1 Introduction

1.1 Hsieh's Model

Hsieh (2003) looks to differences between third- and fourth-quarter consumption in the CEX data. Let C_h^{Q3} and C_h^{Q4} be the total consumption of household h in quarters 3 and 4. Let PFD_t be the Fund payout in year t, $Family\ size_h$ be the number of Fund-eligible members of family h and $Family\ income_h$ be the income of family h. (The family characteristics don't have time subscripts because each CEX household is in the panel for one year at most.) Therefore, $PFD_t \times Family\ size_h / Family\ income_h$ is the fraction of the household's annual income received through the APF dividend. $\mathbf{z}_h'$ is a vector of family characteristics.[1]

$$\log\left(\frac{C_h^{Q4}}{C_h^{Q3}}\right) = \alpha_1 \frac{PFD_t \times Family\ size_h}{Family\ income_h} + \mathbf{z}_h'\alpha_2$$

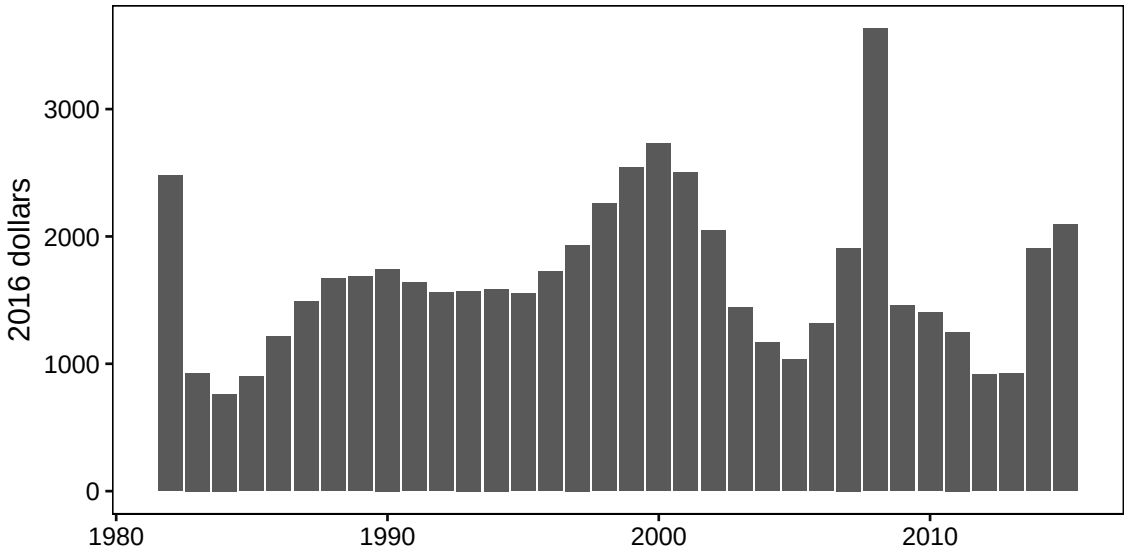
Hsieh then conducts inference on α_1, arguing that if it's non-zero, the household is exhibiting "excess sensitivity" to the dividend. He ultimately concludes that he can't reject the null hypothesis of $\alpha_1 = 0$, thereby failing to reject the consumption smoothing hypothesis.

There are a number of issues to make one hesitant about this specification. Particularly concerning is the risk of correlation with unobserved year or household variables that are correlated with consumption. The structure of the data – with households in the panel for one year or less – means that household fixed effects would absorb both time effects and family sizes.[2] Even without household fixed effects, time fixed effects seem important for, e.g., business cycle effects. However, as Hsieh points out, including year effects reduces the source of identifying variation to differences in family size, which requires the unsavory assumption that families of different sizes have the same seasonal consumption patterns.

2 Data

The goal here is to investigate the behavior of people and firms affected by the APF payout. To do that, I'll first discuss the various data sources, then comment on the assumptions that are necessary for a causal interpretation.

Figure 1: Alaska Permanent Fund payments, per individual



Source: Alaska Permanent Fund Division (APFD 2016b).

Figures are adjusted for inflation using the annual average CPI (US BLS 2016). The 2008 total includes a one-time, $1200 bonus.

2.1 Alaska Permanent Fund

The Alaska Permanent Fund (APF) receives revenue from oil leases in Alaska into a constitutionally-established fund. Since 1982, the Fund has sent out dividend payments to Alaska residents. The dividend is uniform in a given year, not conditioned on age or income, and the amount is calculated from the Fund's recent investment earnings. Figure 1 plots the dividend for each individual[3] (APFD 2016b).

All Alaskan residents are eligible, as long as they've lived in Alaska for a year and plan to live there permanently. Alaskans can be disqualified for that year's payment because of, e.g., felony sentencing that year. Some absences from the state are allowed, including for military service and education. To receive the payment, Alaskans must apply in the spring to receive a payment that fall (APFD 2016a).

The payments are quite predictable, calculated with a publicly-known formula. While the final amount is announced a few weeks before payment, Alaskan newspapers publish accurate predictions beforehand.[4] The formula is to take 10.5% of the previous five years' earnings, subtract administration costs and divide by the number of eligible applicants.

Hsieh (2003), citing personal correspondence with Permanent Fund staff, notes that since 1984 the payment has been in the last quarter of the year. Since 1994, all payments have been made in early October. Currently the rule is the first Thursday in October, allowing for a crisp before and after comparison.

2.2 Consumer Expenditure Survey

Details here…

2.3 Wholesale vehicle auctions

To look at vehicle supply, I'm using data from the largest US auction house, Manheim. These transaction-level data include IDs for the buyer, seller and auction site, as well as variables about the vehicle being sold. For most sales, I have the buyer and seller billing zip codes, allowing me to identify Alaskan purchasers. There are 308,186 distinct buyers in the data, 247 of them from Alaska.

1. Hsieh says "z contains variables for changes in the number of adults, number children, and a second-order polynomial in age of the head of the household".

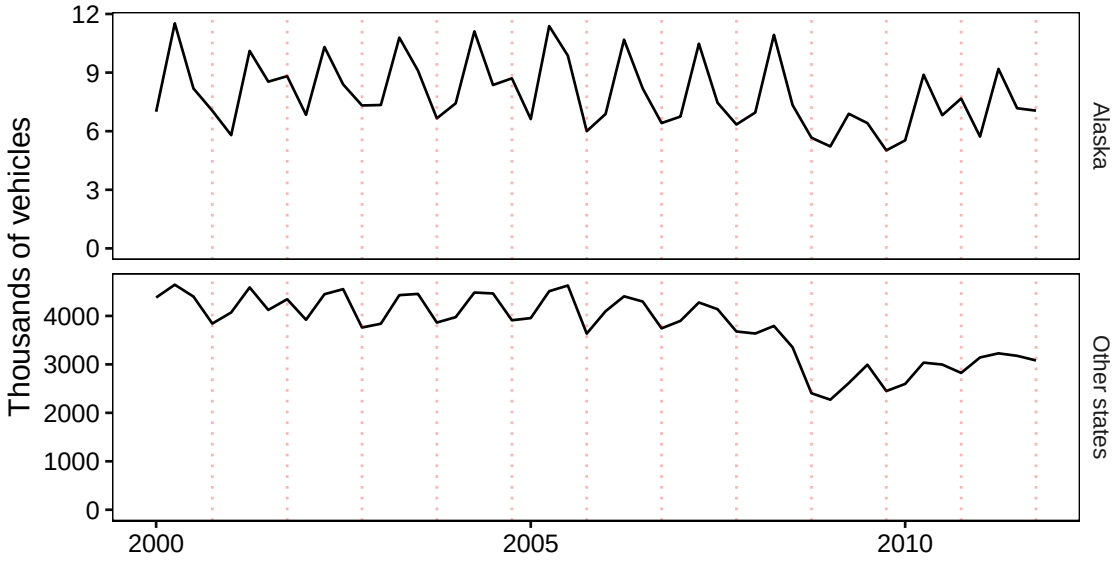
2. The only exception is that household FE wouldn't be collinear with the family size measure for families that changed size between Q3 and Q4, but this is not useful variation, since the new household members are only eligible for the dividend if they have been Alaska residents for a year.

3. The figure includes a one-time, $1200 bonus in 2008. Payments have been adjusted to 2016 dollars (US BLS 2016).

4. In 2014, the forecast from 20 days out was $46 (2.4%) too high. (DeMarban and Doogan 2014; Doogan 2014)

2.4 Vehicle registrations

Figure 2: Vehicle registrations, Alaska vs. other states



Source: R.L. Polk and Co, aggregated from county-by-quarter observations.
Dotted lines mark the fourth quarter of each year.

To have a measure of vehicle expenditures that's more immediately related to consumers, I have county-by-quarter registration data from R.L. Polk & Co. These data cover all new registrations of passenger cars and light trucks from 2000 to 2011 in every county of the US. There are 150,581 county–quarter observations, representing 181,723,012 vehicle registrations.[5] I will assume that the state and quarter of registration is the state and quarter of vehicle sale.

5. In Alaska, the 19 counties are called boroughs, plus one "Unorganized Borough" that includes 10 additional census areas. All 29 are present in the vehicle registration data.

3 Assumptions for identification

3.1 Assumptions for a Hsieh-style model

3.2 Assumptions for a DD-style model

3.2.1 DD

3.2.2 Synthetic controls

3.2.3 Generalized synthetic controls

A Data cleaning

A.1 Consumer Expenditure Survey

A.2 Wholesale vehicle auctions

Elimination category	Count removed	Details
Weird vehicles	20,299	Trailers, boats, air compressors, golf carts, vehicles with incomplete bodies, ATVs and RVs.
Bad odometer	586,941	Auction comments indicate reported miles are inaccurate.
Damaged	2,665,224	Auction comments indicate vehicle is substantially damaged.
Bad price	59,193	Auction price seems unreasonable, outside the interval $[100, \min\{80000, 1.5 \times \text{MSRP}\}]$.
Canadian	132,118	Auction comments indicate vehicle is Canadian.

A.3 Vehicle registrations

In the Polk vehicle registrations data, there are eight rows (county–quarter observations) where the county and state are not identified. I've dropped these.

References

APFD (Alaska Department of Revenue, Permanent Fund Division). 2016a. "Statutes and Regulations." Accessed November 20, 2016. https://pfd.alaska.gov/Eligibility/Statutes-and-Regulations.

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DeMarban, Alex, and Sean Doogan. 2014. "Estimated at $1,930, Alaska PFD big but no record." *Alaska Dispatch News* (August 27).

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Hsieh, Chang-Tai. 2003. "Do consumers react to anticipated income changes? Evidence from the Alaska permanent fund." *The American Economic Review* 93 (1): 397–405.

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