**Martinez, Saez and Siegenthaler(2021)**

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| **Question** | **Estimate *(intertemporal)* Frisch elasticity *(how much people are willing to work when their wage increases temporarily)* of substitution through tax change in Switzerland in the late 90s’.** |
| **Context - data** | Switched from an income tax system where current taxes were based on the previous two years' income to a standard annual pay as you earn system, creating a tax holiday during the transition period. Look at to what extent this well-advertised tax holiday affected labour supply, especially labour earnings. |
| **Method(s)** |  |
| **Main results** | * Estimates are representative of the whole population, not focusing on specific subpopulation, potentially more elastic. * Identification of Frisch elasticity on an annual frequency, relevant for business cycle models. * Don’t find any evidence of a response along the employment margin (extensive margin).   - Small Frisch elasticity along the extensive margin.   * No response along the hours of work margin either. * Small aggregate response of wage earnings (Frisch e. of 0.05).   - Responses are concentrated among the higher income earners (top5%) with Frisch of 0.1  - No statistically significant response below the top5%.   * Larger response of self-emp. earnings at all earnings levels: Frisch of 0.3/0.4 * Larger effects for men than for women (even married), in contrast to the standard findings in labour supply literature. * Most effects are visible for the last wave of transitioning, highlighting learning effect. * Frisch real labour supply channel due to labour market-wide temporary changes in net-wage-rates is quantitatively very modest, particularly along the extensive emp. margin.   - Cast doubt on calibrations of macro models that require very large Frisch elasticities to account for large employment fluctuations over business cycles. |
| **Literature** | * Compared to Iceland paper: * Compared to |
| **Limitation** | Analysis limited to labour income. No data on capital income. |
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| **Data** | - Merger of **register-based 2010 population census** with longitudinal **social security annual earnings records**, covering the whole Swiss population 1981-2010. Merger because social security data lack geographical information on cantons.  - One record per job per individual, detailing employment relationship + starting/ending month of employment and total earnings during the period (include bonuses, stock options).  - Drawbacks of the merged dataset: missing data in 1998 due to reporting errors; census 2010 does not have variables of interest usually present in census data such as education, number of children, occupation; must reconstruct family information for years prior to 2010; marital status is observed but cannot match spouses together.  - Cantons had different reporting requirements for incomes earned in tax holiday years. As a result, income tax data cannot be used to study the reform. Rely on social security data to provide information on labour earnings, both wage earnings and self-employment earnings.  - Employer Survey (LSE): Swiss wage structure survey |
| **Tax Holiday**  **Reform** | Local taxes = cantonal + municipal taxes = 5/6 of income tax revenue, rest is Federal taxes.  Cantonal taxes are set by cantonal law and municipalities apply a multiplier to the cantonal tax.  Creates large geographical variation in tax burdens (conditional on income) both across and within cantons.  - Married couples are taxed based on total family income, imposing heavy tax burden on secondary earners, especially if the primary earner’s income is high.  **# Old tax system**:  - Taxes filed every two years, for a two-year period tax liabilities were based on the average of the previous two years incomes. Drawback tax due might not reflect earlier changes in taxpayers’ economic situation.  - Betwixt assessments: in case of permanent entry/exit in the labour market / migration to another canton during the tax period, old system triggered a pay as you earn taxation until the end of the tax period. *Tax holiday applied along the extensive margin, as long as the labour supply response was temporary, otherwise triggers a pay as you earn.*  **# New tax system**:  - Pay as you earn, taxed through estimated payments in current year and following year, tax income tax returned generated tax refund or extra payment.  > System change generates a two-year tax holiday as the income from the previous two years before the actual change are not taxed (outside of ‘extraordinary income’).  - Three successive waves of regime changes: transition in 1999/2001/2003.  - Most cantons were expected to transition in 2001, with decisions made most often mid-2000, so during the first year of the tax holiday. *(\*)*  - For cantons using annual assessment period there is a single tax holiday year for cantonal/municipal taxes and still two years of tax holiday for federal taxes.  **# Salience of the reform**:  - Behavioural responses to the tax holiday can happen only if the public is well informed about the reform and understands that it generates a tax holiday.  - There was either, referendum in many cantons or the transition was in the public debate for many months before the official decision.  - In most cases, the official final decision came about 1.5 years before the beginning of the transition year. Hence, for two-year long tax holidays, the public was always informed in advance for the second year of the tax holiday.  - Expect more information and thus more behavioural responses for the second year of the tax holiday. *(\*)*  - Taxpayers are not perfectly informed but most elastic taxpayers are those who have the most to gain from learning about the tax system and should have the strongest incentives to get informed > inelastic taxpayers do not respond to changes in tax rates. If elastic taxpayers are well informed, estimates capture full information? |
| **Expected**  **Responses** | **# Quasi-pure intertemporal substitution effects** |
| **Tax rates** | **X** |
| **Effect on Employ.** | **X** |
| **Effects on earnings** | Earnings = wage earnings + self-employment earnings.  *Divided in three groups of cantons: (2a) 16 cantons which transitioned in 2001 with a tax holiday in 1999-00 for both the federal and local income taxes (2b) 4 cantons which transitioned in 2001 with a tax holiday for 2000 only for local income taxes and 1999-00 for the federal tax (3) 3 cantons which transitioned in 2003 with tax holiday in 2001-02.*  > Average tax rate (taxes / gross income) & marginal tax rate  1/ Key points  - Trends are close to parallel in all three groups, especially for women.  - For men there are clear spikes during the tax holiday periods, consistent with behaviour changes  - Magnitude of spikes is limited, a couple pts of average earnings at most.  - For women spikes are largely absent, suggesting much smaller response.  2/ Earnings: wage earnings & self-emp. earnings.  - Charts show very small response for wage earnings (precise estimates as parallel assumption holds) and a much larger response for self-employ. income, especially for late-transitioning cantons, but less precisely estimated. In line with previous literature.  Clear and significantly larger response of wage earnings for high-income group (relative to the full population), of around 5% excess earnings during the tax holidays. Also, large spike in self-employment income around 7-10% excess income.  - Estimate Frisch elasticities using changes in marginal tax rates = . Where T = marginal tax rate  - Interpret percentage change in the outcome variable = estimated effect by the average level in the year just before the tax holiday.  **=> Estimated Frisch elasticity =**  T = marginal tax rate except for the Unemployment rate outcome variable where we use the average tax rate.  (Regress with municipalities + time type of data, not individual points)  **/Earning per person/** (annual labour earnings per person, including non-workers, in 1000CHF) respond significantly to the tax holiday, with a 1.4% effect relative to pre-holiday earnings.  Estimated decrease in the marginal tax rate > small but precisely estimated Frisch elasticity of 0.05.  - Significant response for men but for neither women nor married women.  - Effect is concentrated solely among men (Frisch=0.06), no statistically significant effects among women (Frisch=0.02) (nor married women) in contrast with usual findings.  - Earnings responses are more significant among higher earnings groups.  - Income>200k effect=5.3% & Frisch=0.09  **/Wage earnings per worker/** respond to the tax holiday but < total earnings.  - Significant for men but not for women.  - Significant for top wage earners >200l effect=5.1% & Frisch=0.09  **/Self-employment earnings/** respond strongly to the tax holiday Frisch=0.27, strong for both men and women & strong along the full distribution of labour income. Higher Frisch elasticities implied than for wage earnings. Because the tax burdens are smaller for low-income individuals, the Frisch elasticities decline with income.  - Consistent with our graphical analysis, estimates do not generate statistically significant evidence of depressed earnings around the tax holidays. This suggests that the extra earnings during the tax holiday do not come solely at the expense of earnings in surrounding through short-term retiming. |
| **Other results** | **Decomposition of earnings: hours of work and wage rates** |

1. Main question
2. Context – data
3. Method(s)
4. Results