Citizens' Opinions About Basic Income Proposals Compared – A Conjoint Analysis From Finland and Switzerland

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Abstract

A fundamental reform of the welfare state that recently has gained attention is the basic income (BI) scheme. However, different variants of BI schemes are proposed that also include varying political and societal goals. This study investigates what citizens think about the idea of a BI, and to what extent citizens' perceptions depend on the exact design of such a scheme and the context in which this policy is embedded. Empirically, we rely on conjoint experiments conducted in Finland and Switzerland, two countries in which the introduction of a BI scheme recently has been discussed most intensely. Our findings re-veal that whereas the level of support is higher in Finland than in Switzerland, in both countries—despite the contrasting frames of their current BI proposals—citizens tend to favor more generous schemes that are restrictive regarding the access of non-nationals.

1 Setup

```
knitr::opts_chunk$set(include=TRUE, echo=TRUE,
                      warning=FALSE, error=TRUE, message=FALSE,
                      fig.align="center", dpi=300,
                      dev='png', cache=TRUE)

rm(list = ls())

# Load packages
if (!require("pacman", quietly=T)) install.packages("pacman")
pacman::p_load('tidyverse','cjoint','broom','lme4','texreg','Hmisc')

source("plotamce.R") # adapted plot-function from cjoint-package

cj <- read.table("cjUBI.csv",
                 fileEncoding = "UTF-8",
                 sep = ";", header = T, stringsAsFactors = F)
```

2 Data

The analysis focus on conjoint modules in two surveys which were conducted in Finland and Switzerland with representative Qualtrics samples. In the conjoint modules, citizens answered for 5x2 conjoint tables which UBI policy they would choose and how likely they would support those policies in a popular vote. *Choice* and *Support* are therefore the main dependent variables analyzed.

```
cj %>%
  filter(!is.na(sample)) %>%
  group_by(sample) %>%
  summarise(mean=mean(support)) %>%
  full_join(cj, by="sample") %>%
  filter(!is.na(sample)) %>%
  ggplot(aes(x=support)) +
  geom_histogram(aes(y=..density..), bins=10,
                 fill="grey60") +
  geom_vline(aes(xintercept=mean), color="grey10",
             linetype=2, size=1) +
  facet_wrap(~sample, nrow=1) +
  labs(title="Support for UBI proposals",
       subtitle="with the mean per sample (dotted line)",
       x="Value",
       y="Density") +
  theme_minimal()
```

```
cj %>% group_by(sample) %>% summarise(mean(support))
```

```
## # A tibble: 3 x 2
##   sample      `mean(support)`
##   <chr>                 <dbl>
## 1 Finland                50.2
## 2 Switzerland            43.9
## 3 <NA>                   NA
```

Support is different for the two countries under observation: While the values chosen most often are around 50 percent likelihood of support for both countries, the mean is higher for Finland than for Switzerland. For Switzerland, the second most often picked values are close to zero. The higher mean for Finland and the stronger categorical opposition for Switzerland suggest a higher readiness to discuss an upheaval of the welfare state such as proposed by an UBI in Finland, where respondents are used to a stronger welfare state of the social democratic flavor, while Swiss respondents know more liberal elements of welfare states.

In the conjoint table, six attributes varied randomly:

- the amount for adults (very low / low / middle / high)
- the amount for children (low / middle / high)

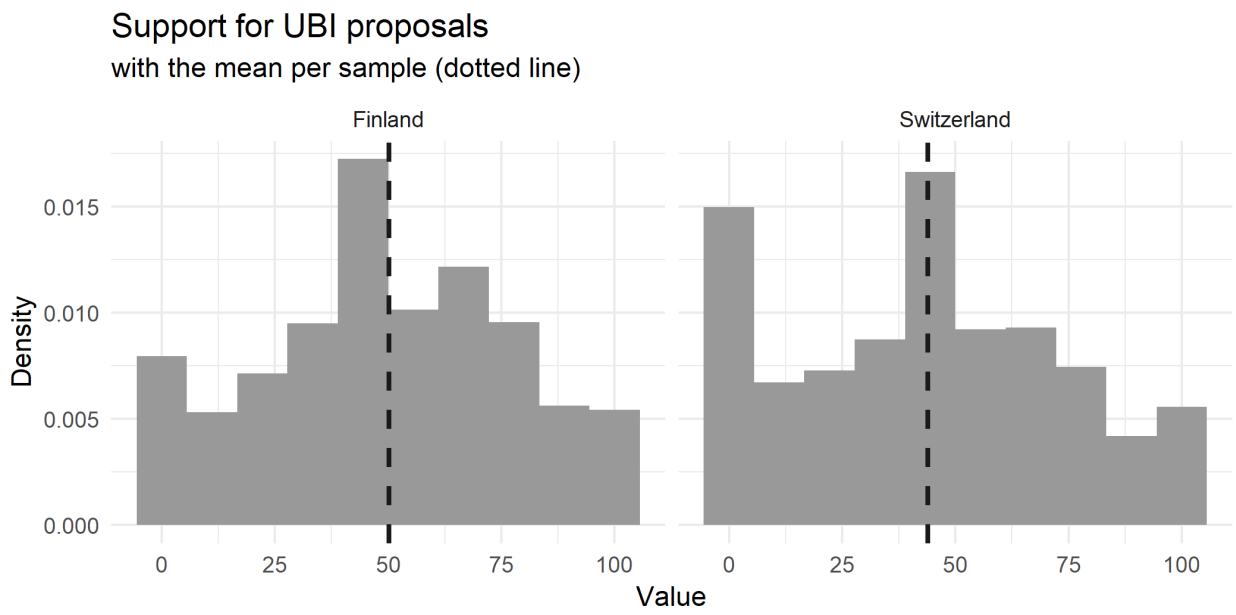

Figure 1: Support for UBI proposals.

- which residents are entitled to an UBI (all permanent residents, after 5 years of residency and after 10 years of residency)
- how the UBI would be financed by cutting back government expenses or through taxes (raising the income or value-added tax, or introducing a transaction tax)
- whether or not social benefits are replaced by an UBI or an UBI is additional and direct payments are cut back
- the same two options for direct payments for agriculture

The respondents actually reacted to the attributes presented through them, which can in a first step be observed through the reported variance in support.

```
deviance <- cj %>% group_by(qs.id) %>%
  summarise(Mean=mean(support),
            Standard.Dev=sd(support),
            Variance=var(support),
            Min=min(support),
            Max=max(support),
            Distinct=n_distinct(support))

deviance$Distance <- deviance$Max-deviance$Min

# join back to the initial data frame
cj <- full_join(cj, deviance, by="qs.id")
rm(deviance)
```

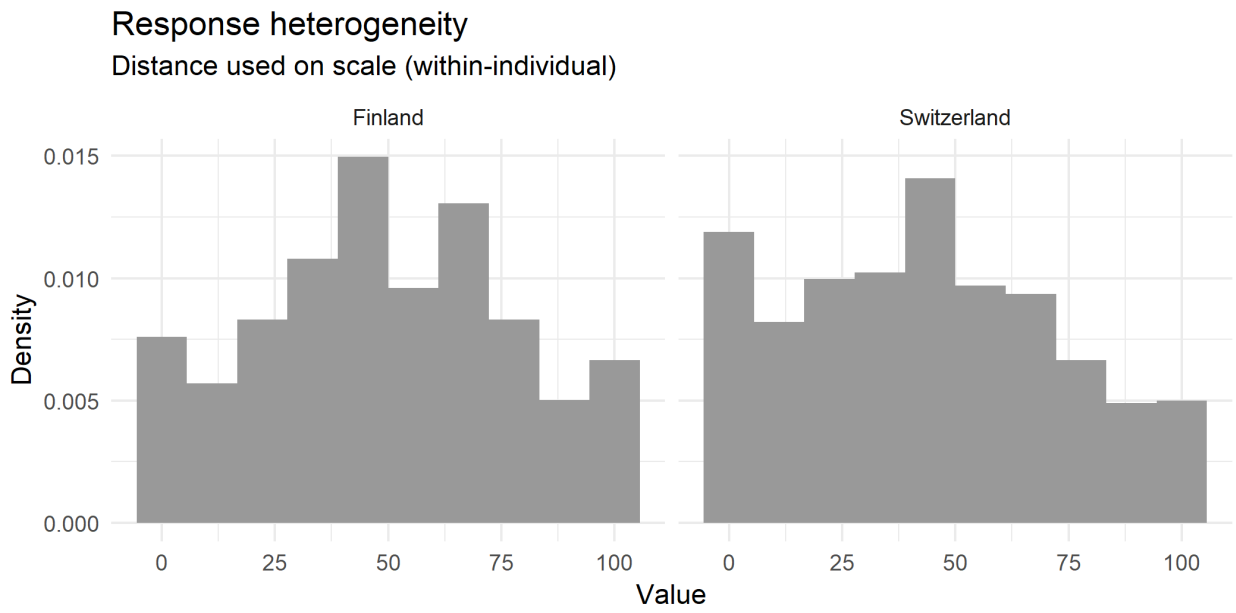

Figure 2: Variance in support, Distance.

```
cj.var <- cj %>%
  filter(task==1 & profile==1) %>%
  select(Distance, sample) %>%
  gather(key = "variable", value = "value", -sample)

ggplot(cj.var, aes(x=value)) +
  geom_histogram(aes(y=..density..), bins=10,
                 fill="grey60") +
  facet_wrap(~sample, nrow=1) +
  labs(title="Response heterogeneity",
       subtitle="Distance used on scale (within-individual)",
       x="Value",
       y="Density") +
  theme_minimal()
```

```
cj.var <- cj %>%
  filter(task==1 & profile==1) %>%
  select(Standard.Dev, sample) %>%
  gather(key = "variable", value = "value", -sample)

ggplot(cj.var, aes(x=value)) +
  geom_histogram(aes(y=..density..), bins=10,
```

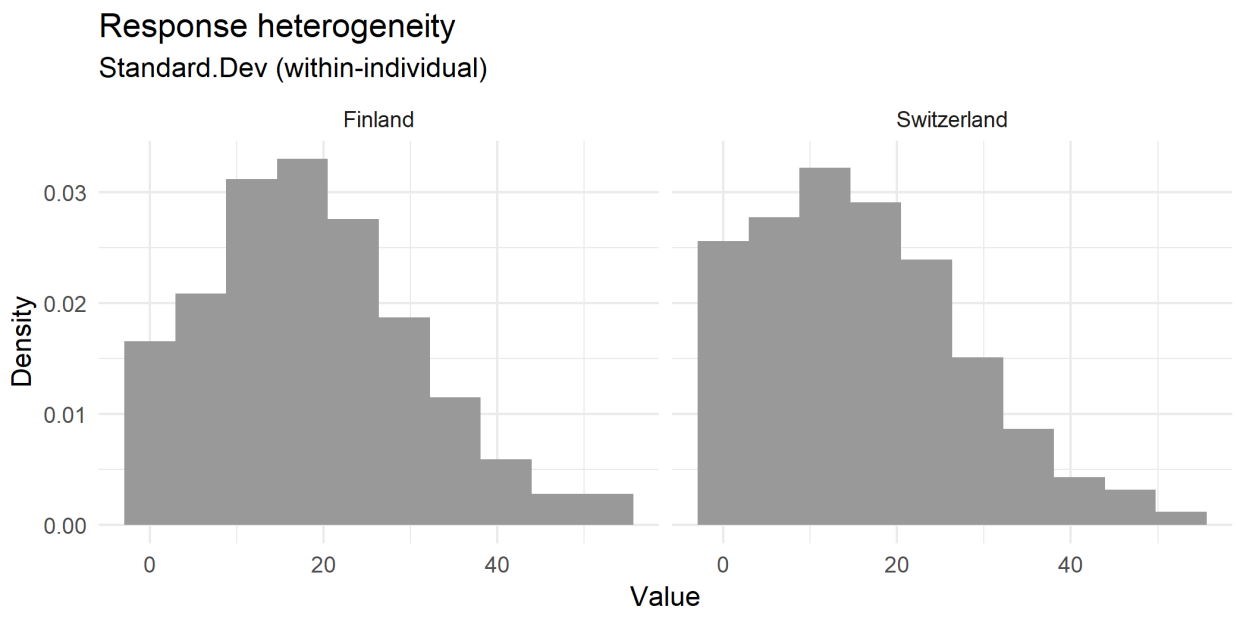

Figure 3: Variance in support, Standard Deviance.

```
                fill="grey60") +
  facet_wrap(~sample, nrow=1) +
  labs(title="Response heterogeneity",
       subtitle="Standard.Dev (within-individual)",
       x="Value",
       y="Density") +
  theme_minimal()
```

Another take at support for UBI proposals are mean support by specific proposals, i.e., to get a mean for each possible combination of policy details.

```
cj %>%
  mutate(concat=paste(Entitlement, Social.benefits, Children,
                      Financing, Direct.payments, Adults, sep="_")) %>%
  filter(!is.na(sample)) %>%
  group_by(sample, concat) %>%
  summarise(mean=mean(support)) %>%
  ggplot(aes(x=mean)) +
  geom_histogram(bins=50, fill="grey60") +
  geom_vline(xintercept=50, color="grey10", linetype=2, size=1) +
  facet_wrap(~sample, ncol=1) +
  labs(title="Mean support per possible UBI combination",
       x="Value",
```

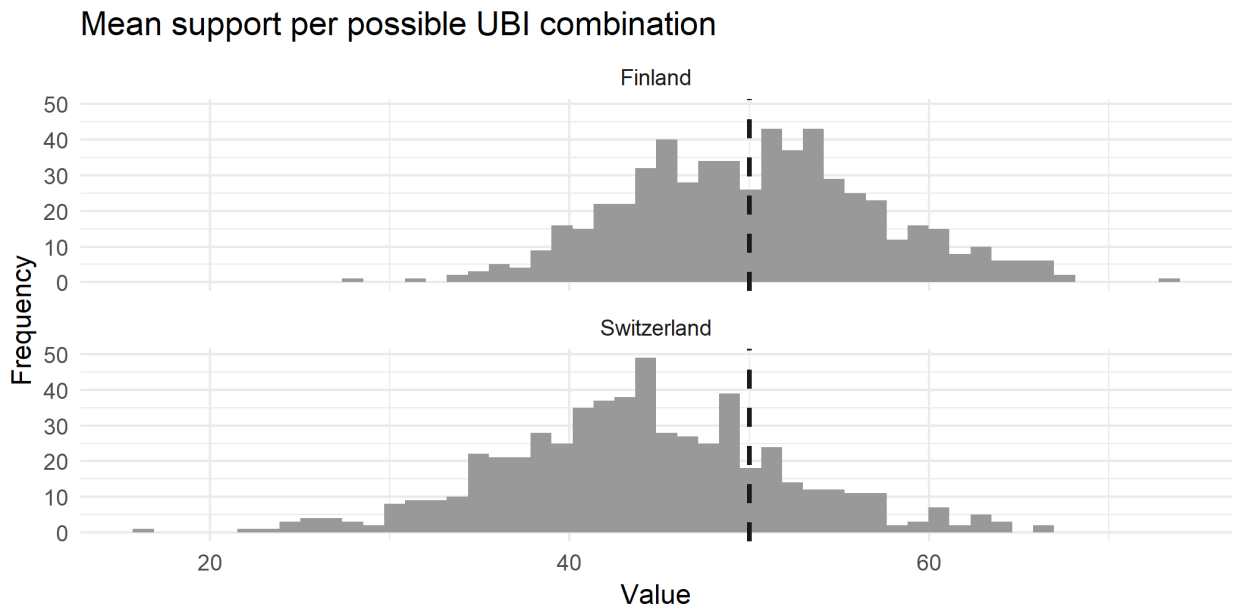

Figure 4: Support for concepts.

```
       y="Frequency") +
  theme_minimal()
```

```
ggsave("img/fig2_meansupport.png",
       dpi=1200,
       units=c("cm"),
       width=20, height=12)
ggsave("img/fig2_meansupport.tiff",
       dpi=1200,
       units=c("cm"),
       width=20, height=12)
```

Besides the variables based on the conjoint models, several individual control variables are considered. Those are:

- `age` categorized in 18-34 years, 35-64 years, and 65 years and older
- Gender `sex` representing women
- Education `educat`, categorized in low (until compulsory level), middle (further education, non-tertiary) and high (tertiary education)
- Income `incomecat`, categorized in low (<5000 CHF per month), middle (5000-8999 CHF) and high (>8999 CHF)
- the type of job a person has, either a full-time job `job.vz`, a part-time job `job.tz` or all other options
- the Left/Right position `lirecat`, categorized in far left, left, middle, right and far right
- how relevant an UBI is considered generally (`dec.rel`)
- and the time it took to answer the conjoint module, both linear `cj.time` and quadratic `cj.time2`

3 Models

3.1 Conjoint models

In a first step, conjoint models explaining support are estimated. First, the model is estimated in a pooled model with interaction effects for the sample.

3.1.1 Support

```
cj[5:10] <- lapply(cj[5:10], factor)
cj$sample <- as.factor(cj$sample)
cj.na <- cj %>% filter(!is.na(sample))

# Support Model
res.support <- amce(
  formula = support ~
    Adults*sample + Children*sample + Entitlement*sample + Financing*sample +
    Social.benefits*sample + Direct.payments*sample,
  respondent.id = "qs.id", respondent.varying="sample",
  data = cj.na,
  na.ignore=T
)

# Prepare Visualization of results
p.support <- plot.amce2(res.support, plot.display = "interaction")

p.support.d <- p.support$data
p.support.d$x <- seq(1,nrow(p.support.d), 1)
p.support.d$facet <- recode_factor(
  p.support.d$facet,
  'Conditional on\nsample = Finland' = "Finland",
  'Conditional on\nsample = Switzerland' = "Switzerland"
)
```

```
# Plot
ggplot(p.support.d) +
  geom_hline(yintercept = 0, size = 0.5, color = "black",
             linetype = "dotted") +
  geom_pointrange(aes(y = pe, ymin = lower, ymax = upper,
                      x = reorder(printvar, -x),
                      color=facet, shape=facet),
                  size=0.4,
```

```
                  position=position_dodge(width=0.95)) +
  ylim(-6.1,4) + coord_flip() +
  facet_grid(~facet) +
  labs(title="UBI Support",
       y="Change in UBI Proposal Support",
       x="",
       color="Sample", shape="Sample") +
  scale_color_brewer(palette="Set1") +
  scale_shape_manual(values=c(16,5,4)) +
  theme_minimal() +
  theme(axis.text.y = element_text(hjust = 0),
        axis.title.x=element_text(size=12),
        legend.position="none")
```

```
rm(p.support, p.support.d)
```

3.1.2 Facetted Support

Next, the marginal effects are estimated separately in a non-pooled model.

```
# Support Model, Finland
cj.sep <- filter(cj.na, sample=="Finland")
res.support.fin <- amce(
  formula = support ~
    Adults + Children + Entitlement + Financing +
    Social.benefits + Direct.payments,
  respondent.id = "qs.id",
  data = cj.sep,
  na.ignore=T
)

# Prepare results for visualization
p.support.fin <- plot.amce2(res.support.fin)
p.support.d.fin <- p.support.fin$data
p.support.d.fin$x <- seq(1,nrow(p.support.d.fin), 1)
p.support.d.fin$facet <- "Finland"

# support Model, Switzerland
cj.sep <- filter(cj.na, sample=="Switzerland")
res.support.sui <- amce(
  formula = support ~
    Adults + Children + Entitlement + Financing +
```

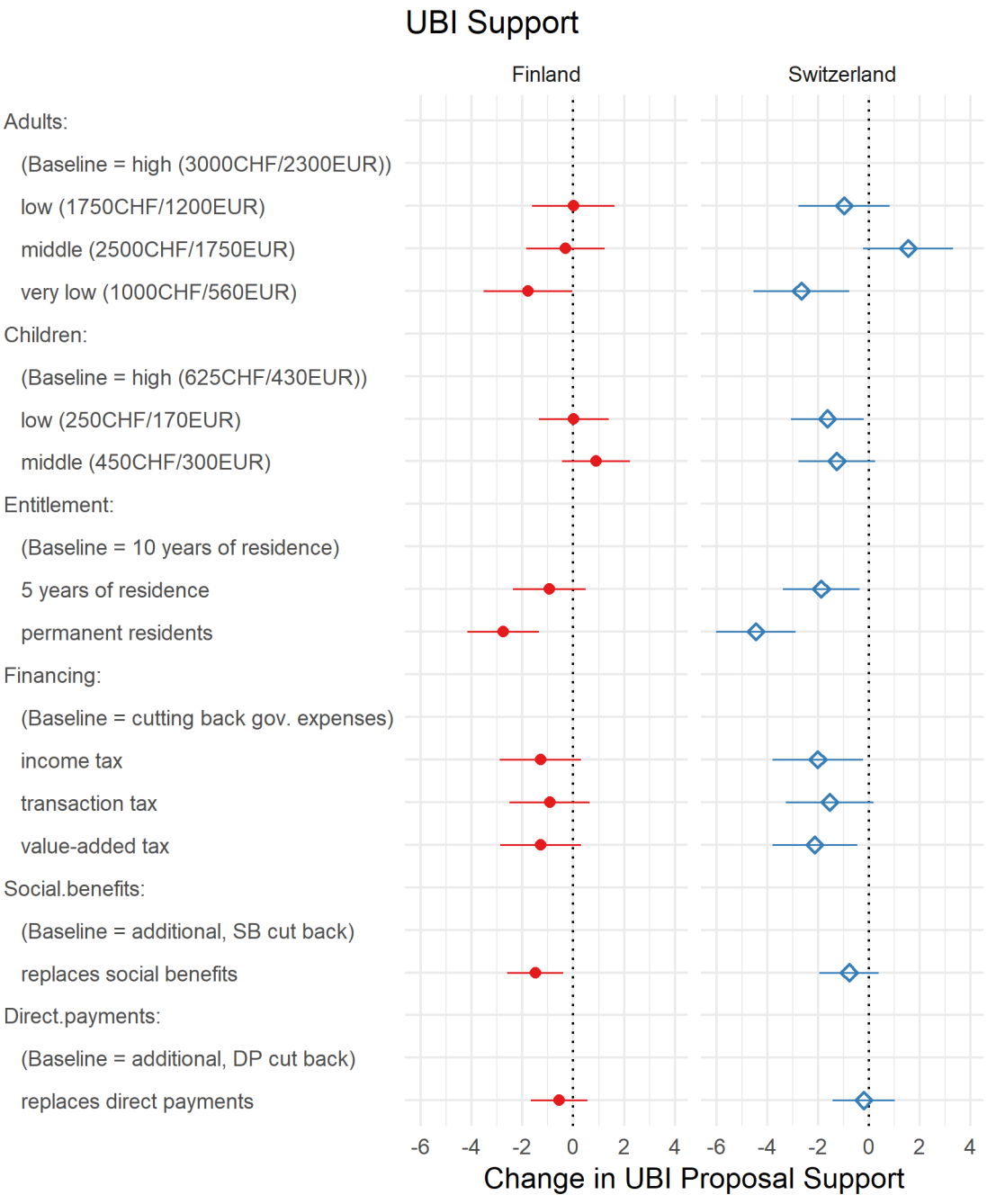

Figure 5: Support AMCE model with Interaction Effect for Finland and Switzerland.

```
    Social.benefits + Direct.payments,
  respondent.id = "qs.id",
  data = cj.sep,
  na.ignore=T
)

# Prepare results for visualization
p.support.sui <- plot.amce2(res.support.sui)
p.support.d.sui <- p.support.sui$data
p.support.d.sui$x <- seq(1,nrow(p.support.d.sui), 1)
p.support.d.sui$facet <- "Switzerland"

# Combine results
p.support.d <- bind_rows(p.support.d.sui, p.support.d.fin)
p.support.d$facet <- as.factor(p.support.d$facet)
```

```
# Plot
ggplot(p.support.d) +
  geom_hline(yintercept = 0, size = 0.5, color = "black",
             linetype = "dotted") +
  geom_pointrange(aes(y = pe, ymin = lower, ymax = upper,
                      x = reorder(printvar, -x),
                      color=facet, shape=facet),
                  size=0.4,
                  position=position_dodge(width=0.95)) +
  ylim(-6.1,4) + coord_flip() +
  facet_grid(~facet) +
  labs(title="UBI support",
       y="Change in UBI Proposal Support",
       x="",
       color="Sample", shape="Sample") +
  scale_color_brewer(palette="Set1") +
  scale_shape_manual(values=c(16,5,4)) +
  theme_minimal() +
  theme(axis.text.y = element_text(hjust = 0),
        axis.title.x=element_text(size=12),
        legend.position="none")
```

```
# Save figures
ggsave("img/fig1_cjsupport.png",
       dpi=1200,
```

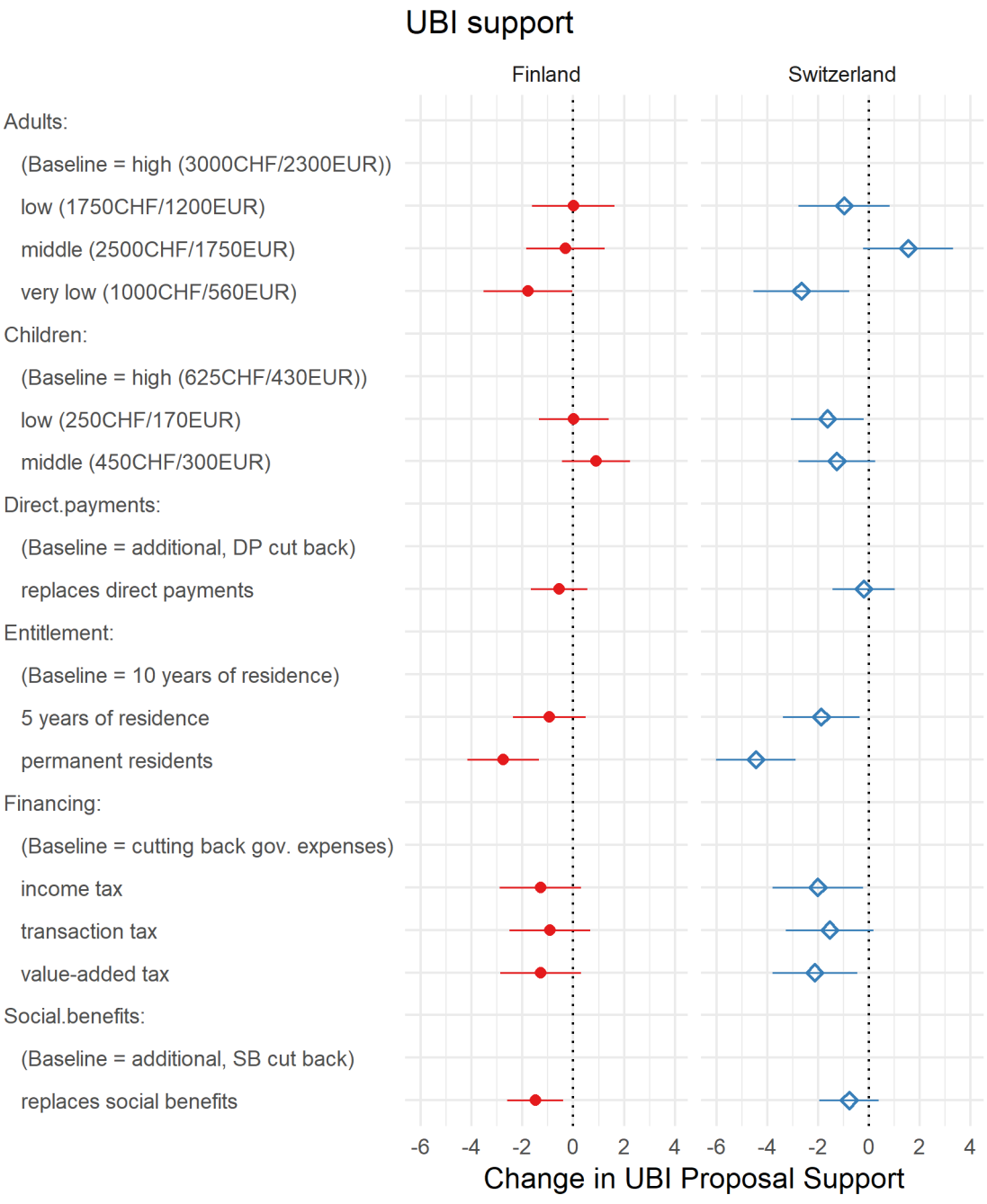

Figure 6: Support AMCE model, separately estimated results for Finland and Switzerland.

```
       units=c("cm"),
       width=21, height=14)
ggsave("img/fig1_cjsupport.tiff",
       dpi=1200,
       units=c("cm"),
       width=21, height=14)
rm(cj.sep, p.support.fin, p.support.sui, p.support.d.fin, p.support.d.sui,
   p.support.d)
```

The results are the same with the pooled model including an interaction for the sample, or the separated models.

4 Group preferences

For group preferences, models with interaction for certain groups are estimated. The code is echoed only for the first variable, left/right.

```
cj.na$lirecat <- NA
cj.na$lirecat[cj.na$lire>=0] <- "far left"
cj.na$lirecat[cj.na$lire>=3] <- "left"
cj.na$lirecat[cj.na$lire==5] <- "middle"
cj.na$lirecat[cj.na$lire>=6] <- "right"
cj.na$lirecat[cj.na$lire>=8] <- "far right"
cj.na$lirecat <- factor(cj.na$lirecat,
                        levels=c("far left","left","middle",
                                 "right","far right"))

cj.na$xfactor <- cj.na$lirecat
cj.nax <- filter(cj.na, !is.na(xfactor))

# Finland
cj.sep <- filter(cj.nax, sample=="Finland")
res.support.fin <- amce(
  formula = support ~
    Adults*xfactor + Children*xfactor + Entitlement*xfactor +
    Financing*xfactor + Social.benefits*xfactor +
    Direct.payments*xfactor,
  respondent.id = "qs.id", respondent.varying="xfactor",
  data = cj.sep,
  na.ignore=T
)
```

```r
# Prepare results for visualization
p.support.fin <- plot.amce2(res.support.fin, plot.display = "interaction")
p.support.d.fin <- p.support.fin$data
p.support.d.fin$x <- seq(1,nrow(p.support.d.fin), 1)
p.support.d.fin$sample <- "Finland"
p.support.d.fin$facet <- recode_factor(
  p.support.d.fin$facet,
  'Conditional on\nxfactor = far left' = "far left",
  'Conditional on\nxfactor = left' = "left",
  'Conditional on\nxfactor = middle' = "middle",
  'Conditional on\nxfactor = right' = "right",
  'Conditional on\nxfactor = far right' = "far right"
)

# Switzerland
cj.sep <- filter(cj.nax, sample=="Switzerland")
res.support.sui <- amce(
  formula = support ~
    Adults*xfactor + Children*xfactor + Entitlement*xfactor +
    Financing*xfactor + Social.benefits*xfactor +
    Direct.payments*xfactor,
  respondent.id = "qs.id", respondent.varying="xfactor",
  data = cj.sep,
  na.ignore=T
)

# Prepare results for visualization
p.support.sui <- plot.amce2(res.support.sui, plot.display = "interaction")
p.support.d.sui <- p.support.sui$data
p.support.d.sui$x <- seq(1,nrow(p.support.d.sui), 1)
p.support.d.sui$sample <- "Switzerland"
p.support.d.sui$facet <- recode_factor(
  p.support.d.sui$facet,
  'Conditional on\nxfactor = far left' = "far left",
  'Conditional on\nxfactor = left' = "left",
  'Conditional on\nxfactor = middle' = "middle",
  'Conditional on\nxfactor = right' = "right",
  'Conditional on\nxfactor = far right' = "far right"
)

# Combine results
```

```
p.support.d <- bind_rows(p.support.d.sui, p.support.d.fin)
p.support.d$facet <- as.factor(p.support.d$facet)
```

```
# Plot
ggplot(p.support.d) +
  geom_hline(yintercept = 0, size = 0.5, color = "black",
             linetype = "dotted") +
  geom_pointrange(aes(y = pe, ymin = lower, ymax = upper,
                      x = reorder(printvar, -x),
                      color=sample, shape=sample),
                  size=0.4,
                  position=position_dodge(width=0.95)) +
  ylim(-15,12) + coord_flip() +
  facet_grid(~facet) +
  labs(title="UBI support by left/right ideology",
       y="Change in Pr(UBI Proposal Chosen)",
       x="",
       color="Sample", shape="Sample") +
  scale_color_brewer(palette="Set1") +
  scale_shape_manual(values=c(16,5,4)) +
  theme_minimal() +
  theme(axis.text.y = element_text(hjust = 0),
        axis.title.x=element_text(size=12),
        legend.position="bottom")
```

```
# Save figures
ggsave("img/fig_cjsupport_lire.png",
       dpi=1200,
       units=c("cm"),
       width=21, height=14)
ggsave("img/fig_cjsupport_lire.tiff",
       dpi=1200,
       units=c("cm"),
       width=21, height=14)
rm(cj.sep, p.support.fin, p.support.sui, p.support.d.fin, p.support.d.sui,
   p.support.d)
```

```
sessionInfo()
```

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 17134)
```

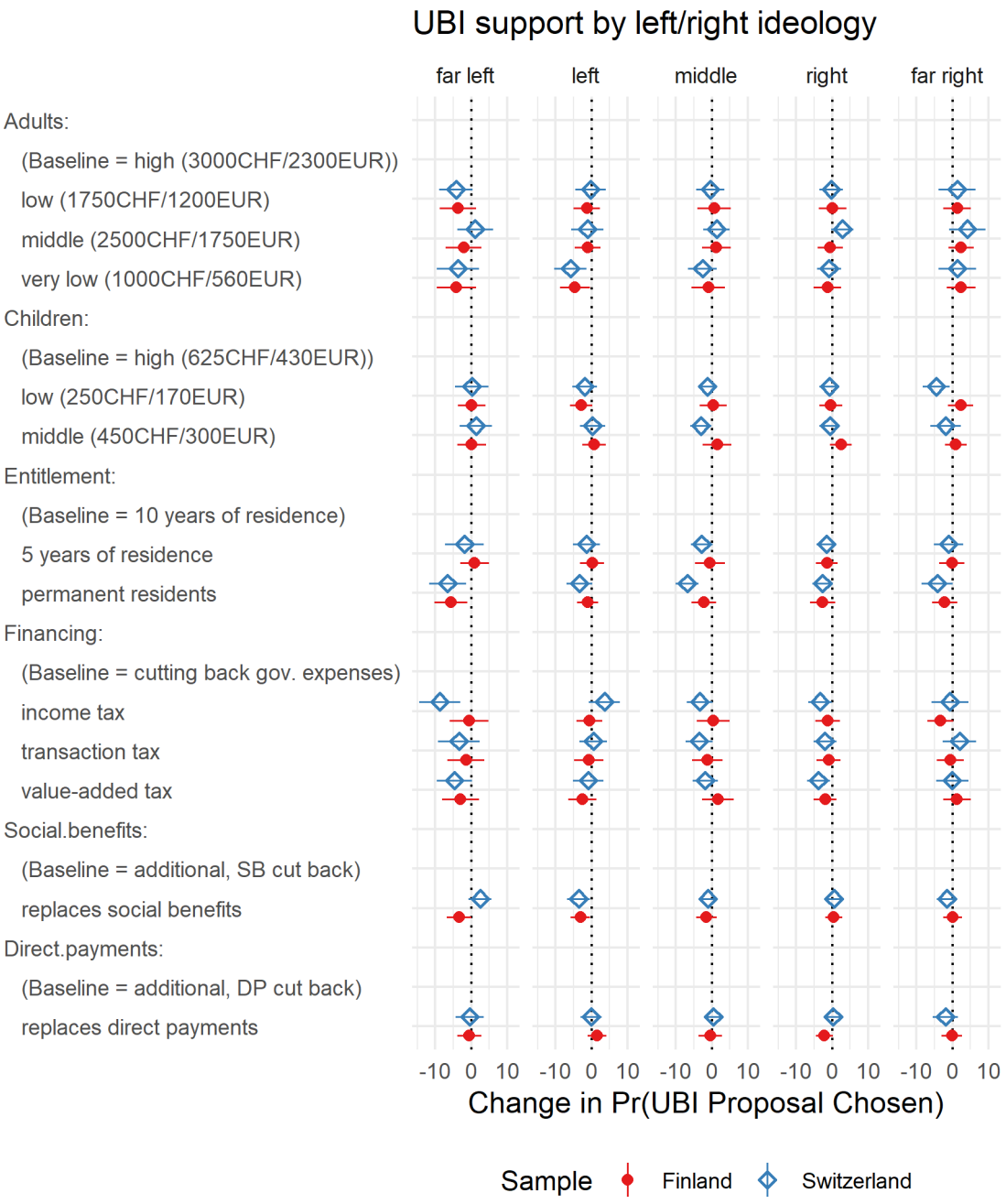

Figure 7: Support AMCE model by ideology, separately estimated results for Finland and Switzerland.

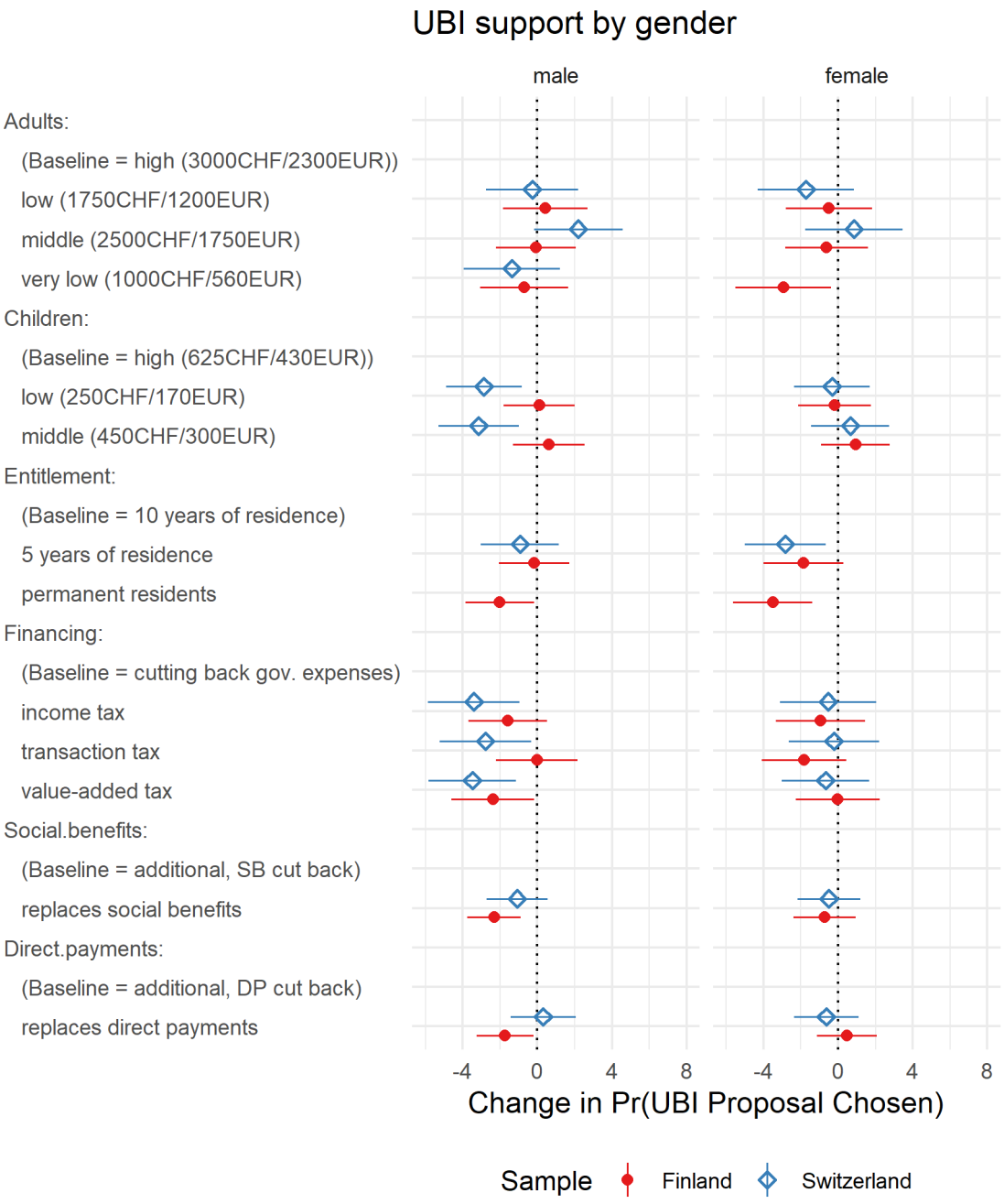

Figure 8: Support AMCE model by gender, separately estimated results for Finland and Switzerland.

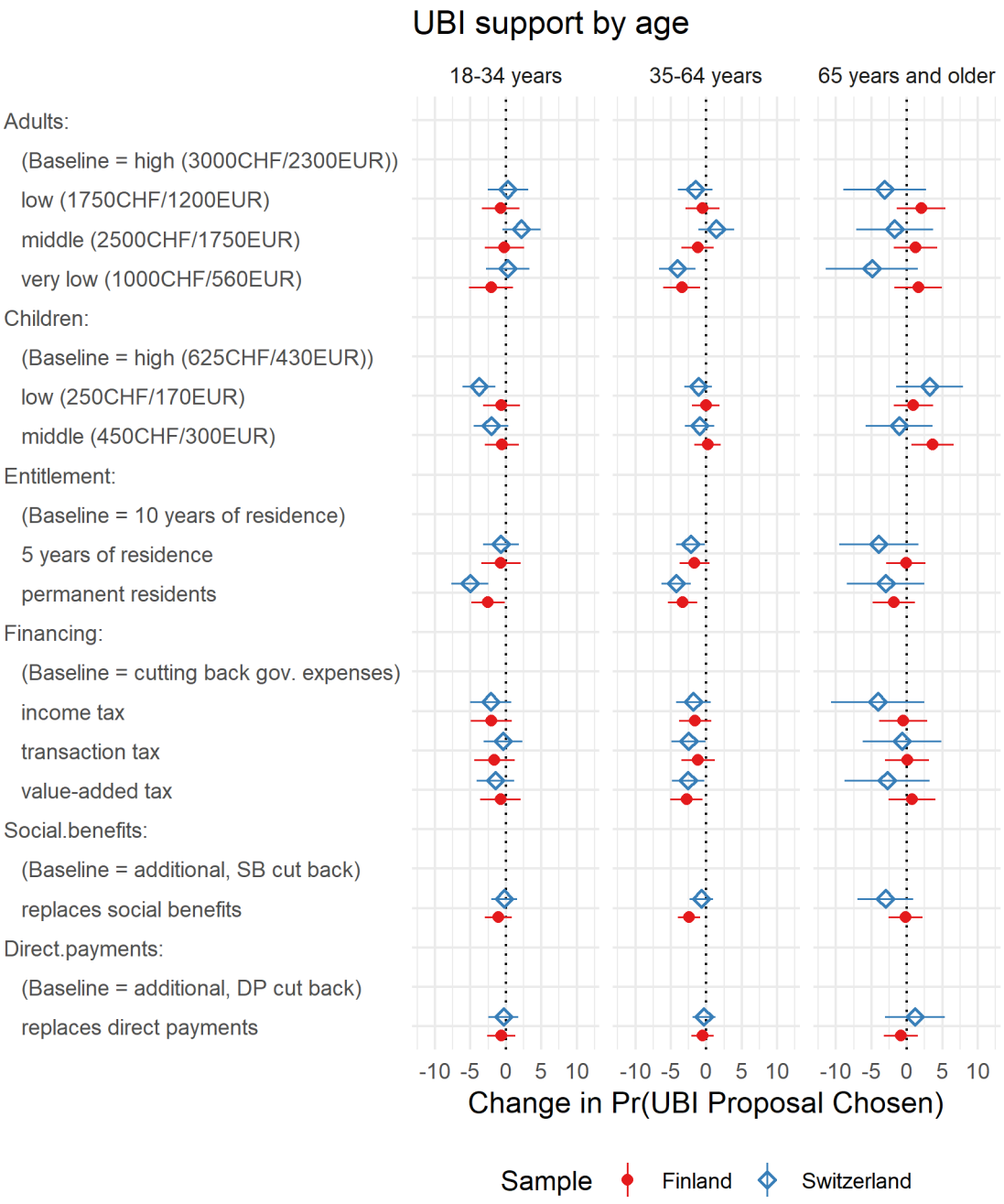

Figure 9: Support AMCE model by age, separately estimated results for Finland and Switzerland.

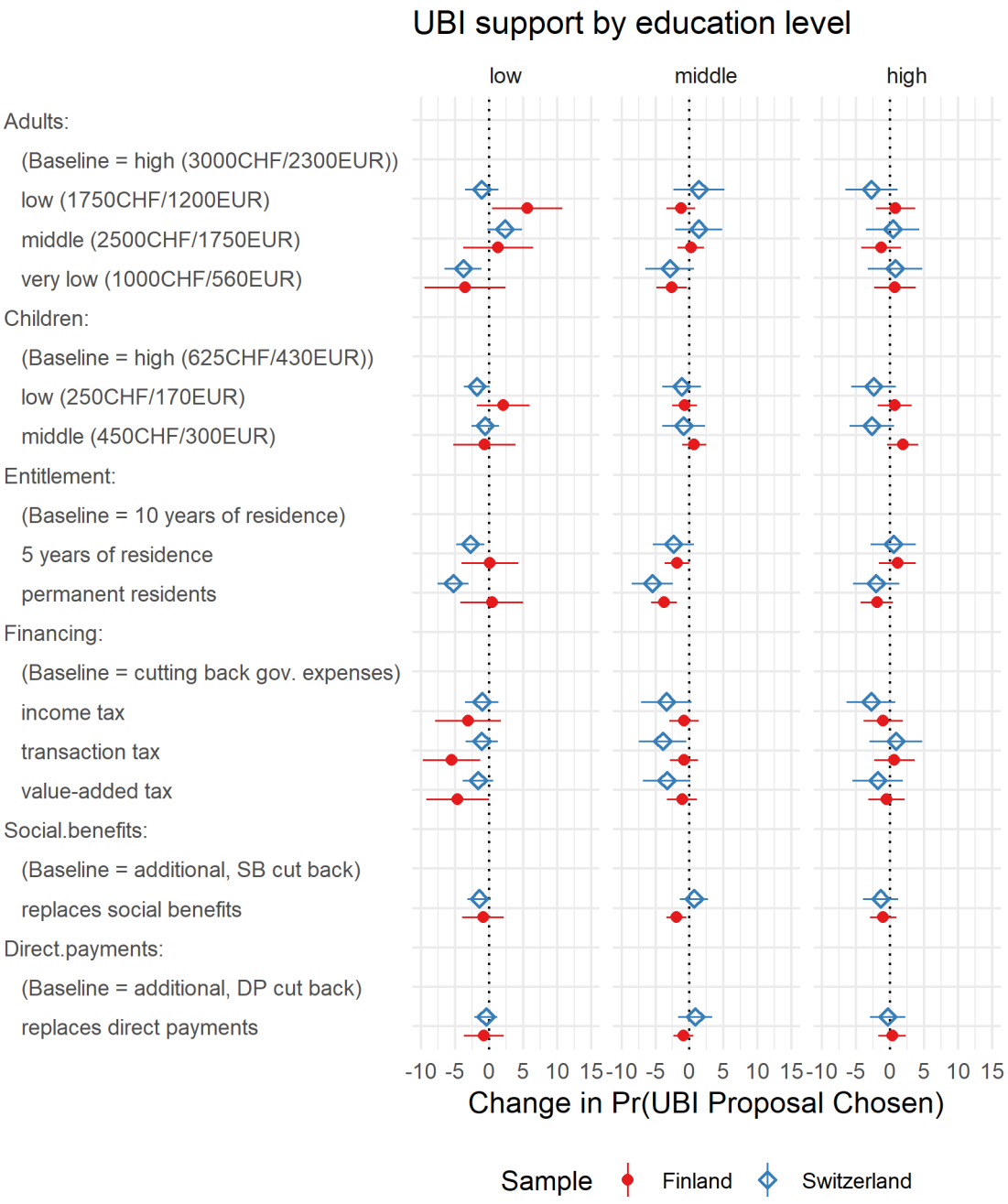

Figure 10: Support AMCE model by education, separately estimated results for Finland and Switzerland.

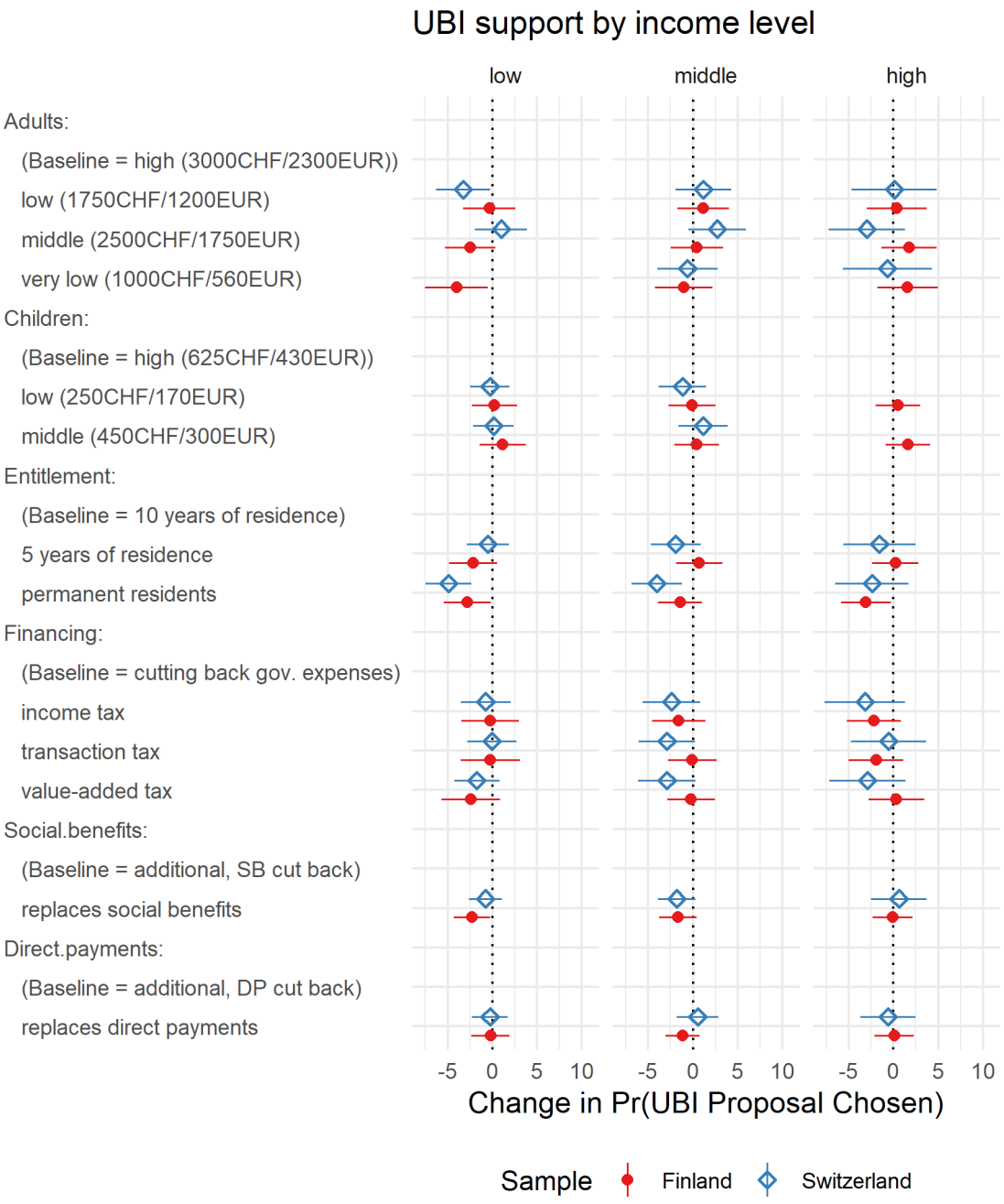

Figure 11: Support AMCE model by income, separately estimated results for Finland and Switzerland.

```
##
## Matrix products: default
##
## locale:
## [1] LC_COLLATE=German_Switzerland.1252  LC_CTYPE=German_Switzerland.1252
## [3] LC_MONETARY=German_Switzerland.1252 LC_NUMERIC=C
## [5] LC_TIME=German_Switzerland.1252
##
## attached base packages:
## [1] grid      stats     graphics  grDevices utils     datasets  methods
## [8] base
##
## other attached packages:
##  [1] bindrcpp_0.2.2  Hmisc_4.1-1     Formula_1.2-3   lattice_0.20-35
##  [5] texreg_1.36.23  lme4_1.1-18-1   broom_0.5.0     cjoint_2.0.6
##  [9] survey_3.33-2   survival_2.42-3 Matrix_1.2-14   lmtest_0.9-36
## [13] zoo_1.8-3       sandwich_2.5-0  forcats_0.3.0   stringr_1.3.1
## [17] dplyr_0.7.6     purrr_0.2.5     readr_1.1.1     tidyr_0.8.1
## [21] tibble_1.4.2    ggplot2_3.0.0   tidyverse_1.2.1 pacman_0.4.6
##
## loaded via a namespace (and not attached):
##  [1] httr_1.3.1          jsonlite_1.5        splines_3.5.1
##  [4] modelr_0.1.2        assertthat_0.2.0    latticeExtra_0.6-28
##  [7] cellranger_1.1.0    yaml_2.2.0          pillar_1.3.0
## [10] backports_1.1.2     glue_1.3.0          digest_0.6.16
## [13] checkmate_1.8.5     RColorBrewer_1.1-2  rvest_0.3.2
## [16] minqa_1.2.4         colorspace_1.3-2    htmltools_0.3.6
## [19] plyr_1.8.4          pkgconfig_2.0.2     haven_1.1.2
## [22] bookdown_0.7        scales_1.0.0        htmlTable_1.12
## [25] withr_2.1.2         nnet_7.3-12         lazyeval_0.2.1
## [28] cli_1.0.0           magrittr_1.5        crayon_1.3.4
## [31] readxl_1.1.0        evaluate_0.11       fansi_0.3.0
## [34] nlme_3.1-137        MASS_7.3-50         xml2_1.2.0
## [37] foreign_0.8-70      data.table_1.11.4   tools_3.5.1
## [40] hms_0.4.2           munsell_0.5.0       cluster_2.0.7-1
## [43] compiler_3.5.1      rlang_0.2.2         nloptr_1.0.4
## [46] rstudioapi_0.7      htmlwidgets_1.2     labeling_0.3
## [49] base64enc_0.1-3     rmarkdown_1.10      codetools_0.2-15
## [52] gtable_0.2.0        reshape2_1.4.3      R6_2.2.2
## [55] gridExtra_2.3       lubridate_1.7.4     knitr_1.20
## [58] utf8_1.1.4          bindr_0.1.1         rprojroot_1.3-2
```

```
## [61] stringi_1.1.7       Rcpp_0.12.18        rpart_4.1-13
## [64] acepack_1.4.1       tidyselect_0.2.4    xfun_0.3
```