```
---
title: "US Top Income Share vs Tax Rates (1913 ~ 2015)"
author: "coop711"
date: "`r Sys.Date()`"
output: html_document
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## Data Preparation

준비한 자료는  [E. Saez 교수의 홈페이지](http://elsa.berkeley.edu/~saez/)에 있는 `TabFig2015prel.xls` 와 [Tax Foundation](http://taxfoundation.org/)에서 제공하는 자료를 손봐서 불러들인 것이다.

```{r, data preparation, message = FALSE, echo = FALSE, results = 'hide'}
options(digits = 2)
# library(xlsx)
library(knitr)
load("US_top_income_shares_2015_add.rda")
load("US_top_income_shares_vs_tax_rates_2015.rda")
# str(US.top.income.shares.15)
# kable(cbind(top.income_tax, Rate_99 = Rate_99, Rate_1 = Rate_1, Rate_99_K = Rate_99_K,
Rate_1_K = Rate_1_K))
```

이 중에서 소득 상위 1%(`P99_100`)몫과 최고세율(Marginal Tax Rates) 간의 관계를 살펴보자

```{r, top 1 percent shares vs MTR, echo = FALSE, fig.width = 12, fig.height = 6.75}
# png(file = "../pics/US_Top_Income_Share_vs_MTR_72dpi_kr.png", width = 864, height = 486)
# png(file = "../pics/US_Top_Income_Share_vs_MTR_300dpi_kr.png", width = 1280, height =
720)
par(mar = c(5, 6, 4, 6) + 0.1)
par(family = "HCR Dotum LVT")
plot(P99_100 ~ Year, data = top.income_tax, type = "b", pch = 17, axes = FALSE, ann =
FALSE, xlim = c(1910, 2020), ylim = c(5, 25))
box()
axis(side = 1, at = seq(1910, 2020, by = 10), labels = seq(1910, 2020, by = 10))
axis(side = 2, at = seq(5, 25, by = 5), labels = seq(5, 25, by = 5), las = 1)
mtext("상위 1% 소득점유율(%)", side = 2, line = 3)
par(new = TRUE)
plot(Marginal ~ Year, data = top.income_tax, type ="l", lty = 2, lwd = 2, col = "red",
axes = FALSE, ann = FALSE, xlim = c(1910, 2020), ylim = c(0, 100))
axis(side = 4, at = seq(0, 100, by = 20), labels = seq(0, 100, by = 20), las = 1)
mtext("최고 한계세율(%)", side = 4, line = 3)
title(main = "상위 1% 소득점유율과 최고 한계세율", xlab = "연도", cex.main = 1.5)
text(x = 1955, y = 95, labels = "최고 한계세율", cex = 1.2)
text(x = 1960, y = 15, labels = "상위 1% 소득점유율", cex = 1.2)
# dev.copy(png, file ="../pics/US_Top_Income_Share_vs_MTR_kr.png", width = 960, height =
540)
# dev.off()
```

<P style = "page-break-before:always"/>

상위 1%의 소득 증가폭과 하위 99%의 소득 증가폭(자본이득 제외)을 최고세율의 변화와 함께 비교

```{r, top 1 and bottom 99 vs MTR, echo = FALSE, fig.width = 12, fig.height = 6.75}
# png(file = "../pics/US_Income_Growth_vs_MTR_72dpi_kr.png", width = 864, height = 486)
# png(file = "../pics/US_Income_Growth_vs_MTR_300dpi_kr.png", width = 1280, height = 720)
par(mar = c(5, 6, 4, 6) + 0.1)
par(family = "HCR Dotum LVT")
plot(Rate_99 ~ Year, data = top.income_tax, type = "b", pch = 24, col = "black", bg =
"black", axes = FALSE, ann = FALSE, xlim = c(1910, 2020), ylim = c(0, 400))
lines(Rate_1 ~ Year, data = top.income_tax, type = "b", pch = 24, col = "black", bg =
"white")
box()
axis(side = 1, at = seq(1910, 2020, by = 10), labels = seq(1910, 2020, by = 10))
axis(side = 2, at = seq(0, 400, by = 100), labels = seq(0, 400, by = 100), las = 1)
ylab.2 <- "평균 소득 (1913 = 100)"
```
```

```
mtext(ylab.2, side = 2, line = 3)
# mtext(ylab.2, side = 2)
par(new = TRUE)
plot(Marginal ~ Year, data = top.income_tax, type ="l", lty = 2, col = "red", lwd = 2,
axes = FALSE, ann = FALSE, xlim = c(1910, 2020), ylim = c(0, 100))
axis(side = 4, at = seq(0, 100, by = 20), labels = seq(0, 100, by = 20), las = 1)
ylab.4 <- "최고 한계세율(%)"
mtext(ylab.4, side = 4, line = 3)
title(main = "상위 1%와 하위 99% 소득 증가\n(자본이득 제외)", xlab = "연도", cex.main = 1.5)
legend("bottom", legend = c("하위 99%", "상위 1%"), pch = 24, col = "black", pt.bg =
c("black", "white"), inset = 0.05)
# legend("bottom", legend = c("Bottom 99%", "Top 1%"), pch = 24, col = "black", pt.bg =
c("black", "white"))
text(x = 1955, y = 95, labels = "최고 한계세율", cex = 1.2)
# dev.copy(png, file ="../pics/US_Income_Growth_vs_MTR_kr.png", width = 960, height = 540)
# dev.off()
```

상위 1%의 소득 증가폭과 하위 99%의 소득 증가폭(자본이득 포함)을 최고세율의 변화와 함께 비교

```{r, top 1 and bottom 99 vs MTR with K, echo = FALSE, fig.width = 12, fig.height = 6.75}
# png(file = "../pics/US_Income_Growth_vs_MTR_72dpi_K_kr.png", width = 864, height = 486)
# png(file = "../pics/US_Income_Growth_vs_MTR_300dpi_K_kr.png", width = 1280, height =
720)
par(mar = c(5, 6, 4, 6) + 0.1)
par(family = "HCR Dotum LVT")
plot(Rate_99_K ~ Year, data = top.income_tax, type = "b", pch = 24, col = "black", bg =
"black", axes = FALSE, ann = FALSE, xlim = c(1910, 2020), ylim = c(0, 600))
lines(Rate_1_K ~ Year, data = top.income_tax, type = "b", pch = 24, col = "black", bg =
"white")
box()
axis(side = 1, at = seq(1910, 2020, by = 10), labels = seq(1910, 2020, by = 10))
axis(side = 2, at = seq(0, 600, by = 100), labels = seq(0, 600, by = 100), las = 1)
mtext("평균 소득 (1913 = 100)", side = 2, line = 3)
par(new = TRUE)
plot(Marginal ~ Year, data = top.income_tax, type ="l", lty = 2, col = "red", lwd = 2,
axes = FALSE, ann = FALSE, xlim = c(1910, 2020), ylim = c(0, 100))
axis(side = 4, at = seq(0, 100, by = 20), labels = seq(0, 100, by = 20), las = 1)
mtext("최고 한계세율(%)", side = 4, line = 3)
title(main = "상위 1%와 하위 99% 소득 증가\n(자본이득 포함)", xlab = "연도", cex.main = 1.5)
legend("bottom", legend = c("하위 99%", "상위 1%"), pch = 24, col = "black", pt.bg =
c("black", "white"), inset = 0.05)
text(x = 1955, y = 95, labels = "최고 한계세율", cex = 1.2)
# dev.copy(png, file ="../pics/US_Income_Growth_vs_MTR_K_kr.png", width = 960, height =
540)
# dev.off()
```

<!--## 뒷 정리

```{r, save.image}
# save.image(file = "US_top_income_shares_vs_tax_rates_2015.rda")
```
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