1981 to create a benchmark that I can use to compute changes in an inequality measure by simply adding or subtracting from the household income of the stationary distribution.

Now, let h_i^{1981} be the household size for household i in 1981. Finally, let D_t be the APFD payment amount in time t. Then, the hypothetical family income Y_{it}^{Mech} is defined as:

$$Y_{it}^{Mech} = Y_{it}^{1981} + h_i^{1981} \times D_t \times 1\{t \geq 1982\} \tag{2}$$

Computing the Gini on the distribution of Y_{it}^{Mech} gives me a time series of inequality in Alaska, in which I hold constant the underlying income distribution (wages, business income, capital income) and the household size, while accounting for the addition of the transfers starting in 1982. Let G_t^{1981} be the Gini Index based on the Y_{it}^{1981} and G_t^{Mech} be the Gini Index based on the Y_{it}^{Mech} distribution. I call the **Mechanical Effect** of the APFD the following difference:

$$\mu_t = G_t^{1981} - G_t^{Mech} \tag{3}$$

Two elements matter for interpreting μ_t. First, it completely relies on the assumption of a constant underlying income distribution and household size. With time, these two variables naturally change with the trends in the economy. Specifically, in the case of the household size, one clear confounder is migration into and out of Alaska. Second, the estimated effect can also be sensitive to the choice of which year to fix before the introduction of the APFD. Nevertheless, especially for the first few years after the introduction of the APFD, I interpret μ_t as the change in inequality in Alaska that comes only from the natural shift in the income distribution due to the introduction of the transfers.

4.2 Total Effect

The analysis of the effects of the APFD will follow the steps outlined in Abadie, Diamond, and Hainmueller (2010). The target variables will be the measures of income inequality (percentile ratios, Gini Index). As candidates for composing the synthetic control, the other states in the U.S. will be used, with the possibility of restricting this candidate group to states that have similar characteristics to Alaska in a further analysis.

To illustrate the process, first consider the matrix $\boldsymbol{X_0}$, $K \times 1$ that includes the targeted K periods of pre-treatment (with the treatment being the introduction of the APFD), characteristics of the Alaskan economy. Moreover, define $\boldsymbol{X_1}$, $K \times C$, where C is the number of candidates to integrate the synthetic control, composed of the same K periods of pre-treatment characteristics as in X_0, but for the C

candidates. Lastly, I define $\mathbf{V}$ as the diagonal matrix that gives weight, or the importance, to each of the pre-treatment characteristics. Then, the synthetic control model will be the solution to the following optimization problem:

$$\min_{W} \quad (X_0 - X_1 W)' V (X_0 - X_1 W) \tag{4}$$

$$s.t \quad W = \{(w_2, ..., w_C)' : \sum_{i=2}^{C} w_i = 1, w_i \geq 0 \quad \forall i \in (2, ..., C)\} \tag{5}$$

The result of this optimization problem will be the optimal weight matrix $\mathbf{W^*}$, which then can be used to construct the synthetic control by using the weights to produce a weighted average of the values of the characteristics in the candidate group. Let w_i be the state-specific weights assigned to state i, coming from matrix $\mathbf{W^*}$, and G_i the inequality measure of state i. The synthetic control estimate of the counterfactual Alaska is built by the following computation:

$$\hat{G}_i^{Synth} = \sum_{i=2}^{C} w_i \times G_i \tag{6}$$

I then compare the synthetic to the actual measures of inequality observed in Alaska after the APFD was implemented. Specifically, the total treatment effect can be computed in the following way:

$$\hat{\tau}_t = G_t - \hat{G}_t^{Synth} \tag{7}$$

The main assumption for $\hat{\tau}_t$ to be a correct estimate of the true total treatment effect is that U.S. states follow the factor model:

$$G_{it}(0) = \delta_t + \lambda_t \eta_i + \epsilon_{it} \tag{8}$$

Where $G_{it}(0)$ is the inequality measure of state i in time t, in the absence of the treatment (following potential outcomes notation). Moreover, δ_t are time-fixed factors, η_i is a vector of state-specific characteristics, λ_t are time-flexible factors, and ϵ_{it} is random noise. This assumption produces two main requirements. First, there cannot be confounding interventions in the treated unit, as it would lead my model to over- or underestimate the true total effect of the APFD due to the

extra complexity coming from the other intervention. Second, there cannot be large structural changes in the model's units. One natural example of this follows. Imagine that my SCM chose the state of Texas as a good candidate to compose my synthetic, and a few years after 1982, Texas hypothetically enacted a law that shifted the state's inequality downward. This would cause my synthetic control estimate of the total effect to have a negative bias component.

Even though the weights are not in control of the researcher, the characteristics that are components in the $\mathbf{X}$ matrices matter for the result, as shown by Ferman, Pinto, and Possebom (2020). I follow the author's recommendation, matching the synthetic control using all periods of the pre-treatment inequality measures. Moreover, I do not include other covariates in the matching targets, following Kaul *et al.* (2015).

5 Results

In this section, I present the results of my analysis, using the Gini Index as a measure of income inequality. All figures shown have a vertical dashed line in 1982, indicating the start of the APFD transfers.

5.1 Mechanical Effect

Figure 3 shows the Gini Index computation for the two series described in Section 4.1. The black crossed line shows the Gini Index calculated for the static distribution of Y_{it}^{1981}. The red dotted line shows the Gini Index calculated for the hypothetical income distribution of Y_{it}^{Mech}.

Figure 3 shows that, given a constant income distribution and household size, universal cash transfers mechanically lower income inequality in an economy. This makes intuitive sense: transferring income to the entire population shrinks the share of income concentrated among the richest individuals.

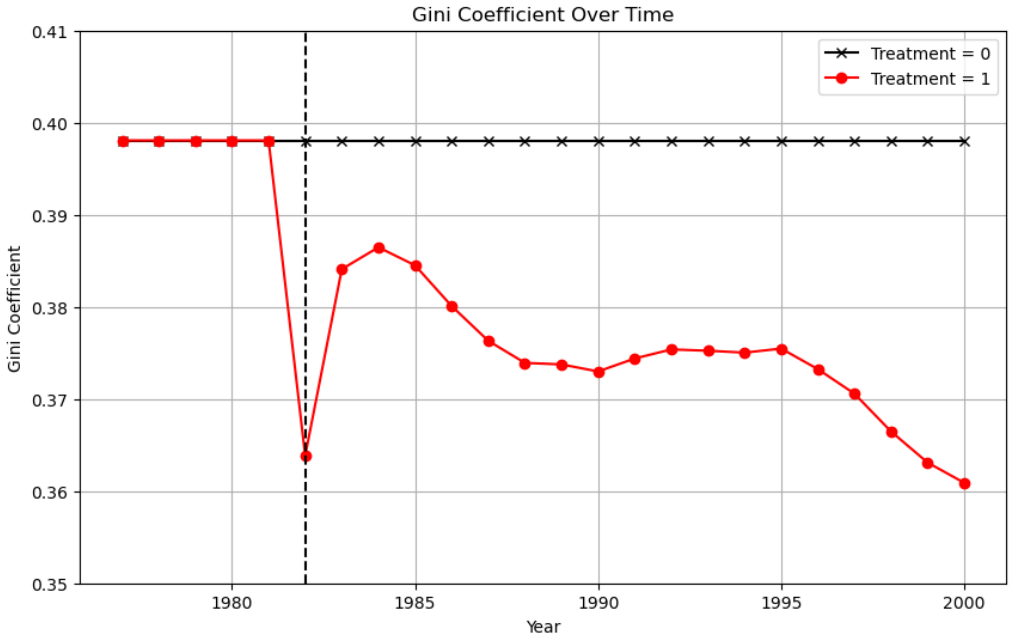


Figure 3: Mechanical effect.

Notes: The figure shows the Gini Index computed for the two series described in Section 4.1, excluding any behavioral response from the population. The black crossed line holds the Alaskan household income distribution fixed at its 1981 values for every year. The red dotted line uses the same fixed distribution but adds the APFD payment in each year from 1982 onward, scaled by 1981 household size. The vertical dashed line marks 1982, the start of the APFD transfers. The gap between the two series is the mechanical effect of the APFD. The sharp decrease in the first year of the treatment reflects the large magnitude of the first transfer of the program ($1,000 in 1981 dollars). The largest gap occurs in 2000, at approximately 0.04, and the average gap over the entire analysis period is close to a decrease of 0.02.

There is a sharp decrease in the first year of the treatment, reflecting the large magnitude of the first transfer of the program at the time ($1,000 in 1981 dollars). The effect diminishes in the following years, before assuming a downward trend that continues until the end of the time series. Taking the difference between the two series, I find the largest gap in the year 2000, with a value of approximately 0.04. Overall, the average gap over the entire analysis period is close to a decrease of 0.02 in the Alaskan Gini Index due to the mechanical effect of the APFD.

5.2 Total Effect

Figure 4 shows the actual trajectory for income inequality in Alaska (in blue) and the estimated synthetic counterfactual trajectory (in green). The synthetic represents the state of Alaska in the absence of the introduction of the APFD. Although the pre-treatment match is not perfect, the synthetic closely follows the trend of the

Alaskan inequality up to 1984, when it starts to diverge.

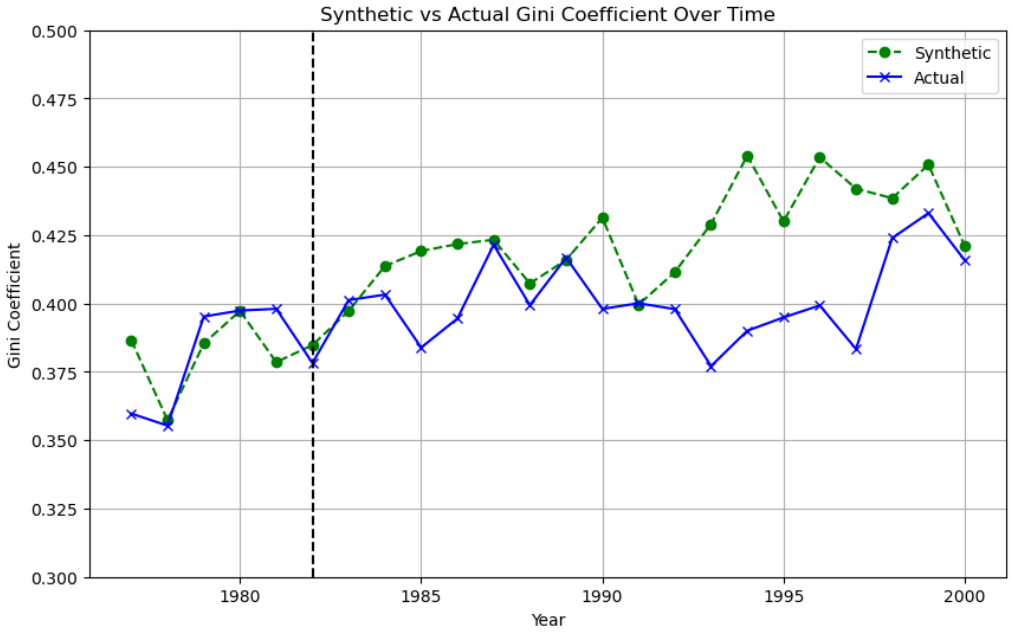


Figure 4: Alaska vs Synthetic.

Notes: The blue line is the actual trajectory for income inequality in Alaska, measured by the Gini Index of total family income. The green line is the estimated synthetic counterfactual trajectory, a weighted average of the inequality measures of the other U.S. states, with the weights chosen to match Alaska over the pre-treatment period as described in Section 4.2. The synthetic represents the state of Alaska in the absence of the introduction of the APFD. Following Ferman, Pinto and Possebom (2020), the matching uses all periods of the pre-treatment inequality measures; following Kaul et al. (2015), no other covariates are included in the matching targets. The vertical dashed line marks 1982.

For clarity, Figure 5 shows the difference between actual and synthetic, represented by the solid black line in the graph. The difference is no larger than 0.04 for every year until 1993, when it grows and remains relatively constant until 1998, when it approaches zero again. Over the entire period, the gap averages out to a decrease of 0.02 in the Gini Index for Alaska.

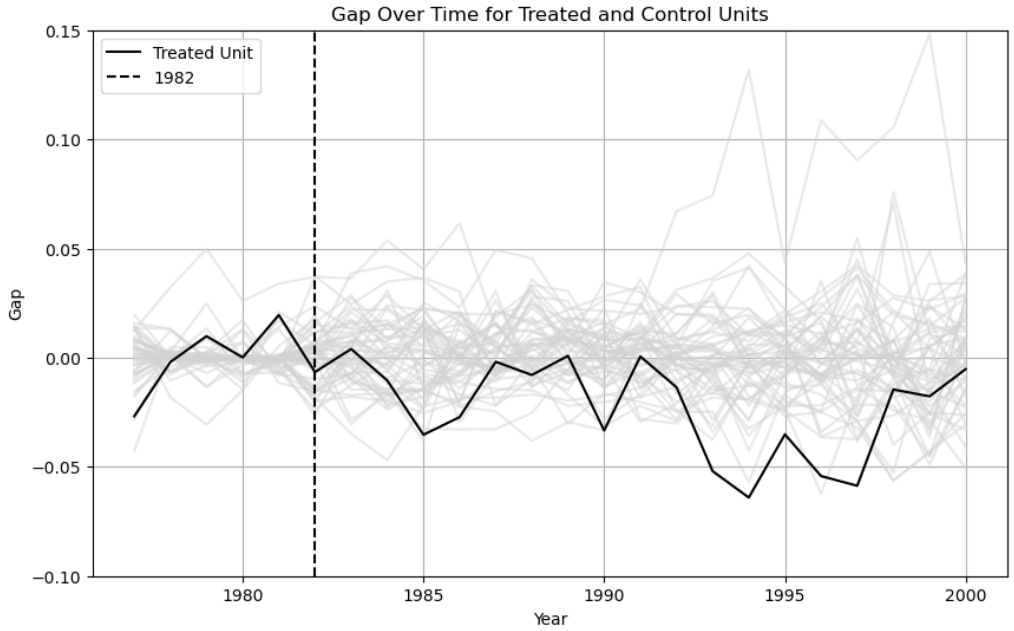


Figure 5: Gaps between actual and synthetic.

Notes: The solid black line is the difference between actual and synthetic Alaska, the estimated total effect of the APFD. Following Abadie, Diamond and Hainmueller (2010), the shaded gray lines show the placebo distribution of the treatment, estimated by assuming that other states in the sample were also treated in 1982 and repeating the same methodology used for Alaska. Since the states were not treated, the estimated placebo effects are expected to be close to zero. The vertical dashed line marks 1982. The estimates for Alaska are negative but not much different from the placebo distribution for most of the analysis period, with some larger deviations between 1993 and 1997. Using the traditional post-to-pre RMSPE ratio ranking, Alaska's p-value is 0.745, so the estimated effect is statistically indistinguishable from the placebo distribution.

Following Abadie, Diamond, and Hainmueller (2010), Figure 5 also shows a placebo distribution of the treatment represented by the shaded gray lines. They are estimated by assuming that other states in the sample were also treated in 1982 and repeating the same methodology used for Alaska. Since the states were not treated, I expect the estimated placebo effects to be close to zero. Moreover, comparing my SCM estimates to the distribution of placebo effects gives me a sense of the statistical significance of the treatment. In the APFD case, my estimates are negative but not much different from the placebo distribution for most of the analysis period, with some larger deviations between 1993 and 1997. Using the traditional post-to-pre RMSPE ratio ranking, Alaska's p-value is 0.745, confirming that the estimated effect is statistically indistinguishable from the placebo distribution. Overall, the total effect estimates point to a small, negative, and statistically insignificant effect of the APFD on Alaskan inequality.

5.3 Discussion

In Figure 6, I bring together the estimates of the mechanical effect, coming from the gap between the lines of Figure 3, and the estimates for the total effect, replicating Figure 5.

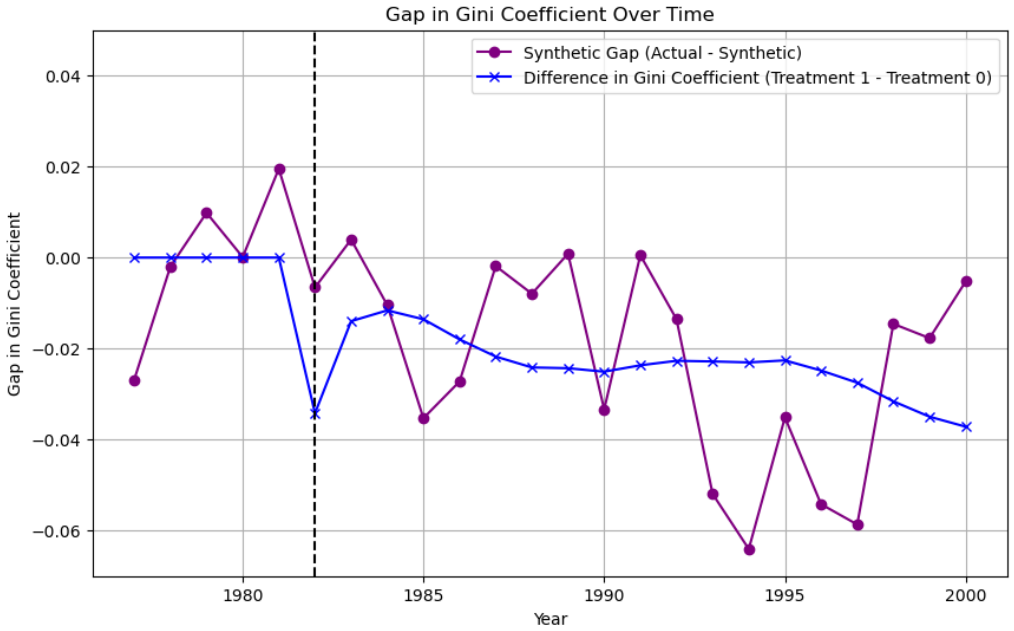


Figure 6: Mechanical vs Total effect.

Notes: The figure brings together the estimates of the mechanical effect, coming from the gap between the lines of Figure 3, and the estimates for the total effect, replicating Figure 5. The circled line is the gap between actual and synthetic Alaska. The crossed line is the mechanical effect, which is zero by construction before 1982. The vertical dashed line marks 1982. Keeping the decomposition of Section 4 in mind, the difference between the two series is the behavioral effect of the policy; averages over several time frames are reported in Table 1. The total effect roughly follows the trends and level of the estimated mechanical effect, with larger deviations coming from the 1993–1997 period.

Keeping Equation 1 in mind, I bring the mechanical and total effects together to assess whether behavioral effects exist and, if so, what their magnitude is. Figure 6 shows that the total effect roughly follows the trends and level of the estimated mechanical effect, with larger deviations coming from the 1993–1997 period. By my rationale in Equation 1, the difference between the two series would equate to the behavioral effects of the policy.

Table 1 summarizes the results of my analysis. To remind the reader, τ_t refers to the total effect of the program, μ_t is the mechanical effect of the transfers, and θ_t is the behavioral effect. I take the entire period average as my main result of the

analysis (row 4 of Table 1).

Table 1: Average total, mechanical and behavioral effects of the APFD.

Average effect over	Total	Mechanical	Behavioral
5 years	−0.0151	−0.0183	0.0032
10 years	−0.0117	−0.0210	0.0093
15 years	−0.0224	−0.0218	−0.0007
Entire period	−0.0228	−0.0241	0.0013

Notes: Entries are averages of the estimated effects of the APFD on the Gini Index of total family income in Alaska, in Gini Index points. Rows report averages over the first 5, 10 and 15 years after the introduction of the APFD and over the entire period of analysis. The total effect is $\hat{\tau}_t = G_t - \hat{G}_t^{\text{Synth}}$, the difference between the Gini Index observed in Alaska and the Gini Index of the synthetic, from Equation (7). The mechanical effect is $\mu_t = G_t^{1981} - G_t^{\text{Mech}}$, from Equation (3), computed by fixing the Alaskan income and household-size distributions at their 1981 values and adding the APFD payments scaled by household size from 1982 onward. The behavioral effect is backed out from the decomposition $\tau_t = \theta_t + \mu_t$ in Equation (1). Negative values indicate a decrease in inequality. Row 4 is the main result of the analysis. No standard errors are reported, since significance is assessed against the placebo distribution; using the traditional post-to-pre RMSPE ratio ranking, Alaska's p-value is 0.745.

The average magnitudes of the effects in Table 1 can paint a clearer picture of the role of each component in the total effect. The mechanical effect closely approximates the magnitude of the total effect, while the behavioral effect is consistently close to zero over most time frames. My conclusion is that I cannot reject the null hypothesis that the change in inequality is due only to the mechanical effects of the policy.

This does not mean that the Alaskan population did not respond at all to the transfers. Several factors could mask any behavioral effects that exist. I highlight three. First, sampling noise in the CPS data is due to the size of the Alaskan population. Second, changes in household composition are not accounted for in the mechanical-effect computation. Lastly, since savings and increasing capital income are possible mechanisms, it could be the case that the time it takes for the effect to grow enough to affect the estimates is longer than my period of analysis.

6 Comparison with Kozminski and Baek (2017)

As mentioned before, this is not the first paper to investigate the relationship between the APFD transfers and income inequality in Alaska. Kozminski and Baek (2017) used data collected by Frank (2009), which built an inequality panel for all states in the U.S. The raw data source for the inequality measures was collected from tax reports published yearly by the Internal Revenue Service. These reports consisted of the amount of tax returns filed for each income bracket and state, along with the total income declared in each of the brackets. Frank (2009) then interpolates between the bounds of each bracket to estimate several inequality measures, including the Gini Index, which I will focus on. I plot the time series of the Gini Index for Alaska in Figure 7 using the Frank dataset.

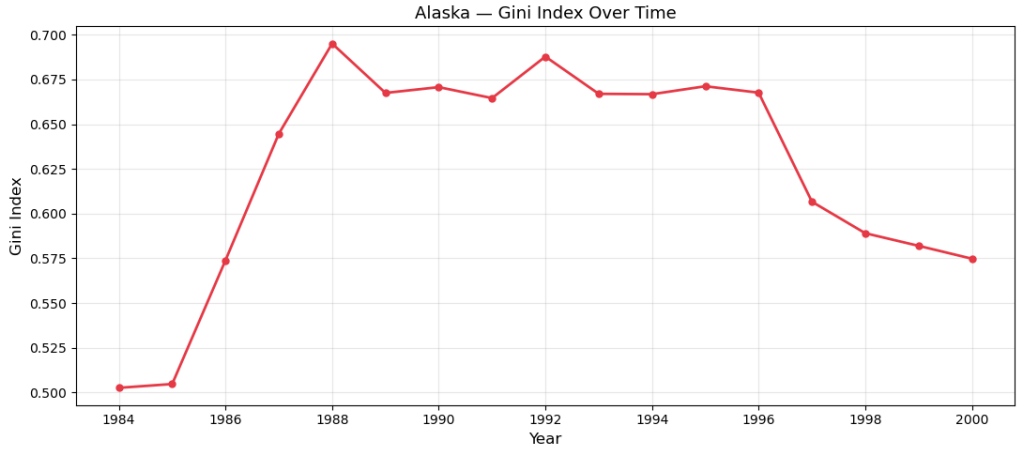


Figure 7: Gini Index over the years.

Notes: The series is the Gini Index for Alaska from the state-level inequality panel built by Frank (2009), the data used by Kozminski and Baek (2017). The raw data source is the tax reports published yearly by the Internal Revenue Service, which consist of the amount of tax returns filed for each income bracket and state along with the total income declared in each of the brackets; Frank (2009) interpolates between the bounds of each bracket to estimate several inequality measures, including the Gini Index.

Figure 7 captures the rising inequality in the U.S., which was also documented by Heathcote, Perri, and Violante (2010). However, one interesting feature that the reader can notice in the figure is that Alaska experienced a high increase in income inequality around the year 1986, an increase that was not followed by any other state in Frank's dataset. Therefore, it is important to understand why Alaska behaved so differently from the other states, especially when we consider that this behavior cannot be seen in the time series constructed using the CPS in this paper.

The fact that the data from Frank (2009) originates from tax reports gives me a clue about where to look first for a cause of the drastic change in Alaska. Coincidentally, in 1986 (the start of the increase in inequality), the Tax Reform Act of 1986 (TRA) was enacted under the Reagan administration.

One particularly important impact of the TRA was the change in the rule for when a dependent had to file a federal tax return. Specifically, it affected dependents who had to declare unearned income exceeding $500, which was to be adjusted by inflation starting in the following years. This became later popularly known as the "Kiddie Tax". This is especially important for any analyses that rely on tax data from the time, since the APFD transfers would count towards the dependent's unearned income[1], and the transfers were consistently above the $500 threshold, as Figure 1 shows. I hypothesize that this change is a main driver of the structural break observed in the Frank dataset.

To illustrate this point, Figure 8 shows the total number of tax filings for Alaska from 1984 to 2000 drawn from the Statistics of Income reports and bulletins (Internal Revenue Service, 1984–2000)[2]. The Statistics of Income reports contain the number of filings and total amount filed for each state, year, and tax bracket. Data from it was used by Frank (2009) to construct the inequality measures mentioned before. There is a clear structural break in the number of filings starting in 1987, the year the changes from the TRA went into effect. Figure 9 shows the same time series, but focusing only on the amount of tax filings in the lowest bracket available (the bracket thresholds changed over the course of the series). The level change from 1986 to 1987 in the total number of filings is virtually the same as the level change in the filings in the lowest bracket, which would be the one affected by the Kiddie Tax from the TRA.

[1] In 2008 the IRS published a reminder to Alaskans that discusses the taxability of the APFD and includes rules for children in Internal Revenue Service (2008).

[2] From 1982 to 1987 the data is omitted from the IRS reports. I use data that was graciously shared by Mark Frank, from Frank (2007), which was originally collected by Charles Hicks from internal IRS sources.

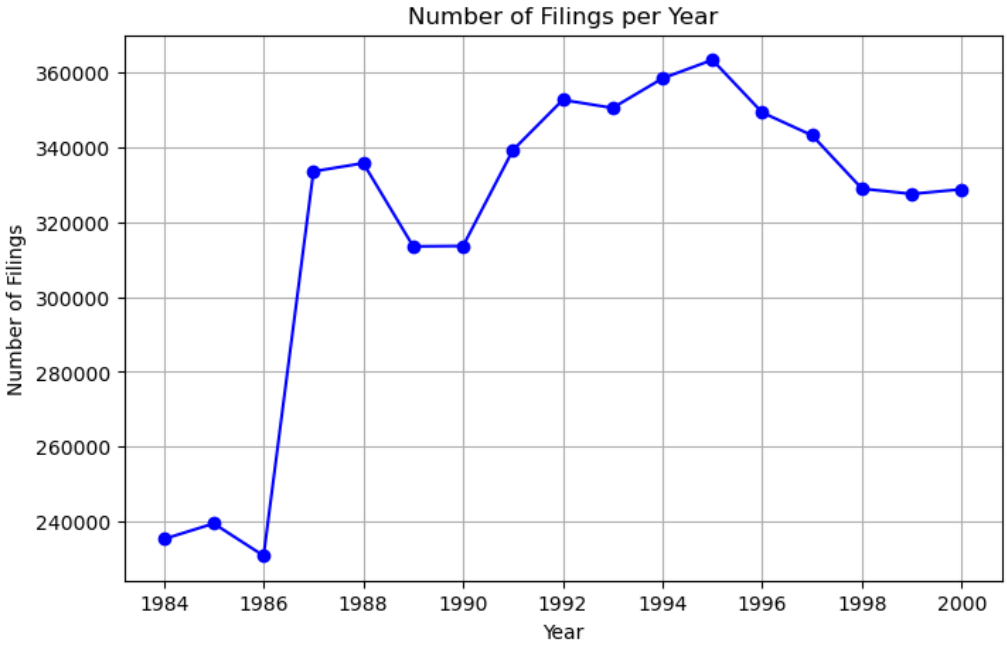


Figure 8: Total number of filings in Alaska per year.

Notes: The series is the total number of tax filings for Alaska from 1984 to 2000, summed over all brackets. The Statistics of Income reports contain the number of filings and total amount filed for each state, year and tax bracket, and data from them was used by Frank (2009).

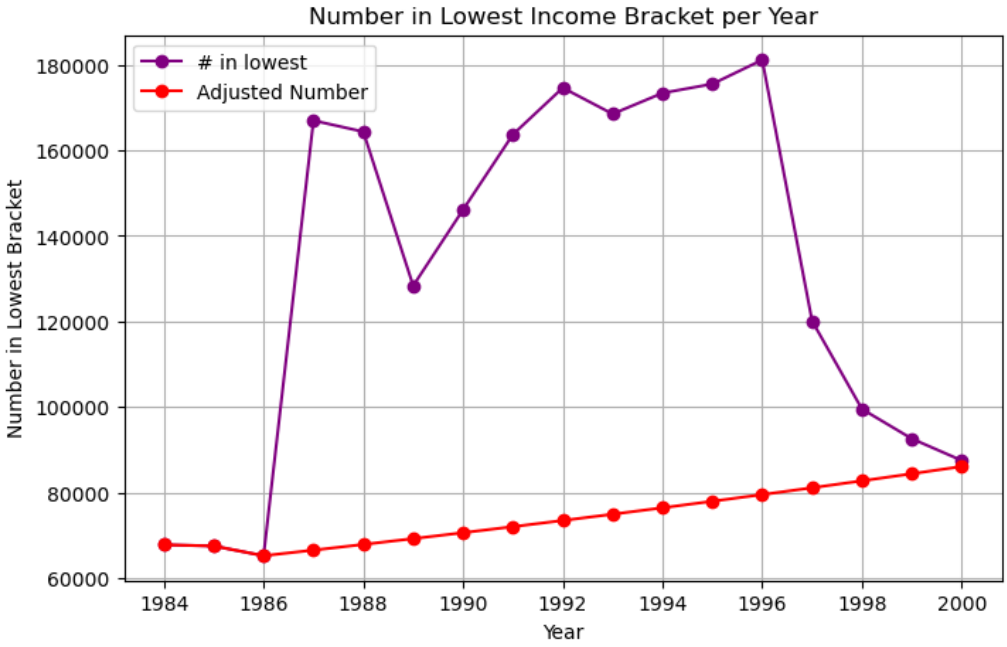


Figure 9: Number of filings in the lowest income bracket in Alaska per year.

Notes: The purple line, "# in lowest", is the number of Alaskan tax filings in the lowest income bracket available in each year of the Statistics of Income reports; the bracket thresholds changed over the course of the series. The red line, "Adjusted Number", is the series used in Section 6, which takes the number of filings in the lowest bracket and assumes a constant growth in the number of filings each year after 1986, creating a "synthetic" version of the lower bracket that abstracts away from the effects of the Kiddie Tax.

The method used by Frank (2009) to calculate the Gini Index based on the SOI report is particularly sensitive to large changes in the number of tax filings. This makes intuitive sense, since the method should capture the effect of a large population being added to the lowest bracket. I plot the inequality measure using Frank's method in Figure 10, in blue. The jump between 1986 and 1987 is clear.

I argue that this dynamic incorrectly captured the Alaskan inequality, and propose a simple adjustment to assess whether the TRA changes drive the resulting increase in inequality documented by Kozminski and Baek (2017). I take the number of filings in the lowest bracket and assume a constant growth in the number of filings each year after 1986, creating a "synthetic" version of the lower bracket that abstracts away from the effects of the Kiddie Tax. This series is represented in Figure 9 in red. I then recalculate the Gini Index using the same method as Frank (2009), applied to the synthetic data. I report the adjusted series in Figure 10 in orange. The adjusted series shows a behavior that does not include the structural break in 1986–87, as expected.

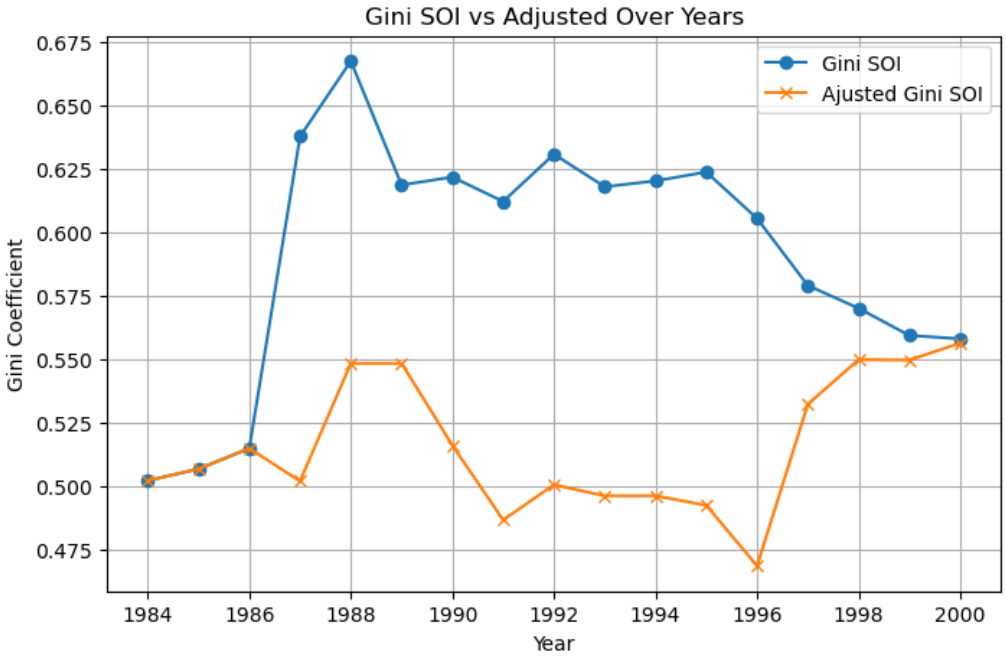


Figure 10: Gini Index Time series.

Notes: The blue line, "Gini SOI", is the Gini Index for Alaska computed with the method of Frank (2009) applied to the reported SOI data; the jump between 1986 and 1987 is clear. The orange line, "Adjusted Gini SOI", recalculates the Gini Index using the same method as Frank (2009) applied to the synthetic version of the lower bracket shown in red in Figure 9.

I then use the SCM to assess the effects of the APFD using the adjusted Gini Index series for Alaska and the data from the Frank dataset for the other states of the U.S. as a donor pool for the synthetic Alaska. I plot the gaps generated by the difference between actual Alaska and the synthetic in Figure 11, along with the same results from the analysis using the data from the CPS.

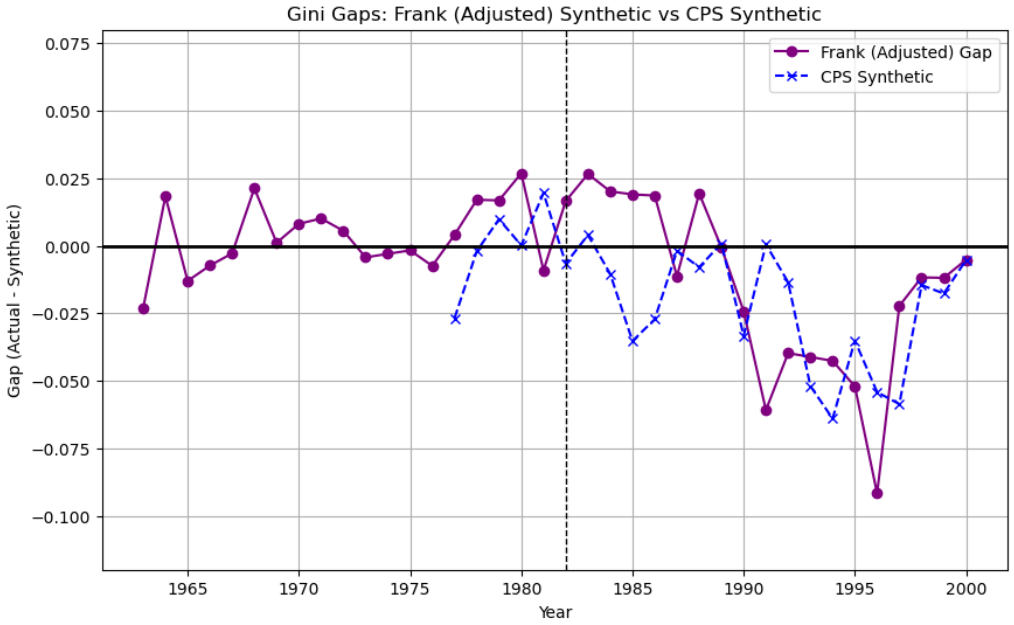


Figure 11: Synthetic control comparison.

Notes: Both series are the gaps generated by the difference between actual Alaska and the synthetic, estimated with the SCM described in Section 4.2. The purple line uses the adjusted Gini Index series for Alaska from Figure 10 and the data from the Frank dataset for the other states of the U.S. as a donor pool for the synthetic Alaska. The blue line reproduces the same results from the analysis using the data from the CPS, shown in Figure 5. The vertical dashed line marks 1982. Both series measure slightly different inequalities: the CPS measures inequality at the household income level, while the data from the SOI measures inequality at the tax return level. With the adjusted data that abstracts away from the effects of the TRA, the estimates of the total effect are very similar between both data sources, pointing to a similar slight reduction in inequality in Alaska, with bigger effects arising in the mid-to-late 1990s.

With the adjusted data that abstracts away from the effects of the TRA, the estimates of the total effect of the APFD on Alaskan inequality are very similar between both data sources. Both series measure slightly different inequalities: the CPS measures inequality at the household income level, while the data from the SOI measures inequality at the tax return level. Nevertheless, the analysis with both measures is pointing to a similar slight reduction in inequality in Alaska, with bigger effects arising in the mid-to-late 1990s.

Taken together, these results and those of Kozminski and Baek (2017) illustrate how sensitive distributional conclusions can be to the administrative origins of the underlying data. The two analyses differ in one respect: a feature of the underlying tax data that had not been previously documented — the structural break induced by the TRA. Once it is accounted for, the tax-based and survey-based estimates converge, and the estimated sign of the APFD's effect reverses.

7 Concluding Remarks

With the growing concerns over job destruction coming from AI and automation, policymakers have proposed universal cash transfers to mitigate the adverse effects of these labor market changes. In this paper, I investigated the effects of these cash transfers on income inequality, using the Alaska Permanent Fund Dividend as a natural setting for this analysis.

I estimate the effects of the universal cash transfers from the APFD on the income inequality of the state. I find that the average effect over the entire period of analysis is a drop of 0.02 in the Gini Index. This drop is consistent with how the transfers would mechanically change Alaskan inequality, suggesting that I cannot reject the null hypothesis that the change in inequality is due only to the mechanical effects of the policy. Moreover, I reconcile these results with the previous literature.

Future work can elaborate on my analysis. The analysis can be improved by including more pre-treatment periods to increase the performance of the SCM. One candidate data source to do this is the U.S. Census. However, there are some caveats to using data that go farther back than the CPS, since Alaska rapidly changed in the late 1960s and early 1970s due to oil discoveries.

References

ABADIE, Alberto; DIAMOND, Alexis; HAINMUELLER, Jens. Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. **Journal of the American statistical Association**, Taylor & Francis, v. 105, n. 490, p. 493–505, 2010.

BANERJEE, Abhijit; FAYE, Michael; KRUEGER, Alan; NIEHAUS, Paul; SURI, Tavneet. Effects of a Universal Basic Income during the pandemic. **Innovations for Poverty Action Working Paper**, 2020.

BERMAN, Matthew; REAMEY, Random. Permanent fund dividends and poverty in Alaska. Institute of Social and Economic Research, University of Alaska Anchorage, 2016.

BRYNJOLFSSON, Erik; CHANDAR, Bharat; CHEN, Ruyu. Canaries in the Coal Mine?: Six Facts about the Recent Employment Effects of Artificial Intelligence. Stanford Institute for Economic Policy Research (SIEPR), 2025.

CHUNG, Wankyo; HA, Hyungserk; KIM, Beomsoo. Money transfer and birth weight: evidence from the Alaska permanent fund dividend. **Economic Inquiry**, Wiley Online Library, v. 54, n. 1, p. 576–590, 2016.

DYNAN, Karen E; SKINNER, Jonathan; ZELDES, Stephen P. Do the rich save more? **Journal of political economy**, The University of Chicago Press, v. 112, n. 2, p. 397–444, 2004.

FERMAN, Bruno; PINTO, Cristine; POSSEBOM, Vitor. Cherry picking with synthetic controls. **Journal of Policy Analysis and Management**, Wiley Online Library, v. 39, n. 2, p. 510–532, 2020.

FLOOD, Sarah *et al.* IPUMS CPS: version 12.0 [dataset]. Minneapolis, MN: Ipums, 2024. DOI: https://doi.org/10.18128/D030.V12.0.

FRANK, Mark W. Inequality and growth in the United States: Evidence from a new state-level panel of income inequality measures. **Economic Inquiry**, Wiley Online Library, v. 47, n. 1, p. 55–68, 2009.

GIBSON, Marcia; HEARTY, Wendy; CRAIG, Peter. The public health effects of interventions similar to basic income: a scoping review. **The Lancet Public Health**, Elsevier, v. 5, n. 3, e165–e176, 2020.

HARSTAD, Paul. Executive Summary of Findings from a Survey of Alaska Voters on the PFD, 2017.

HEATHCOTE, Jonathan; PERRI, Fabrizio; VIOLANTE, Giovanni L. Unequal we stand: An empirical analysis of economic inequality in the United States, 1967–2006. **Review of Economic dynamics**, Elsevier, v. 13, n. 1, p. 15–51, 2010.

HEATHCOTE, Jonathan; PERRI, Fabrizio; VIOLANTE, Giovanni L; ZHANG, Lichen. More unequal we stand? Inequality dynamics in the United States, 1967–2021. **Review of Economic Dynamics**, Elsevier, v. 50, p. 235–266, 2023.

HOYNES, Hilary; ROTHSTEIN, Jesse. Universal basic income in the United States and advanced countries. **Annual Review of Economics**, Annual Reviews, v. 11, n. 1, p. 929–958, 2019.

INTERNAL REVENUE SERVICE. **A Reminder to Alaskans: The 2008 Permanent Fund Dividend of $3,269 is Taxable**. [*S. l.: s. n.*], Sept. 2008. IRS Newsroom, Release No. SEA-08-20. Accessed 30 May 2026. Available from:

https://www.irs.gov/newsroom/a-reminder-to-alaskans-the-2008-permanent-fund-dividend-of-3269-is-taxable.

INTERNAL REVENUE SERVICE. **Statistics of Income—Individual Income Tax Returns, Tax Years 1984–2000**. Washington, DC, 1984–2000. Annual complete-report volumes for tax years 1984 through 2000. Individual volumes available via the SOI archive. Accessed 30 May 2026. Available from: https://www.irs.gov/statistics/soi-tax-stats-archive.

JONES, Damon; MARINESCU, Ioana. The labor market impacts of universal and permanent cash transfers: Evidence from the Alaska Permanent Fund. **American Economic Journal: Economic Policy**, American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203-2425, v. 14, n. 2, p. 315–340, 2022.

KAUL, Ashok; KLÖSSNER, Stefan; PFEIFER, Gregor; SCHIELER, Manuel. Synthetic control methods: Never use all pre-intervention outcomes together with covariates, 2015.

KOZMINSKI, Kate; BAEK, Jungho. Can an oil-rich economy reduce its income inequality? Empirical evidence from Alaska's Permanent Fund Dividend. **Energy Economics**, Elsevier, v. 65, p. 98–104, 2017.

U.S. BUREAU OF LABOR STATISTICS. Consumer Price Index for All Urban Consumers: All Items in U.S. City Average [CPIAUCSL] retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CPIAUCSL, April, 2025., 2025.

WILSON, Naomi; MCDAID, Shari. The mental health effects of a Universal Basic Income: A synthesis of the evidence from previous pilots. **Social science & medicine**, Elsevier, v. 287, p. 114374, 2021.