BEA Fixed Assets - Example

Datasets

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Contents

Preamble

```
rm(list = ls())
pklist <- c("curl", "tidyverse", "rvest")
source("https://fgeerolf.github.io/datasets/load-packages.R")
options(tibble.print_max = 100)
```

Datasets

```
load("NIPA.fixed.asset.tables.RData")
load("../bea-nipa/nipa.RData")
load("../bea-nipa/nipa.annual.RData")
load("../bea-nipa/nipa.series.RData")

gdp <- nipa.annual %>%
  rename(seriescode = variable) %>%
  full_join(nipa.series, by = "seriescode") %>%
  filter(seriescode == "A001RC") %>%
  select(year, gdp = value) %>%
  arrange(year)

gdp %>%
  tail(10)
```

```
##    year      gdp
## 80 2008 14867453
## 81 2009 14590870
## 82 2010 15187772
## 83 2011 15778960
```

```
## 84 2012 16429308
## 85 2013 17015583
## 86 2014 17763425
## 87 2015 18445536
## 88 2016 18922511
## 89 2017 19729061
```

1937 and 2015

```
NIPA.fixed.asset.tables %>%
  filter(table_number == "Table 2.1.",
         year %in% c(1937, 2015)) %>%
  select(year, value, line, description) %>%
  merge(gdp, by = "year") %>%
  arrange(line, year) %>%
  mutate(value = round(value * 1000*100/gdp, digits = 1)) %>%
  select(-gdp) %>%
  spread(year, value) %>%
  filter(`2015` >= 20) %>%
  as.tibble
```

```
## # A tibble: 11 x 4
##     line description                `1937` `2015`
##    <int> <chr>                      <dbl>  <dbl>
##  1     1 Private fixed assets       248.   223
##  2     2 Equipment                   32.5   33.9
##  3     3 Nonresidential equipment    32     33.7
##  4    35 Structures                 212.   175.
##  5    36 Nonresidential structures   99.4   71.5
##  6    37 Commercial and health care  17.3   26.3
##  7    67 Residential structures     112.   103.
##  8    68 Housing units              102.    78.3
##  9    69 Permanent site             102.    77
## 10    70 1-to-4-unit                 92     66.1
## 11    74 Improvements                 9.1   23.1
```

And below are all items.

```
NIPA.fixed.asset.tables %>%
  filter(table_number == "Table 2.1.",
         year %in% c(1937, 2015)) %>%
  select(year, value, line, description) %>%
  merge(gdp, by = "year") %>%
  arrange(line, year) %>%
  mutate(value = round(value * 1000*100/gdp, digits = 1)) %>%
  select(-gdp) %>%
  spread(year, value) %>%
  as.tibble
```

```
## # A tibble: 103 x 4
##     line description                      `1937` `2015`
##    <int> <chr>                            <dbl>  <dbl>
##  1     1 Private fixed assets             248.   223
##  2     2 Equipment                         32.5   33.9
```

```
##  3     3 Nonresidential equipment             32     33.7
##  4     4 Information processing equipment      1.6    7.4
##  5     5 Computers and peripheral equipment    0      1
##  6     6 Communication equipment               0.9    2.8
##  7     7 Medical equipment and instruments     0.1    2.3
##  8     8 Nonmedical instruments                0.2    1.1
##  9     9 Photocopy and related equipment       0.1    0.2
## 10    10 Office and accounting equipment       0.4    0.1
## # ... with 93 more rows
```

Finally, here are all items but ranked:

```
NIPA.fixed.asset.tables %>%
  filter(table_number == "Table 2.1.",
         year %in% c(1937, 2015)) %>%
  select(year, value, line, description) %>%
  merge(gdp, by = "year") %>%
  arrange(line, year) %>%
  mutate(value = round(value * 1000*100/gdp, digits = 1)) %>%
  select(-gdp) %>%
  spread(year, value) %>%
  arrange(-`2015`) %>%
  as.tibble
```

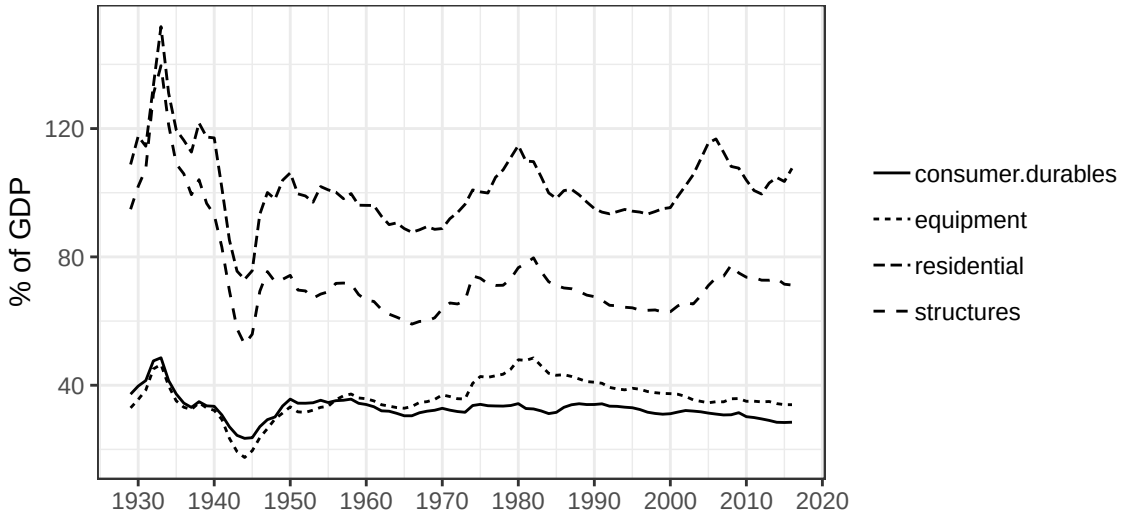
```
## # A tibble: 103 x 4
##     line description                `1937` `2015`
##    <int> <chr>                      <dbl>  <dbl>
##  1     1 Private fixed assets       248.   223
##  2    35 Structures                 212.   175.
##  3    67 Residential structures     112.   103.
##  4    68 Housing units              102.    78.3
##  5    69 Permanent site             102.    77
##  6    36 Nonresidential structures   99.4   71.5
##  7    70 1-to-4-unit                 92     66.1
##  8     2 Equipment                   32.5   33.9
##  9     3 Nonresidential equipment    32     33.7
## 10    37 Commercial and health care  17.3   26.3
## # ... with 93 more rows
```

Time series

Decomposing in big items

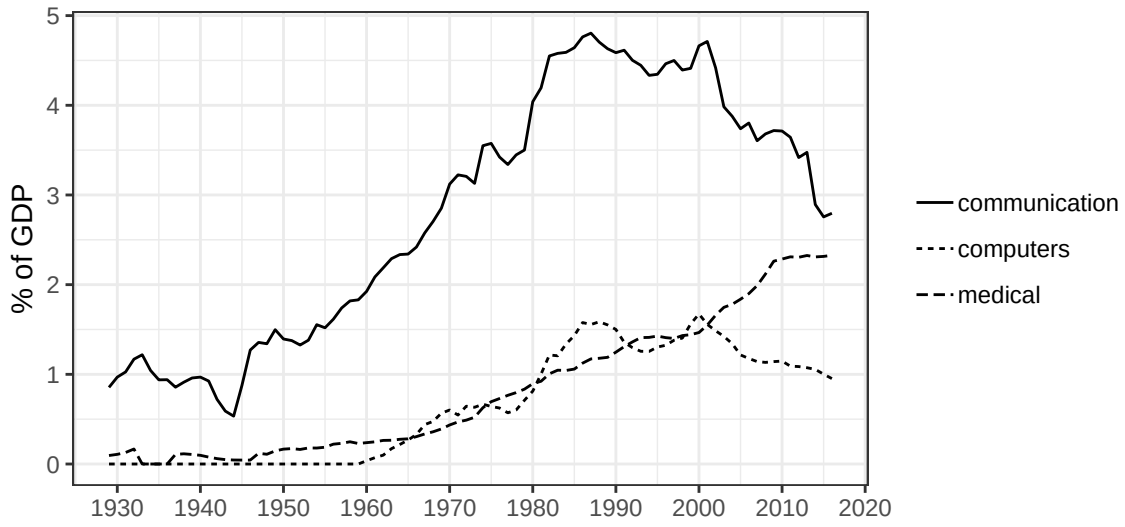
```
matrix(c("Table 1.1.", 6, "structures",
         "Table 1.1.", 8, "residential",
         "Table 1.1.", 15, "consumer.durables",
         "Table 2.1.", 2, "equipment"),
       byrow = TRUE, ncol = 3) %>%
  as.data.frame %>%
  mutate(V2 = V2 %>% paste %>% as.numeric) %>%
  rename(table_number = V1, line = V2, variable = V3) %>%
  left_join(NIPA.fixed.asset.tables,
            by = c("table_number", "line")) %>%
  select(variable, year, value) %>%
```

```
  merge(gdp, by = "year") %>%
  mutate(value = value * 1000*100/gdp) %>%
  arrange(value) %>%
  ggplot(data = ., aes(x = year, y = value, linetype = variable)) +
  geom_line() + ylab("% of GDP") + xlab("") +
  scale_x_continuous(breaks = seq(1920, 2025, 10)) +
  theme_bw() + theme(legend.title = element_blank())
```



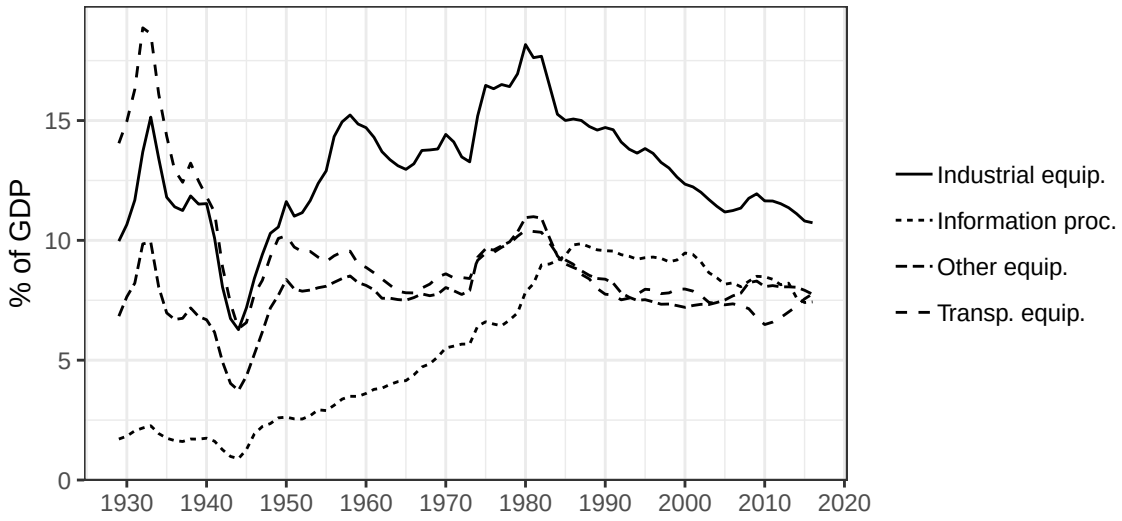
Decomposing Equipment: computers, communication, medical

```
matrix(c("Table 2.1.", 5, "computers",
         "Table 2.1.", 6, "communication",
         "Table 2.1.", 7, "medical"), byrow = TRUE, ncol = 3) %>%
  as.data.frame %>%
  mutate(V2 = as.numeric(paste(V2))) %>%
  rename(table_number = V1, line = V2, variable = V3) %>%
  as.data.frame %>%
  left_join(NIPA.fixed.asset.tables,
            by = c("table_number", "line")) %>%
  select(variable, year, value) %>%
  merge(gdp, by = "year") %>%
  mutate(value = value * 1000*100/gdp) %>%
  ggplot(data = ., aes(x = year, y = value, linetype = variable)) +
  geom_line() + ylab("% of GDP") + xlab("") +
  scale_x_continuous(breaks = seq(1920, 2025, 10)) +
  theme_bw() + theme(legend.title = element_blank())
```



Information proc., Industrual equip., Transp .equip., Other equip.

```
matrix(c("Table 2.1.", 4, "Information proc.",
         "Table 2.1.", 11, "Industrial equip.",
         "Table 2.1.", 18, "Transp. equip.",
         "Table 2.1.", 26, "Other equip."),
       byrow = TRUE, ncol = 3) %>%
  as.data.frame %>%
  mutate(V2 = as.numeric(paste(V2))) %>%
  rename(table_number = V1, line = V2, variable = V3) %>%
  left_join(NIPA.fixed.asset.tables,
            by = c("table_number", "line")) %>%
  select(variable, year, value) %>%
  arrange(variable, year) %>%
  merge(gdp, by = "year") %>%
  mutate(value = value * 1000*100/gdp) %>%
  ggplot(data = ., aes(x = year, y = value, linetype = variable)) +
  geom_line() + ylab("% of GDP") + xlab("") +
  scale_x_continuous(breaks = seq(1920, 2025, 10)) +
  theme_bw() + theme(legend.title = element_blank())
```



Decomposition of Investment

Example in 1937 and 2015

Finally, here are all items but ranked:

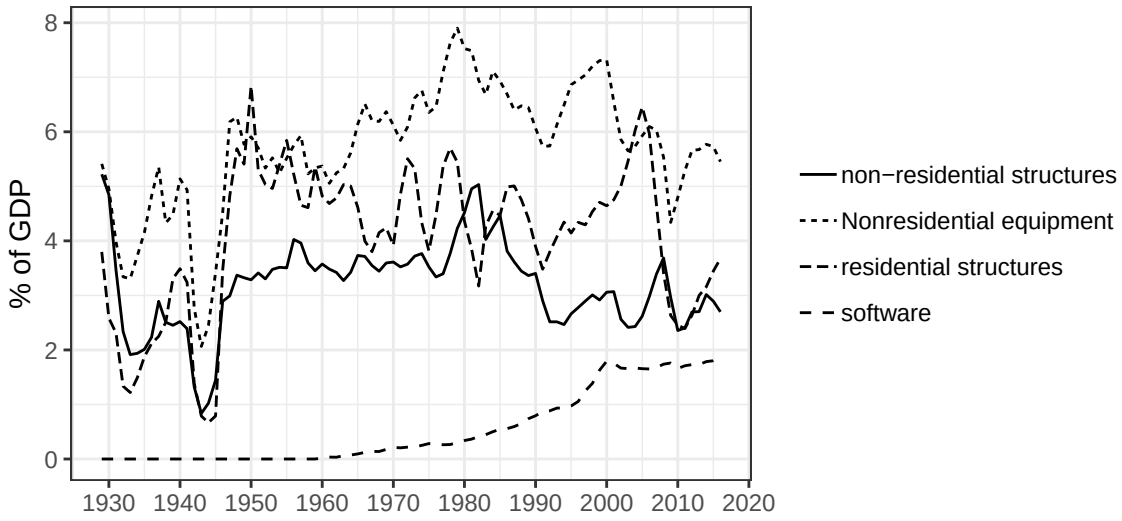
```
NIPA.fixed.asset.tables %>%
  filter(table_number == "Table 2.7.", year %in% c(1937, 2015)) %>%
  select(year, value, line, description) %>%
  merge(gdp, by = "year") %>%
  arrange(line, year) %>%
  mutate(value = round(value * 1000*100/gdp, digits = 1)) %>%
  select(-gdp) %>%
  spread(year, value) %>%
  arrange(-`2015`) %>%
  as.tibble
```

```
## # A tibble: 103 x 4
##     line description                                      `1937` `2015`
##    <int> <chr>                                           <dbl>  <dbl>
##  1     1 Private fixed assets                             11.4   16
##  2    35 Structures                                        5.1    6.3
##  3     2 Equipment                                         5.5    5.8
##  4     3 Nonresidential equipment                          5.4    5.7
##  5    76 Intellectual property products                    0.7    3.9
##  6    77 Nonresidential intellectual property products     0.7    3.9
##  7    67 Residential structures                            2.2    3.4
##  8    36 Nonresidential structures                         2.9    2.9
##  9    78 Software                                          0      1.8
## 10    82 "Research and development \\8,9\\"                0.3    1.7
## # ... with 93 more rows
```

Time series

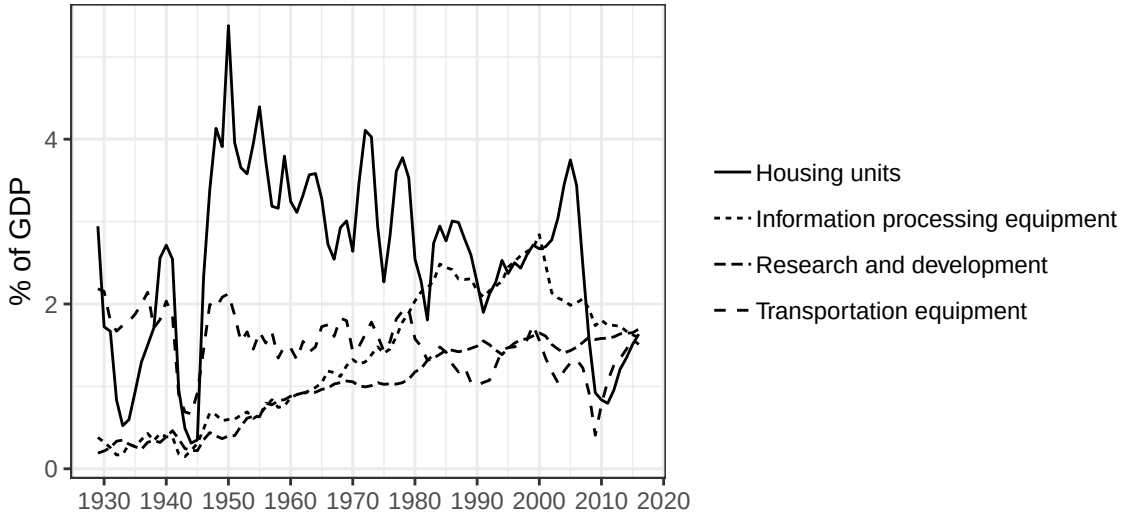
Decomposing in big items

```
matrix(c("Table 2.7.", 67, "residential structures",
         "Table 2.7.", 36, "non-residential structures",
         "Table 2.7.", 78, "software",
         "Table 2.7.", 3,  "Nonresidential equipment"),
       byrow = TRUE, ncol = 3) %>%
  as.data.frame %>%
  mutate(V2 = as.numeric(paste(V2))) %>%
  rename(table_number = V1, line = V2, variable = V3) %>%
  left_join(NIPA.fixed.asset.tables,
            by = c("table_number", "line")) %>%
  select(variable, year, value) %>%
  merge(gdp, by = "year") %>%
  mutate(value = value * 1000*100/gdp) %>%
  arrange(value) %>%
  ggplot(data = ., aes(x = year, y = value, linetype = variable)) +
  geom_line() + ylab("% of GDP") + xlab("") +
  scale_x_continuous(breaks = seq(1920, 2025, 10)) +
  theme_bw() +
  theme(legend.title = element_blank())
```




```
matrix(c("Table 2.7.", 82, "Research and development",
         "Table 2.7.", 4, "Information processing equipment",
         "Table 2.7.", 18, "Transportation equipment",
         "Table 2.7.", 68,  "Housing units"),
       byrow = TRUE, ncol = 3) %>%
  as.data.frame %>%
  mutate(V2 = as.numeric(paste(V2))) %>%
  rename(table_number = V1, line = V2, variable = V3) %>%
  left_join(NIPA.fixed.asset.tables,
            by = c("table_number", "line")) %>%
  select(variable, year, value) %>%
  merge(gdp, by = "year") %>%
  mutate(value = value * 1000*100/gdp) %>%
```

```
  arrange(value) %>%
  ggplot(data = ., aes(x = year, y = value, linetype = variable)) +
  geom_line() + ylab("% of GDP") + xlab("") +
  scale_x_continuous(breaks = seq(1920, 2025, 10)) +
  theme_bw() +
  theme(legend.title = element_blank())
```



Computing Environment

```
Sys.time()
```

```
## [1] "2018-09-24 19:57:29 PDT"
```

```
sessionInfo()
```

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS High Sierra 10.13.6
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
##  [1] bindrcpp_0.2.2  rvest_0.3.2     xml2_1.2.0      forcats_0.3.0
##  [5] stringr_1.3.1   dplyr_0.7.6     purrr_0.2.5     readr_1.1.1
##  [9] tidyr_0.8.1     tibble_1.4.2    ggplot2_3.0.0   tidyverse_1.2.1
## [13] curl_3.2
##
## loaded via a namespace (and not attached):
```

```
##  [1] Rcpp_0.12.18     cellranger_1.1.0 pillar_1.3.0     compiler_3.5.1
##  [5] plyr_1.8.4       bindr_0.1.1      tools_3.5.1      digest_0.6.15
##  [9] lubridate_1.7.4  jsonlite_1.5     evaluate_0.11    nlme_3.1-137
## [13] gtable_0.2.0     lattice_0.20-35  pkgconfig_2.0.2  rlang_0.2.2
## [17] cli_1.0.0        rstudioapi_0.7   yaml_2.2.0       haven_1.1.2
## [21] withr_2.1.2      httr_1.3.1       knitr_1.20       hms_0.4.2
## [25] rprojroot_1.3-2  grid_3.5.1       tidyselect_0.2.4 glue_1.3.0
## [29] R6_2.2.2         fansi_0.3.0      readxl_1.1.0     rmarkdown_1.10
## [33] modelr_0.1.2     magrittr_1.5     backports_1.1.2  scales_1.0.0
## [37] htmltools_0.3.6  assertthat_0.2.0 colorspace_1.3-2 labeling_0.3
## [41] utf8_1.1.4       stringi_1.2.4    lazyeval_0.2.1   munsell_0.5.0
## [45] broom_0.5.0      crayon_1.3.4
```