



Berner Fachhochschule  
Haute école spécialisée bernoise  
Bern University of Applied Sciences



---

<sup>b</sup>  
UNIVERSITÄT  
BERN

# Income Redistribution through taxation: how deductions undermine the effect of taxes

Oliver Hümbelin, BFH Centre for Social Security  
Rudolf Farys, University of Bern

ISA RC28 Summer Meeting, Columbia University in New York  
August 8-10, 2017

- 1** Introduction: The role of the tax system to reduce income inequality
- 2** Theory: Redistribution through taxation
- 3** Data & Methods: Decomposition of redistribution effects based on Swiss tax data
- 4** Results: Partial redistribution effect of taxes and deductions
- 5** Summary & Conclusion

# Introduction: The role of the tax system to reduce income inequality

---

# Introduction: The role of the tax system to reduce income inequality

- ▶ The OECD (2011, 2015) points out that the recent increase in disposable income inequality is also because of a retreat of governmental redistribution. It is therefore important to fully understand the redistribution mechanics of a welfare state.

# Introduction: The role of the tax system to reduce income inequality

- ▶ The OECD (2011, 2015) points out that the recent increase in disposable income inequality is also because of a retreat of governmental redistribution. It is therefore important to fully understand the redistribution mechanics of a welfare state.
- ▶ An important element of income inequality reduction are *progressive direct taxes*. On average 25% of the overall redistribution can be attributed to income taxes (Wang et al. 2014).

# Introduction: The role of the tax system to reduce income inequality

- ▶ The OECD (2011, 2015) points out that the recent increase in disposable income inequality is also because of a retreat of governmental redistribution. It is therefore important to fully understand the redistribution mechanics of a welfare state.
- ▶ An important element of income inequality reduction are *progressive direct taxes*. On average 25% of the overall redistribution can be attributed to income taxes (Wang et al. 2014).
- ▶ Yet many countries also provide options for claiming deductions that alter the redistributive effect of taxes. This latter aspect however is often neglected since data usually only reports on taxes paid.

# Introduction: The role of the tax system to reduce income inequality

- ▶ The OECD (2011, 2015) points out that the recent increase in disposable income inequality is also because of a retreat of governmental redistribution. It is therefore important to fully understand the redistribution mechanics of a welfare state.
- ▶ An important element of income inequality reduction are *progressive direct taxes*. On average 25% of the overall redistribution can be attributed to income taxes (Wang et al. 2014).
- ▶ Yet many countries also provide options for claiming deductions that alter the redistributive effect of taxes. This latter aspect however is often neglected since data usually only reports on taxes paid.
- ▶ By using administrative tax data we are able to evaluate *the visible (taxes) and hidden (deductions) instruments of the welfare state* with respect to their impact on income inequality.

# Theory: Redistribution through taxation



# Theory: Redistribution through taxation

- ▶ **Taxes:** the degree of redistribution depends on the mean tax rate and the progressivity. According to the OECD (2008), tax rates were lowered in most OECD countries in recent years.

# Theory: Redistribution through taxation

- ▶ **Taxes:** the degree of redistribution depends on the mean tax rate and the progressivity. According to the OECD (2008), tax rates were lowered in most OECD countries in recent years.
- ▶ **Deductions:** comprise amounts that are deductible from taxable income, which accordingly lead to a lower tax rate and tax burden. Some aim to lower hard social circumstances (e.g. child costs) others incentivize certain behaviors (saving for old age). Without data it is difficult to tell the redistributive effect.

# Theory: Redistribution through taxation

- ▶ **Taxes:** the degree of redistribution depends on the mean tax rate and the progressivity. According to the OECD (2008), tax rates were lowered in most OECD countries in recent years.
- ▶ **Deductions:** comprise amounts that are deductible from taxable income, which accordingly lead to a lower tax rate and tax burden. Some aim to lower hard social circumstances (e.g. child costs) others incentivize certain behaviors (saving for old age). Without data it is difficult to tell the redistributive effect.
- ▶ **Behavioral aspects:** Taxes and deductions induce also behavioral responses that affect pre-tax income distribution (see Bargain et al. (2015)).

# Theory: Redistribution through taxation

- ▶ **Taxes:** the degree of redistribution depends on the mean tax rate and the progressivity. According to the OECD (2008), tax rates were lowered in most OECD countries in recent years.
- ▶ **Deductions:** comprise amounts that are deductible from taxable income, which accordingly lead to a lower tax rate and tax burden. Some aim to lower hard social circumstances (e.g. child costs) others incentivize certain behaviors (saving for old age). Without data it is difficult to tell the redistributive effect.
- ▶ **Behavioral aspects:** Taxes and deductions induce also behavioral responses that affect pre-tax income distribution (see Bargain et al. (2015)).

# Using tax data for inequality studies – The case of the Swiss tax system

# Using tax data for inequality studies – The case of the Swiss tax system

- ▶ As opposed to many other European countries where the levying of taxes is centralised, the tax system in Switzerland mirrors the historically evolved federal structure, giving a lot of power to the sub-state levels, namely the cantons and municipalities (ESTV, 2013). A total of 26 tax laws exist, with each canton having its own tax law and the municipalities and the federal state also levying taxes.

# Using tax data for inequality studies – The case of the Swiss tax system

- ▶ As opposed to many other European countries where the levying of taxes is centralised, the tax system in Switzerland mirrors the historically evolved federal structure, giving a lot of power to the sub-state levels, namely the cantons and municipalities (ESTV, 2013). A total of 26 tax laws exist, with each canton having its own tax law and the municipalities and the federal state also levying taxes.
- ▶ We use tax data from a large canton in Switzerland.

# Using tax data for inequality studies – The case of the Swiss tax system

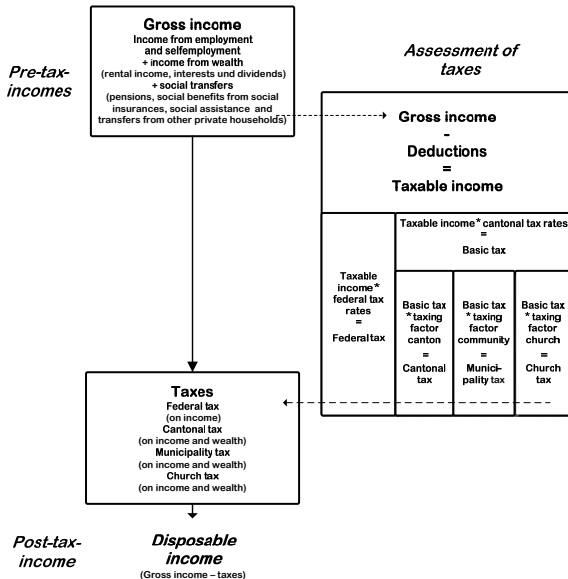
- ▶ As opposed to many other European countries where the levying of taxes is centralised, the tax system in Switzerland mirrors the historically evolved federal structure, giving a lot of power to the sub-state levels, namely the cantons and municipalities (ESTV, 2013). A total of 26 tax laws exist, with each canton having its own tax law and the municipalities and the federal state also levying taxes.
- ▶ We use tax data from a large canton in Switzerland.
- ▶ Aargau is the fourth largest canton in Switzerland, with respect to economic inequality, mean income and the tax system it is an average canton, thus its not a special case we are looking at.



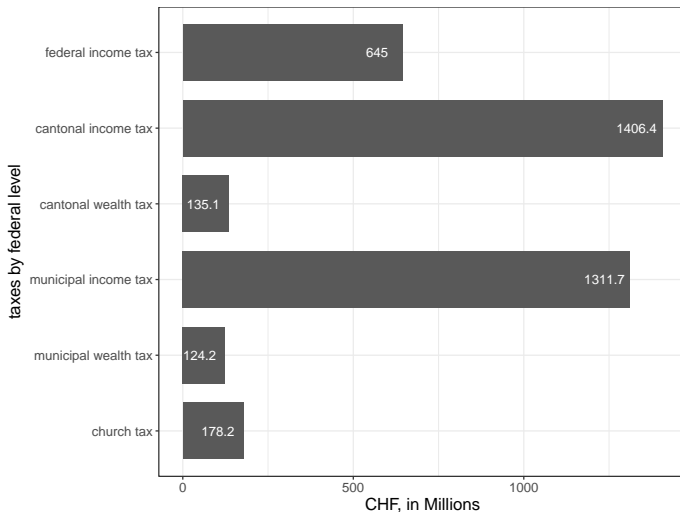
# Using tax data for inequality studies – The case of the Swiss tax system

- ▶ As opposed to many other European countries where the levying of taxes is centralised, the tax system in Switzerland mirrors the historically evolved federal structure, giving a lot of power to the sub-state levels, namely the cantons and municipalities (ESTV, 2013). A total of 26 tax laws exist, with each canton having its own tax law and the municipalities and the federal state also levying taxes.
- ▶ We use tax data from a large canton in Switzerland.
- ▶ Aargau is the fourth largest canton in Switzerland, with respect to economic inequality, mean income and the tax system it is an average canton, thus its not a special case we are looking at.
- ▶ We have two time points: 2001 (283'580 tax units) and 2011 (327'047 tax units) and thus we are able to compare changes over time

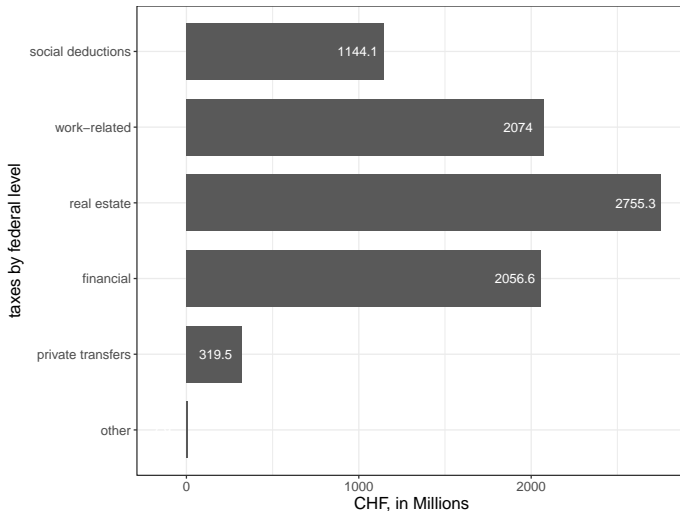
# The Assessment of taxes



# Overview on taxes under scrutiny



# Overview on deductions under scrutiny



# Decomposition of redistribution effects

# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

$$RS = G_x - G_{x-t} \quad (1)$$

# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

$$RS = G_x - G_{x-t} \quad (1)$$

- ▶ The overall effect differentiates the effect into an effect of progression/Kakwani-Index (Kakwani, 1977), average tax burden and an effect of reranking



# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

$$RS = G_x - G_{x-t} \quad (1)$$

- ▶ The overall effect differentiates the effect into an effect of progression/Kakwani-Index (Kakwani, 1977), average tax burden and an effect of reranking

$$RS = G_x - G_{x-t_i} = K_i * \frac{t_i}{1 - t_i} - RR_i \quad (2)$$

# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

$$RS = G_x - G_{x-t} \quad (1)$$

- ▶ The overall effect differentiates the effect into an effect of progression/Kakwani-Index (Kakwani, 1977), average tax burden and an effect of reranking

$$RS = G_x - G_{x-t_i} = K_i * \frac{t_i}{1 - t_i} - RR_i \quad (2)$$

- ▶ (1) Identify effect of taxes

# Decomposition of redistribution effects

- ▶ Reynolds & Smolensky (1977) concept of measuring redistribution

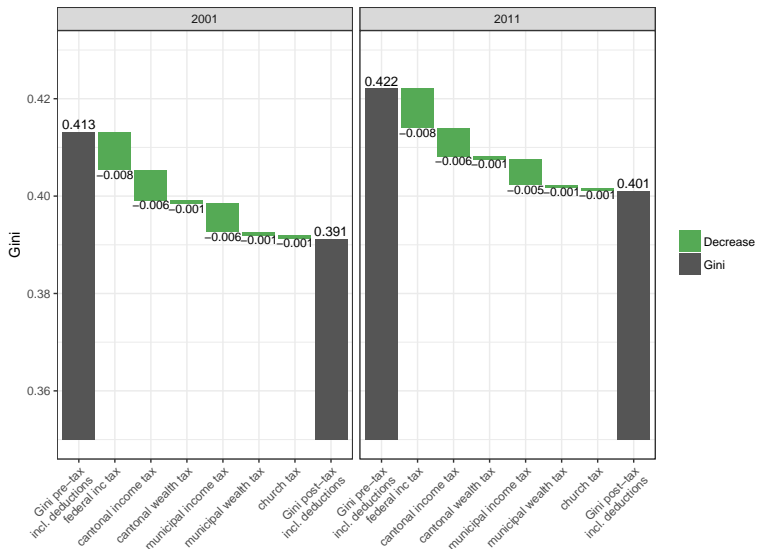
$$RS = G_x - G_{x-t} \quad (1)$$

- ▶ The overall effect differentiates the effect into an effect of progression/Kakwani-Index (Kakwani, 1977), average tax burden and an effect of reranking

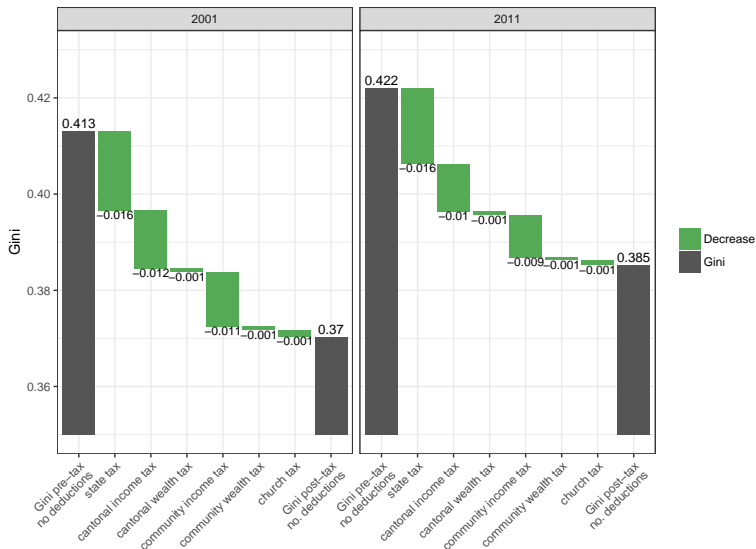
$$RS = G_x - G_{x-t_i} = K_i * \frac{t_i}{1 - t_i} - RR_i \quad (2)$$

- ▶ (1) Identify effect of taxes
- ▶ (2) To identify the effect of deductions a post tax income distribution without any deductions was created ( $G_z$ ). The effect of every single deduction ( $u_i$ ) was identified by comparing post tax income distributions applying deduction  $i$  ( $G_{u_i}$ ) to  $G_z$ .

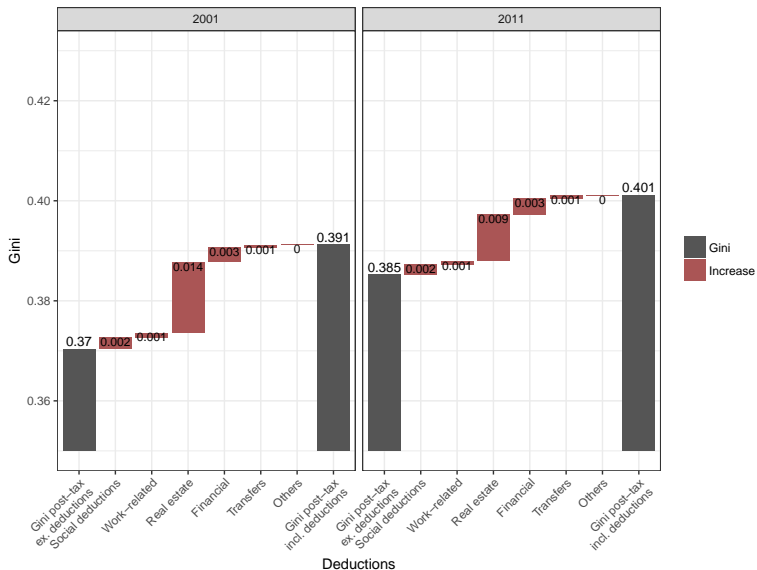
# Results: Partial redistributive effect of taxes (incl. deductions)



# Results: Partial redistributive effect of taxes (no deductions)



# Results: Partial redistributive effect of deductions



# Summary & Conclusion

# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.



# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.
- ▶ Our administrative data based study showed however that deductions mitigate the redistributive effect of taxes drastically (by nearly 50%).

# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.
- ▶ Our administrative data based study showed however that deductions mitigate the redistributive effect of taxes drastically (by nearly 50%).
- ▶ Put simply, high income earners profit greatly from deductions.

# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.
- ▶ Our administrative data based study showed however that deductions mitigate the redistributive effect of taxes drastically (by nearly 50%).
- ▶ Put simply, high income earners profit greatly from deductions.
  1. While a lot of deductions were created to reduce taxes to ease the consequences of difficult social or work-related circumstances (such as the deduction for children or deductions for commuters) they are nevertheless open to everyone. In a progressive tax system however, the resulting relative tax relief for high income earners is higher.

# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.
- ▶ Our administrative data based study showed however that deductions mitigate the redistributive effect of taxes drastically (by nearly 50%).
- ▶ Put simply, high income earners profit greatly from deductions.
  1. While a lot of deductions were created to reduce taxes to ease the consequences of difficult social or work-related circumstances (such as the deduction for children or deductions for commuters) they are nevertheless open to everyone. In a progressive tax system however, the resulting relative tax relief for high income earners is higher.
  2. High income earners have additional options to claim deductions like costs related to homeownership or shifting money to the pension system.

# Summary & Conclusion

- ▶ While most studies focus on direct taxes paid, this paper expands the perspective by providing insight into the mitigating effect of the often hidden part of the fiscal welfare state; deductions.
- ▶ Our administrative data based study showed however that deductions mitigate the redistributive effect of taxes drastically (by nearly 50%).
- ▶ Put simply, high income earners profit greatly from deductions.
  1. While a lot of deductions were created to reduce taxes to ease the consequences of difficult social or work-related circumstances (such as the deduction for children or deductions for commuters) they are nevertheless open to everyone. In a progressive tax system however, the resulting relative tax relief for high income earners is higher.
  2. High income earners have additional options to claim deductions like costs related to homeownership or shifting money to the pension system.

*Thank you for your attention!*

Bargain, O., Dolls, M., Immervoll, H., Neumann, D., Peichl, A., Pestel, N., & Siegloch, S. (2015). Tax Policy and Income Inequality in the United States, 1979-2007. *Economic Inquiry*, 53(2), 1061-1085.

ESTV (2013). *Das schweizerische Steuersystem*. Bern: Eidgenössische Steuerverwaltung.

Kakwani, N. C. (1977). Measurement of Tax Progressivity: An International Comparison. *The Economic Journal*, 87(345), 71-80.

OECD (2008). *Growing Unequal? Income Distribution and Poverty in OECD Countries*. Paris: OECD Publishing.

OECD (2011). *Divided We Stand. Why Inequality Keeps Rising*. OECD Publishing.

OECD (2015). *In It Together: Why Less Inequality Benefits All*. Paris: OECD Publishing.

Reynolds, M., & Smolensky, E. (1977). Post-fisc distributions of income in 1950, 1961, and 1970. *Public Finance Review*, 5(4), 419-438.

Wang, C., Caminada, K., & Goudswaard, K. (2014). Income redistribution in 20 countries over time. *International Journal of Social Welfare*, 23(3), 262-275.