frbussupport.Rnw: Create Support Files

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0.1 stdver_varinfo

This code creates the varinfo.csv support file, parsing the data from the fixed format text file "frbus_package/mods/stdver_varinfo" into a data.frame.

```
raw = readLines("frbus_package/mods/stdver_varinfo")
```

Here we define the fixed length fields. The only reference to the original file seems to be in the stochsim program, to determine which are stochastic equations. There seems to be information in this file that is not used anywhere. I've made up names for some fields to use until I find better information.

```
flds = c("seq","vname","vdesc","vtype","vrule","sector",
         "var7","stoch","var8","var9","decomp")
start = c(1,5,16,111,115,117,130,132,135,137,139)
length = c(3,8,94,4,1,13,1,2,1,1,2)
parse = data.frame(flds,start,length)
rownames(parse) = parse$flds
(parse = subset(parse,select = -c(flds)))

##        start length
## seq        1      3
## vname      5      8
## vdesc     16     94
## vtype    111      4
## vrule    115      1
## sector   117     13
## var7     130      1
## stoch    132      2
## var8     135      1
## var9     137      1
## decomp   139      2
```

Using the field definitions that I created above, I transform the file's information into a data.frame.

```
varinfo = data.frame(lapply(flds,
            function(x) (trimws(substr(raw,parse[x,"start"],
                                sum(c(parse[x,"start"],parse[x,"length"],-1)))))),
            stringsAsFactors = FALSE)
colnames(varinfo) = flds
varinfo = varinfo[varinfo$vname!="ZZZBLANK",]
rownames(varinfo) = varinfo[,"vname"]
varinfo$seq = as.numeric(as.character(varinfo$seq))
varinfo$var7 = as.numeric(as.character(varinfo$var7))
varinfo$var8 = as.numeric(as.character(varinfo$var8))
```

```
varinfo$var9 = as.numeric(as.character(varinfo$var9))
varinfo$decomp = as.numeric(as.character(varinfo$decomp))
str(varinfo)
```

```
## 'data.frame': 508 obs. of  11 variables:
##  $ seq   : num  1 2 3 4 5 6 7 8 9 10 ...
##  $ vname : chr  "CENG" "D01Q4" "D2002" "D2003" ...
##  $ vdesc : chr  "Consumption of crude energy (oil, coal, natural gas),  2009 $" "Dummy, destru
##  $ vtype : chr  "B.4" "X.7" "X.7" "X.7" ...
##  $ vrule : chr  "A" "" "" "" ...
##  $ sector: chr  "sector_c.5" "" "" "" ...
##  $ var7  : num  4 1 1 1 1 1 1 1 1 1 ...
##  $ stoch : chr  "OT" "NO" "NO" "NO" ...
##  $ var8  : num  1 0 0 0 0 0 0 0 0 0 ...
##  $ var9  : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ decomp: num  16 27 27 27 14 27 14 14 27 27 ...
```

I haven't figured out what most of the varinfo fields are used for but we can examine the values.

```
varinfo[c("CENG","PGDP"),]
```

```
##      seq vname
## CENG   1  CENG
## PGDP 216  PGDP
##                                                                  vdesc vtype
## CENG Consumption of crude energy (oil, coal, natural gas),  2009 $   B.4
## PGDP                                          Price index for GDP, cw     I
##      vrule      sector var7 stoch var8 var9 decomp
## CENG     A  sector_c.5    4    OT    1    0     16
## PGDP     A sector_g.44    4    NO    0    1     22
```

```
varinfo$vname
```

```
##   [1] "CENG"     "D01Q4"    "D2002"    "D2003"    "D69"      "D79A"
##   [7] "D8095"    "D81"      "D83"      "D86"      "D87"      "DCON"
##  [13] "DDOCKM"   "DDOCKX"   "DELRFF"   "DEUC"     "DFMPRR"   "DFPDBT"
##  [19] "DFPEX"    "DFPSRP"   "DGLPRD"   "DMPALT"   "DMPEX"    "DMPGEN"
##  [25] "DMPINTAY" "DMPRR"    "DMPSTB"   "DMPTAY"   "DMPTLR"   "DMPTLUR"
##  [31] "DMPTMAX"  "DMPTPI"   "DMPTR"    "DMPTRSH"  "DPADJ"    "DPGAP"
##  [37] "DRSTAR"   "EC"       "ECD"      "ECH"      "ECNIA"    "ECNIAN"
##  [43] "ECO"      "EGF"      "EGFI"     "EGFIN"    "EGFIT"    "EGFL"
##  [49] "EGFLN"    "EGFLT"    "EGFN"     "EGFO"     "EGFON"    "EGFOT"
##  [55] "EGPDIN"   "EGS"      "EGSI"     "EGSIN"    "EGSIT"    "EGSL"
##  [61] "EGSLN"    "EGSLT"    "EGSN"     "EGSO"     "EGSON"    "EGSOT"
##  [67] "EH"       "EHN"      "EI"       "EIN"      "EM"       "EMN"
```

```
##  [73] "EMO"      "EMON"     "EMP"      "EMPN"     "EMPT"     "EPD"
##  [79] "EPDN"     "EPI"      "EPIN"     "EPS"      "EPSN"     "EX"
##  [85] "EXN"      "FCBN"     "FCBRN"    "FGDP"     "FGDPT"    "FNICN"
##  [91] "FNILN"    "FNIN"     "FNIRN"    "FPC"      "FPCM"     "FPI10"
##  [97] "FPI10T"   "FPIC"     "FPITRG"   "FPX"      "FPXM"     "FPXR"
## [103] "FPXRR"    "FPXRRT"   "FRL10"    "FRS10"    "FRSTAR"   "FTCIN"
## [109] "FXGAP"    "FYNICN"   "FYNILN"   "FYNIN"    "GFDBTN"   "GFDRT"
## [115] "GFINTN"   "GFS"      "GFSN"     "GFSRPN"   "GFSRT"    "GFSUB"
## [121] "GFSUBN"   "GFT"      "GFTN"     "GFTRD"    "GFTRT"    "GSDBTN"
## [127] "GSDRT"    "GSINTN"   "GSSRPN"   "GSSRT"    "GSSUB"    "GSSUBN"
## [133] "GST"      "GSTN"     "GSTRD"    "GSTRT"    "HGEMP"    "HGGDP"
## [139] "HGGDPT"   "HGPCDR"   "HGPDR"    "HGPIR"    "HGPKIR"   "HGPPSR"
## [145] "HGVPD"    "HGVPI"    "HGVPS"    "HGX"      "HGYNID"   "HKS"
## [151] "HKSR"     "HLEPT"    "HLPRDT"   "HMFPT"    "HQLFPR"   "HQLWW"
## [157] "HUQPCT"   "HUXB"     "HXBT"     "JCCACN"   "JCCAN"    "JKCD"
## [163] "JRCD"     "JRH"      "JRPD"     "JRPI"     "JRPS"     "JYGFEN"
## [169] "JYGFGN"   "JYGSEN"   "JYGSGN"   "JYNCN"    "KCD"      "KH"
## [175] "KI"       "KPD"      "KPI"      "KPS"      "KS"       "LEF"
## [181] "LEFT"     "LEH"      "LEO"      "LEP"      "LEPPOT"   "LES"
## [187] "LEST"     "LEUC"     "LF"       "LFPR"     "LHP"      "LPRDT"
## [193] "LQUALT"   "LUR"      "LURBLS"   "LURNAT"   "LURTRSH"  "LWW"
## [199] "MEI"      "MEP"      "MFPT"     "N16"      "PCDR"     "PCENG"
## [205] "PCENGR"   "PCER"     "PCFR"     "PCFRT"    "PCHR"     "PCNIA"
## [211] "PCOR"     "PCPI"     "PCPIX"    "PCSTAR"   "PCXFE"    "PGDP"
## [217] "PGFIR"    "PGFL"     "PGFOR"    "PGSIR"    "PGSL"     "PGSOR"
## [223] "PHOUSE"   "PHR"      "PIC4"     "PICNGR"   "PICNIA"   "PICX4"
## [229] "PICXFE"   "PIECI"    "PIGDP"    "PIPL"     "PIPXNC"   "PITARG"
## [235] "PITRSH"   "PKIR"     "PKPDR"    "PL"       "PLMIN"    "PLMINR"
## [241] "PMO"      "PMP"      "POIL"     "POILR"    "POILRT"   "PPDR"
## [247] "PPIR"     "PPSR"     "PTR"      "PWSTAR"   "PXB"      "PXG"
## [253] "PXNC"     "PXP"      "PXR"      "QEC"      "QECD"     "QECO"
## [259] "QEH"      "QEPD"     "QEPI"     "QEPS"     "QKIR"     "QLEOR"
## [265] "QLEP"     "QLF"      "QLFPR"    "QLHP"     "QLWW"     "QPCNIA"
## [271] "QPL"      "QPMO"     "QPXG"     "QPXNC"    "QPXP"     "QYNIDN"
## [277] "RBBB"     "RBBBE"    "RBBBP"    "RCAR"     "RCCD"     "RCCH"
## [283] "RCGAIN"   "REQ"      "REQP"     "RFF"      "RFFALT"   "RFFE"
## [289] "RFFFIX"   "RFFGEN"   "RFFINTAY" "RFFMIN"   "RFFRULE"  "RFFTAY"
## [295] "RFFTLR"   "RFNICT"   "RFRS10"   "RFYNIC"   "RFYNIL"   "RG10"
## [301] "RG10E"    "RG10P"    "RG30"     "RG30E"    "RG30P"    "RG5"
## [307] "RG5E"     "RG5P"     "RGFINT"   "RGW"      "RME"      "RPD"
## [313] "RRFFE"    "RRFIX"    "RRMET"    "RRTR"     "RSPNIA"   "RSTAR"
## [319] "RTB"      "RTBE"     "RTINV"    "RTPD"     "RTPI"     "RTPS"
## [325] "RTR"      "T47"      "TAPDAD"   "TAPDD"    "TAPDDP"   "TAPDS"
## [331] "TAPDT"    "TAPSAD"   "TAPSDA"   "TAPSSL"   "TFCIN"    "TFDIV"
## [337] "TFIBN"    "TFPN"     "TFSIN"    "TRFCI"    "TRFCIM"   "TRFIB"
```

```
## [343] "TRFP"     "TRFPM"    "TRFPT"    "TRFPTX"   "TRFSI"    "TRSCI"
## [349] "TRSCIT"   "TRSIB"    "TRSIBT"   "TRSP"     "TRSPP"    "TRSPT"
## [355] "TRSPTX"   "TRSSI"    "TRSSIT"   "TRYH"     "TSCIN"    "TSIBN"
## [361] "TSPN"     "TSSIN"    "UCES"     "UCFS"     "UEMOT"    "UEMP"
## [367] "UFCBR"    "UFNIR"    "UFPCM"    "UFPXM"    "UFTCIN"   "UGFDBT"
## [373] "UGSDBT"   "UGSINT"   "UGSSUB"   "UJCCA"    "UJCCAC"   "UJYGFE"
## [379] "UJYGFG"   "UJYGSE"   "UJYGSG"   "ULEF"     "ULES"     "UPCPI"
## [385] "UPCPIX"   "UPGFL"    "UPGSL"    "UPKPD"    "UPMP"     "UPXB"
## [391] "UQPCT"    "UVEOA"    "UVPD"     "UVPI"     "UVPS"     "UXBT"
## [397] "UXENG"    "UYD"      "UYHI"     "UYHLN"    "UYHPTN"   "UYHSN"
## [403] "UYHTN"    "UYL"      "UYNI"     "UYNICP"   "UYP"      "UYSEN"
## [409] "VEO"      "VEOA"     "VPD"      "VPI"      "VPS"      "WDNFCN"
## [415] "WPO"      "WPON"     "WPS"      "WPSN"     "XB"       "XBN"
## [421] "XBO"      "XBT"      "XENG"     "XFS"      "XFSN"     "XG"
## [427] "XGAP"     "XGAP2"    "XGDE"     "XGDEN"    "XGDI"     "XGDIN"
## [433] "XGDO"     "XGDP"     "XGDPN"    "XGDPT"    "XGDPTN"   "XGN"
## [439] "XGO"      "XGPOT"    "XP"       "XPN"      "YCSN"     "YDN"
## [445] "YGFSN"    "YGSSN"    "YH"       "YHGAP"    "YHIBN"    "YHIN"
## [451] "YHL"      "YHLN"     "YHP"      "YHPCD"    "YHPGAP"   "YHPNTN"
## [457] "YHPSHR"   "YHPTN"    "YHSHR"    "YHSN"     "YHT"      "YHTGAP"
## [463] "YHTN"     "YHTSHR"   "YKIN"     "YKPDN"    "YKPSN"    "YMSDN"
## [469] "YNICPN"   "YNIDN"    "YNIIN"    "YNILN"    "YNIN"     "YNISEN"
## [475] "YPN"      "ZDIVGR"   "ZECD"     "ZECO"     "ZEH"      "ZGAP05"
## [481] "ZGAP10"   "ZGAP30"   "ZGAPC2"   "ZLHP"     "ZPI10"    "ZPI10F"
## [487] "ZPI5"     "ZPIB5"    "ZPIC30"   "ZPIC58"   "ZPICXFE"  "ZPIECI"
## [493] "ZRFF10"   "ZRFF30"   "ZRFF5"    "ZVPD"     "ZVPI"     "ZVPS"
## [499] "ZXBD"     "ZXBI"     "ZXBS"     "ZYH"      "ZYHP"     "ZYHPST"
## [505] "ZYHST"    "ZYHT"     "ZYHTST"   "ZYNID"
```

```
table(varinfo$vtype)

##
##   B B.1 B.2 B.3 B.4 B.6 B.7   I I.3 X.1 X.2 X.3 X.4 X.5 X.7
##  54  12   1   1  73   1   4 239   1   3  72  34   6   1   6

table(varinfo$vrule)

##
##       A
## 126 382

str(varinfo$sector)

##  chr [1:508] "sector_c.5" "" "" "" "" "" "" "" "" ...

summary(varinfo$var7)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##     1.0     1.0     4.0     2.7     4.0     5.0       4
```

```
table(varinfo$var7)
```

```
##
##   1   2   3   4   5
## 201  25   3 274   1
```

```
table(varinfo$stoch)
```

```
##
##  FN  GV  IN  IS  LB  NO  OT  PR  RW  ST
##  12  15   4  10   7 437  10   9   2   2
```

```
table(varinfo$var8)
```

```
##
##   0   1   2   7
## 413  90   1   1
```

```
table(varinfo$var9)
```

```
##
##   0   1   2   3   4
## 370  24  80  21  10
```

```
table(varinfo$decomp)
```

```
##
##  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
## 30  2 33  5  5  4 12  4  7  7 11  3 24 49 34  8  8 30  2 11 16 53 44 26 17
## 26 27 28 29
## 32 18 12  1
```

```
table(varinfo$vtype,varinfo$stoch)
```

```
##
##        FN  GV  IN  IS  LB  NO  OT  PR  RW  ST
##   B     0   0   0   0   6  46   0   0   0   2
##   B.1   3   5   0   0   0   2   0   2   0   0
##   B.2   0   0   0   0   0   1   0   0   0   0
##   B.3   0   0   0   0   0   1   0   0   0   0
##   B.4   9  10   4  10   0  21  10   7   2   0
##   B.6   0   0   0   0   0   1   0   0   0   0
##   B.7   0   0   0   0   1   3   0   0   0   0
##   I     0   0   0   0   0 239   0   0   0   0
```

```
##   I.3   0   0   0   0   0   1   0   0   0   0
##   X.1   0   0   0   0   0   3   0   0   0   0
##   X.2   0   0   0   0   0  72   0   0   0   0
##   X.3   0   0   0   0   0  34   0   0   0   0
##   X.4   0   0   0   0   0   6   0   0   0   0
##   X.5   0   0   0   0   0   1   0   0   0   0
##   X.7   0   0   0   0   0   6   0   0   0   0

table(varinfo$var7,varinfo$var9)

##
##       0   1   2   3   4
##   1 201   0   0   0   0
##   2   4   0  21   0   0
##   3   2   0   0   1   0
##   4 161  24  59  20  10
##   5   1   0   0   0   0

table(varinfo$var7,varinfo$stoch)

##
##      FN  GV  IN  IS  LB  NO  OT  PR  RW  ST
##   1  10   9   0   0   5 173   0   2   1   1
##   2   2   0   0   0   0  23   0   0   0   0
##   3   0   0   0   0   0   3   0   0   0   0
##   4   0   6   4  10   2 233  10   7   1   1
##   5   0   0   0   0   0   1   0   0   0   0

table(varinfo$var8,varinfo$stoch)

##
##      FN  GV  IN  IS  LB  NO  OT  PR  RW  ST
##   0  12   9   0   0   5 383   0   2   1   1
##   1   0   6   3  10   2  50  10   7   1   1
##   2   0   0   0   0   0   1   0   0   0   0
##   7   0   0   1   0   0   0   0   0   0   0

table(varinfo$var9,varinfo$stoch)

##
##      FN  GV  IN  IS  LB  NO  OT  PR  RW  ST
##   0  12  15   4  10   7 299  10   9   2   2
##   1   0   0   0   0   0  24   0   0   0   0
##   2   0   0   0   0   0  80   0   0   0   0
##   3   0   0   0   0   0  21   0   0   0   0
##   4   0   0   0   0   0  10   0   0   0   0
```

Here we create the support file from the data.frame.

```
write.csv(varinfo,"support/varinfo.csv")
```

0.2 stdver_coeffs.txt

In a data.frame in R, all of the vectors need to have the same length. The largest coeffs vector has 50 elements and the smallest has one. That means that I need to change the coefficients files to store a single value with its position in the vector in a row. It doesn't really change the way we'll access them, since we already subscripted the name for access. I couldn't get the logic for a list of lists to work anyway.

```
raw = readLines("frbus_package/mods/stdver_coeffs.txt")
str(raw)

##  chr [1:173] "" ...
```

First, remove the blank line at the top and the stop line at the end and split the name, number, and vector fields.

```
rows = lapply(raw[which(raw!="" & raw!="theend")], function(x) strsplit(x, "\t"))
length(rows)

## [1] 171

rows[[1]]

## [[1]]
## [1] "y_ceng"
## [2] "6"
## [3] "-0.1483451935619194,0.475653118183134,0.5437644321944857,-0.2301598753097478,0

unlist(rows[[1]])

## [1] "y_ceng"
## [2] "6"
## [3] "-0.1483451935619194,0.475653118183134,0.5437644321944857,-0.2301598753097478,0

unlist(rows[[1]])[2]

## [1] "6"

unlist(rows[[1]])[3]

## [1] "-0.1483451935619194,0.475653118183134,0.5437644321944857,-0.2301598753097478,0

as.numeric(unlist(strsplit(unlist(rows[[1]])[3], ",")))

## [1] -0.1483452  0.4756531  0.5437644 -0.2301599  0.4661713 -0.2554290
```

Create a row for each coefficient.

```
vals = data.frame(name=character(), num=integer(),
                  val=double(), stringsAsFactors = FALSE)
str(vals)

## 'data.frame': 0 obs. of  3 variables:
##  $ name: chr
##  $ num : int
##  $ val : num

for (i in 1:length(rows)){
    row = unlist(rows[[i]])
    name = row[1]
    len  = row[2]
    obs = as.numeric(unlist(strsplit(row[3], ",")))
    for (j in 1:len){
        vals = rbind(vals, data.frame(name,num=j,val=obs[j],
                                      stringsAsFactors = FALSE))}}
str(vals)

## 'data.frame': 1088 obs. of  3 variables:
##  $ name: chr  "y_ceng" "y_ceng" "y_ceng" "y_ceng" ...
##  $ num : int  1 2 3 4 5 6 1 1 1 1 ...
##  $ val : num  -0.148 0.476 0.544 -0.23 0.466 ...
```

```
write.csv(vals,"support/coeffs.csv")
```

0.3 stdver_eqs.txt

```
raw = readLines("frbus_package/mods/stdver_eqs.txt")
eqs = paste(raw[which(raw!="" & raw!="theend")], collapse="<endline>")
eqs = gsub("_<endline>", "", eqs)
eqs = gsub("[[:space:]]+", "", eqs)
eqs = strsplit(eqs, "<endline>")
eqs = eqs[[1]]
name = gsub(":.*$", "", eqs)
eq = gsub("^.*:", "", eqs)
stdver = data.frame(name,eq, stringsAsFactors = FALSE)
row.names(stdver) = stdver$name
str(stdver)

## 'data.frame': 386 obs. of  2 variables:
```

```
##  $ name: chr  "ceng" "delrff" "dmptlur" "dmptmax" ...
##  $ eq  : chr  "d(log(ceng),0,1)-ceng_aerr=y_ceng(1)*(log(ceng(-1))-log(xg(-1)*veoa(
```

```
stdver[c("ceng","pgdp"),"eq"]
```

```
## [1] "d(log(ceng),0,1)-ceng_aerr=y_ceng(1)*(log(ceng(-1))-log(xg(-1)*veoa(-1)))+y_cer
## [2] "pgdp-pgdp_aerr=100*xgdpn/xgdp"
```

```
write.csv(stdver,"support/eqs.csv", row.names=FALSE)
```

0.4 Chunks

0.5 Index