tabfig

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Table 1 full descriptives.

```
## Warning: package 'bindrcpp' was built under R version 3.4.2
```

Table 1: c("1993-2003", "2004-2015") Table: c(32110, 51123) Table: c(7501, 9947)

	mean	sd	mean	sd	pval	min	max	propmiss
cesd	1.105	1.666	1.236	1.825	***	0.00	8.00	0.028
md_cesd	-0.066	1.207	0.041	1.199	***	-6.22	7.18	0.028
fd_cesd	0.070	1.663	0.028	1.695	**	-8.00	8.00	0.153
ret	0.464	0.499	0.653	0.476	***	0.00	1.00	0.002
unemp	0.128	0.335	0.080	0.271	***	0.00	1.00	0.002
age	63.593	9.068	69.399	10.792	***	27.00	103.00	0.000
pm_uer	4.996	1.116	6.546	1.929	***	2.20	12.20	0.003
md_uer	-0.766	0.947	0.483	1.761	***	-3.83	6.42	0.003
fd_uer	0.056	1.173	0.132	2.088	***	-7.20	7.30	0.122
lnwlth	15.373	0.170	15.396	0.151	***	0.00	18.37	0.000
negwlth	0.019	0.136	0.038	0.191	***	0.00	1.00	0.000
lninc	10.622	1.080	10.704	1.111	***	0.00	16.42	0.000
male	0.403	0.491	0.414	0.492	**	0.00	1.00	0.000
marr	0.773	0.419	0.661	0.473	***	0.00	1.00	0.000

Individual level descriptives

Table 2: n=9947

	mean	sd	min	max	propmiss
male	0.422	0.494	0.00	1.00	0
nwave	8.368	2.654	1.00	11.00	0
icesd	1.241	1.370	0.00	8.00	0
pgs.swb	0.000	1.000	-3.43	3.45	0
iuer	6.102	1.019	3.79	11.70	0
ret	0.537	0.368	0.00	1.00	0
unemp	0.101	0.209	0.00	1.00	0
dead	0.099	0.299	0.00	1.00	0

Figure 1. PGS Quintiles and ICESD.

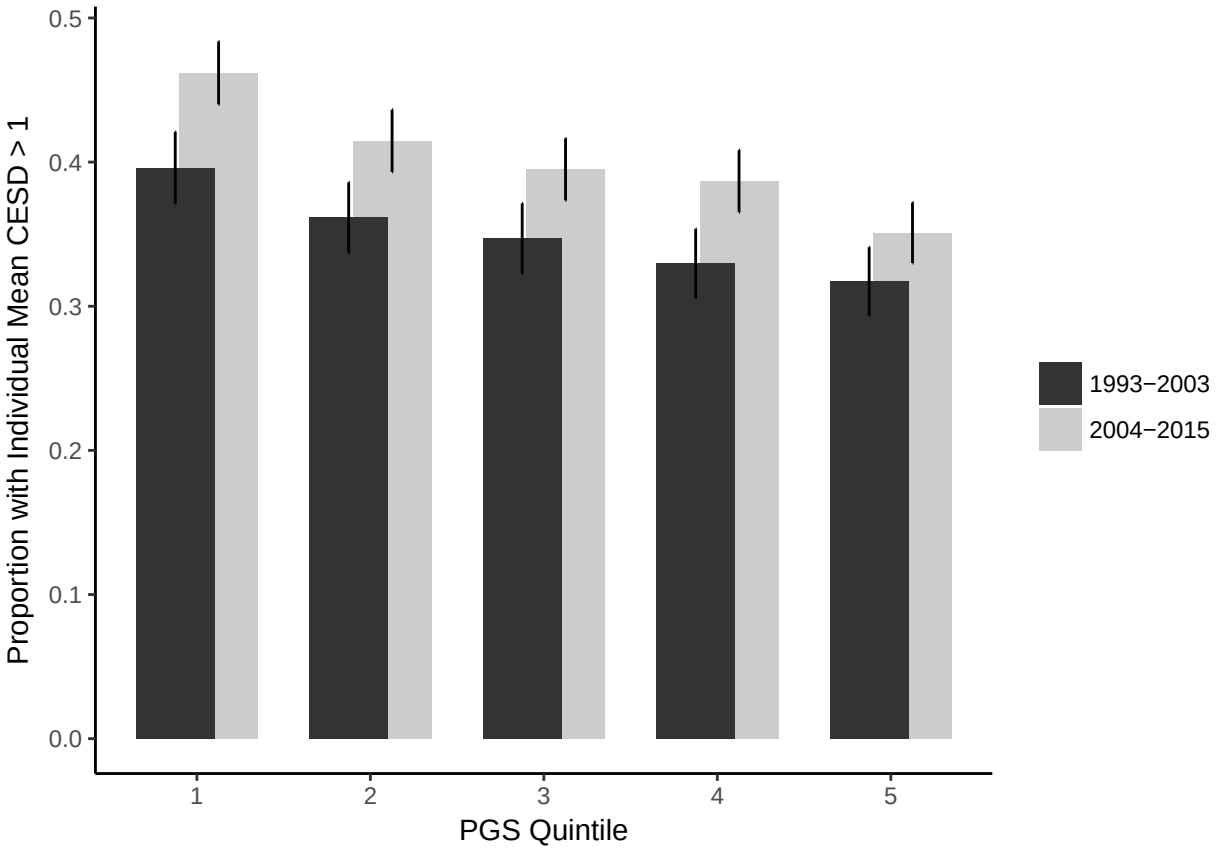


Figure 2. Unemployment Rate over time.

```
## Warning: Removed 218 rows containing non-finite values (stat_summary).
## Warning: Removed 218 rows containing missing values (geom_point).
```

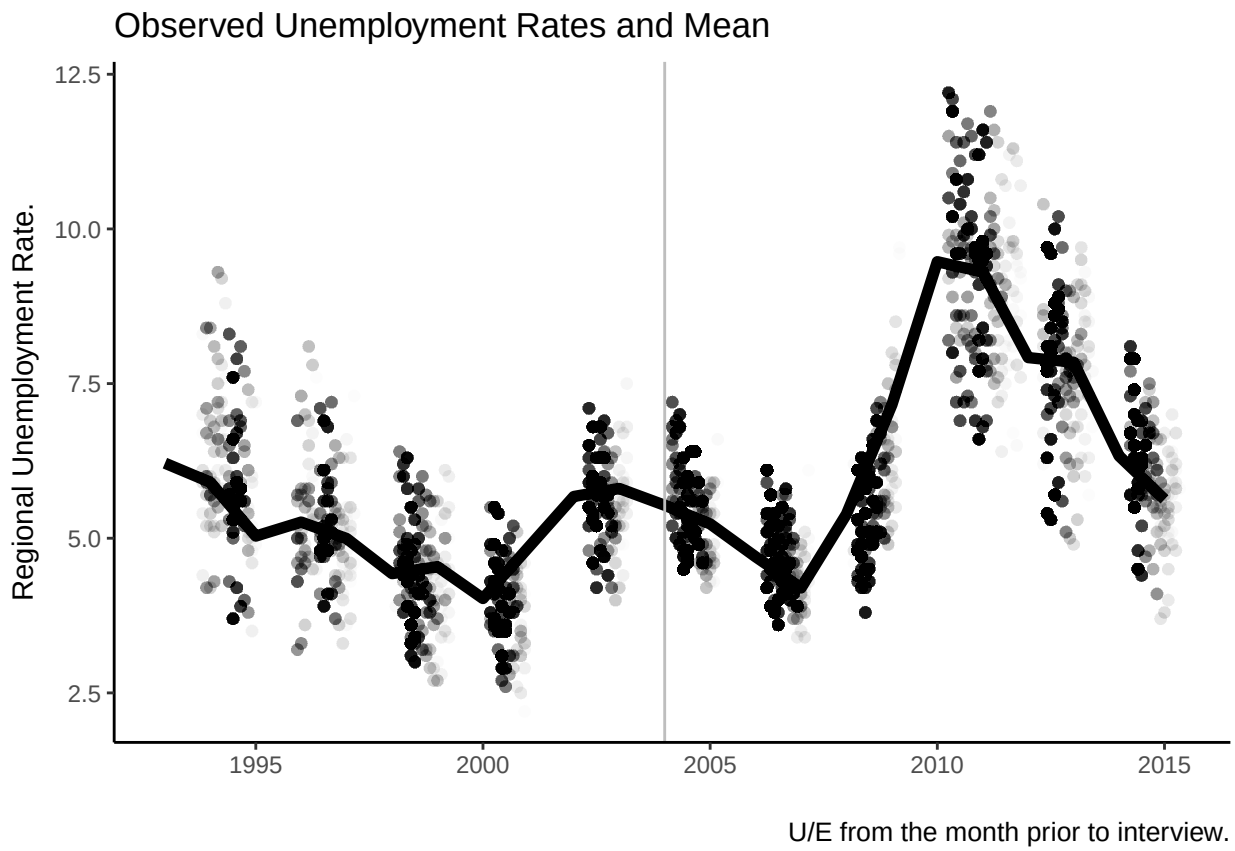


Figure 3. CESD and Unemployment Rate by PGS Quintile

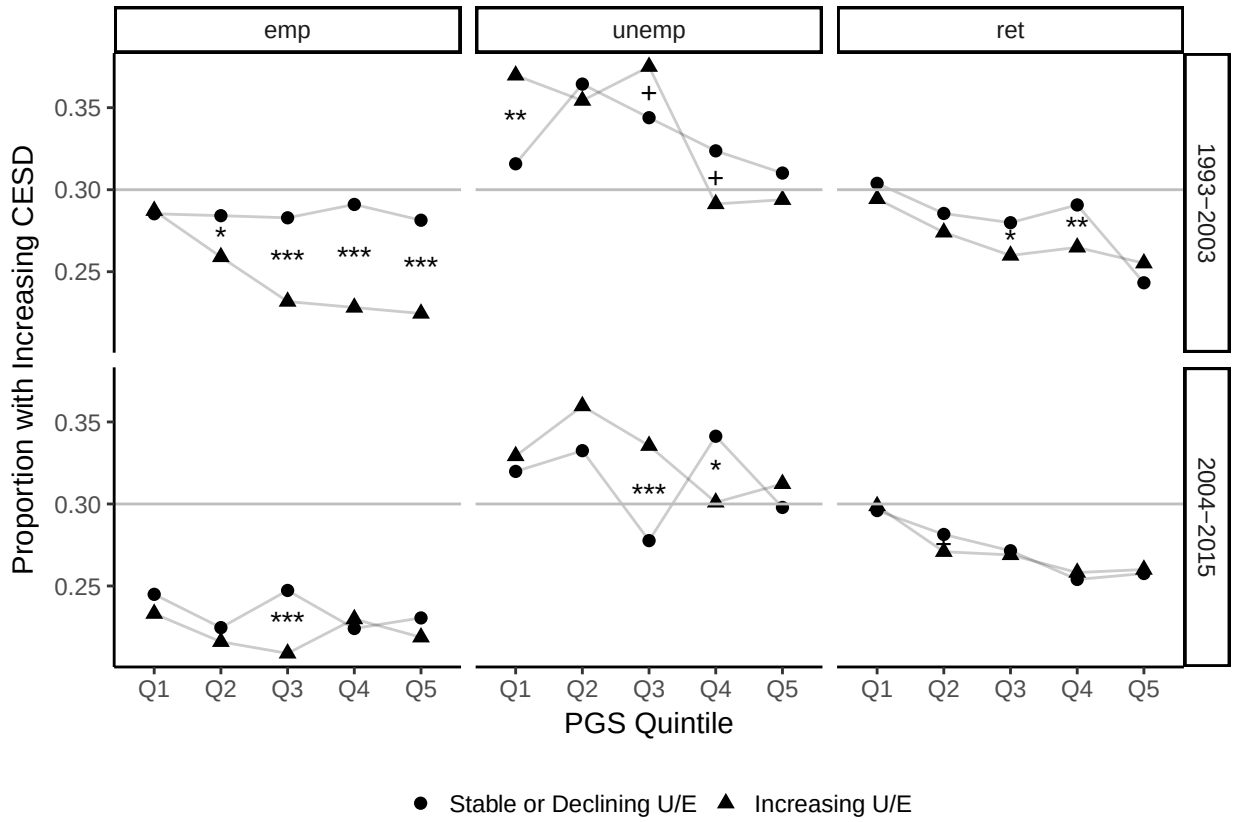


Table ___. Results of environment and interaction models.

```
ee = mktab(plm.e); ee$eff=row.names(ee)
be = mktab(plm.gxe); be$eff = row.names(be)

bm = data.frame(eff=ee$eff)
bm = merge(bm,ee,all=TRUE)
kable(merge(bm,be,by='eff',all=TRUE))
```

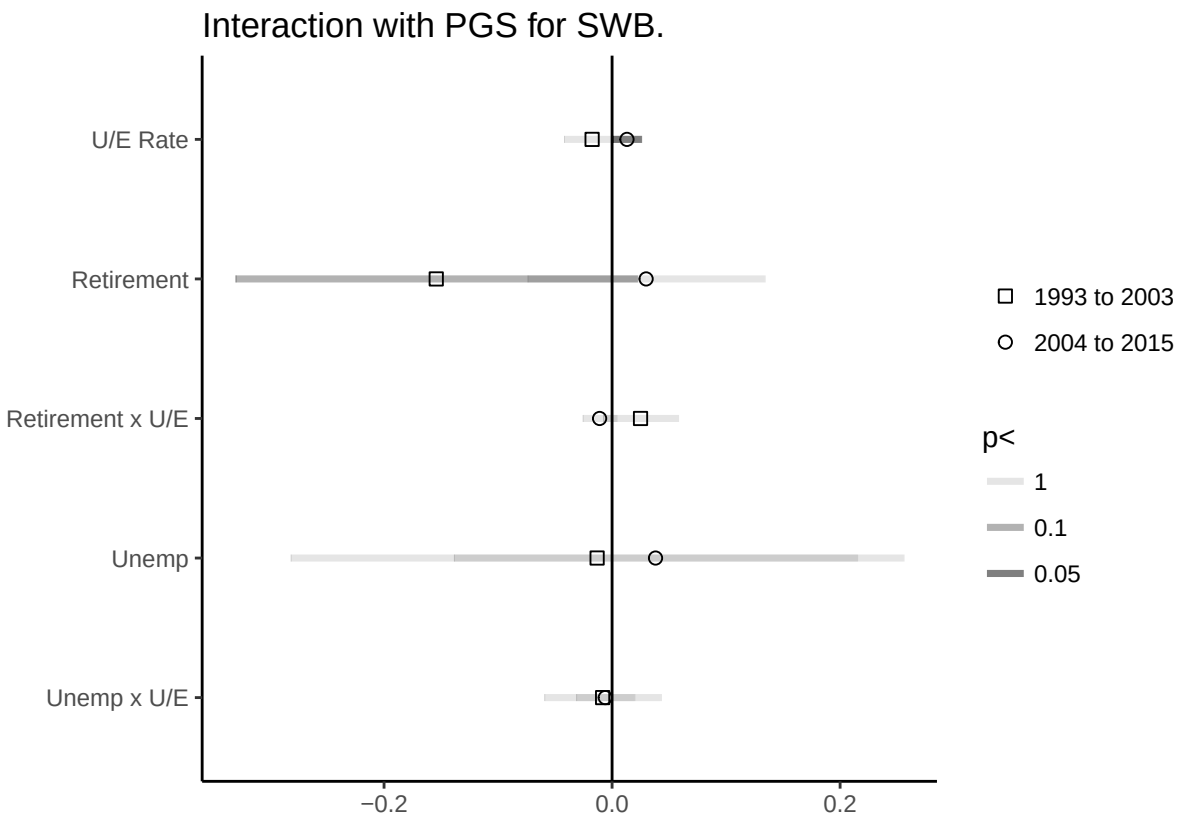
eff	Estimate.x	se.x	sig.x	Estimate.y	se.y	sig.y
age	-0.138	(0.024)	***	-0.138	(0.024)	***
iwendy	0.150	(0.024)	***	0.150	(0.024)	***
lninc	-0.028	(0.006)	***	-0.028	(0.006)	***
lnwlth	-0.034	(0.045)		-0.034	(0.045)	
marr	-0.474	(0.021)	***	-0.473	(0.021)	***
negwlth	0.206	(0.034)	***	0.205	(0.034)	***
pm_uer	-0.054	(0.006)	***	-0.054	(0.006)	***
ret	-0.238	(0.040)	***	-0.238	(0.040)	***
ret:pm_uer	0.042	(0.006)	***	0.042	(0.006)	***
unemp	-0.086	(0.065)		-0.086	(0.065)	
unemp:pm_uer	0.051	(0.011)	***	0.051	(0.011)	***
ret:pgs.swb	NA	NA	NA	0.027	(0.039)	
unemp:pgs.swb	NA	NA	NA	0.044	(0.064)	
iwendy:pgs.swb	NA	NA	NA	-0.003	(0.001)	*
pm_uer:pgs.swb	NA	NA	NA	0.008	(0.005)	
unemp:pm_uer:pgs.swb	NA	NA	NA	-0.007	(0.011)	

eff	Estimate.x	se.x	sig.x	Estimate.y	se.y	sig.y
ret:pm_uer:pgs.swb	NA	NA	NA	-0.006	(0.006)	

Table ___. Results of Cross-year interaction models.

	1993-2003.Estimate	1993-2003.se	1993-2003.sig	2004-2015.Estimate	2004-2015.se	2004-2015.sig
age	-0.085	(0.042)	*	-0.064	(0.032)	*
ret	-0.106	(0.090)		-0.155	(0.054)	**
unemp	-0.018	(0.134)		-0.059	(0.092)	
pm_uer	-0.058	(0.013)	***	-0.032	(0.007)	***
marr	-0.574	(0.044)	***	-0.510	(0.032)	***
lnwlth	0.037	(0.056)		-0.098	(0.092)	
lninc	-0.041	(0.010)	***	-0.018	(0.008)	*
negwlth	0.178	(0.068)	**	0.194	(0.041)	***
iwendy	0.113	(0.042)	**	0.075	(0.032)	*
ret:pm_uer	0.021	(0.017)		0.029	(0.008)	***
unemp:pm_uer	0.034	(0.025)		0.044	(0.013)	***
pm_uer:pgs.swb	-0.018	(0.013)		0.013	(0.006)	*
ret:pgs.swb	-0.154	(0.090)	+	0.030	(0.053)	
unemp:pgs.swb	-0.013	(0.137)		0.038	(0.090)	
ret:pm_uer:pgs.swb	0.025	(0.017)		-0.011	(0.008)	
unemp:pm_uer:pgs.swb	-0.008	(0.026)		-0.006	(0.013)	

Results figure.

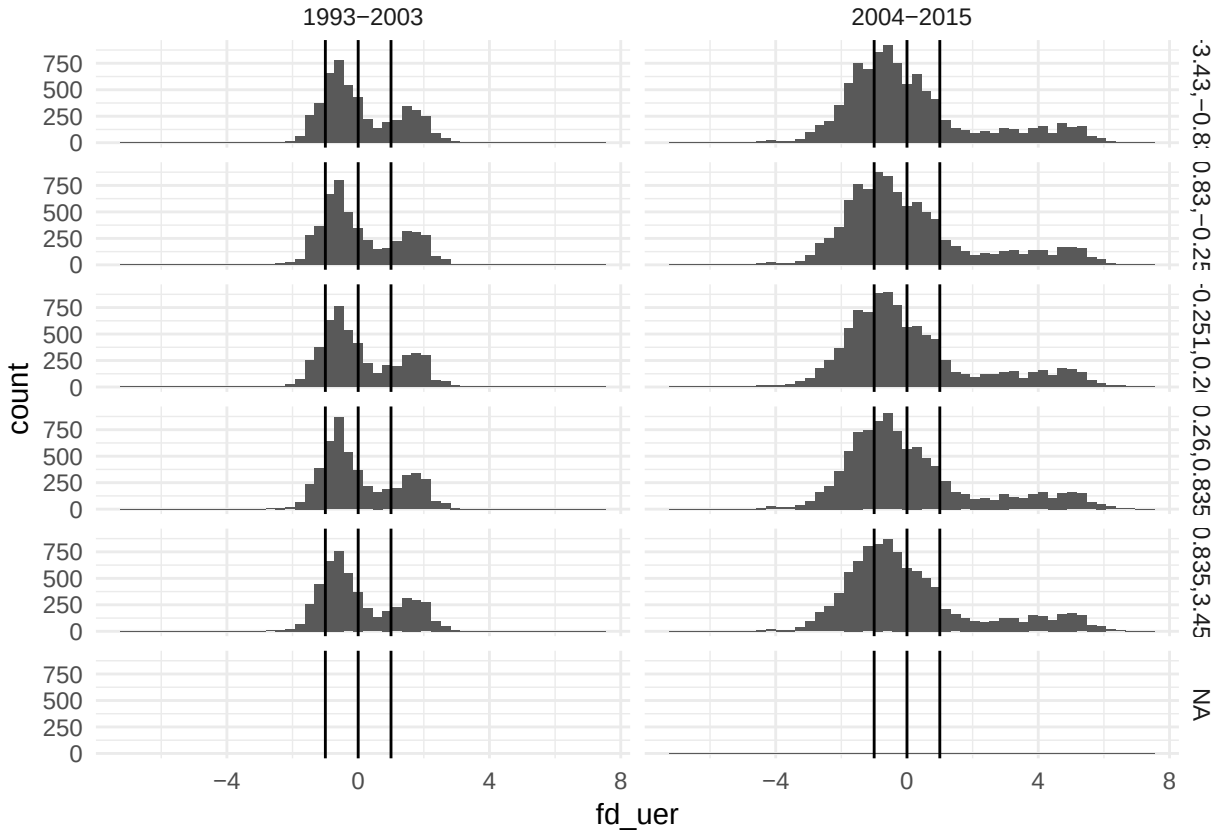


Some supplemental stuff.

Additional Descriptive plots: Distribution of changes (first difference).

```
ggplot(analyze,aes(fd_uer)) +
  geom_histogram(bins=50) +
  facet_grid(pgs.quart5~period) +
  geom_vline(xintercept=c(-1,0,1)) +
  theme_minimal()
```

```
## Warning: Removed 10174 rows containing non-finite values (stat_bin).
```



First difference model (because the u/e rate is dependent on the last level, i.e. not random).

```
fd.gxe <- plm(cesd ~ pm_uer*(ret + unemp)+
                (pm_uer*(ret + unemp)):pgs.swb, data=analyze,
              index=c("hhidpn", "iwendy"),
              na.action=na.omit, model="fd")
```

```
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
```

```
mktab(fd.gxe)
```

```
##                       Estimate      se sig
## (intercept)            0.04353 (0.006) ***
## pm_uer                -0.02210 (0.006) ***
## ret                   -0.02276 (0.045)
## unemp                  0.04415 (0.069)
## pm_uer:ret             0.01485 (0.007)   *
## pm_uer:unemp           0.02970 (0.011)  **
## pm_uer:pgs.swb         0.00599 (0.006)
## ret:pgs.swb           -0.01824 (0.045)
## unemp:pgs.swb         -0.02221 (0.069)
## pm_uer:ret:pgs.swb    -0.00354 (0.007)
## pm_uer:unemp:pgs.swb   0.00130 (0.011)
```

```
fd.gxe2 <- lapply(split(analyze,analyze[,'period']), function(x)
  plm(cesd ~ pm_uer + pm_uer:pgs.swb, data=x,
              index=c("hhidpn", "iwendy"),
              na.action=na.omit, model="fd"))
```

```
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
```

```
lapply(fd.gxe2,mktab)
```

```
## $`1993-2003`
##                 Estimate      se sig
## (intercept)      0.0728 (0.011) ***
## pm_uer          -0.0337 (0.009) ***
## pm_uer:pgs.swb  -0.0120 (0.009)
##
## $`2004-2015`
##                 Estimate      se sig
## (intercept)     0.04628 (0.009) ***
## pm_uer         -0.00578 (0.004)
## pm_uer:pgs.swb  0.00614 (0.004)
```

Pooled dummy first difference model

Note that results below display the same associtions with a reduced model; using a first-difference model eliminates 10,000 observations and statistical significance.

```
fd.gxe <- plm(cesd ~ (pm_uer + pm_uer:pgs.swb + lnwlth + lninc + negwlth + marr + unemp + ret)*period, d
              index=c("hhidpn",'iwendy'),
              na.action=na.omit, model="fd")
```

```
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
```

```
mktab(fd.gxe)
```

```
##                                 Estimate      se sig
## (intercept)                     0.039996 (0.007) ***
## pm_uer                         -0.034482 (0.009) ***
## lnwlth                          0.046495 (0.064)
## lninc                          -0.024166 (0.010)   *
## negwlth                         0.163270 (0.063)  **
## marr                           -0.710245 (0.040) ***
## unemp                           0.181100 (0.035) ***
## ret                             0.032942 (0.027)
## period2004-2015                 1.422501 (1.460)
## pm_uer:pgs.swb                  0.002971 (0.004)
## pm_uer:period2004-2015          0.026361 (0.009)  **
## lnwlth:period2004-2015         -0.122255 (0.096)
## lninc:period2004-2015           0.004052 (0.012)
## negwlth:period2004-2015         0.014173 (0.073)
## marr:period2004-2015            0.164713 (0.039) ***
## unemp:period2004-2015           0.061262 (0.045)
## ret:period2004-2015             0.058962 (0.033)   +
## pm_uer:pgs.swb:period2004-2015  0.000733 (0.003)
```

"Hybrid" Random Effects model.

```
hlm.gxe1 = lmer(cesd~(iuer + md_uer + recession)*pgs.swb +
                  male  + raedyrs + age +
```

```
                marr + lninc_i + lnwlth_i + negwlth_i +
                lninc_md + lnwlth_md + negwlth_md +
                (md_unemp + md_ret + iunemp + iret)*pgs.swb +
                (1|hhidpn),
              data=analyze)

mktab(hlm.gxe1)
```

```
##                    Estimate      se sig
## (Intercept)         8.023194 (1.730) ***
## iuer                0.074775 (0.013) ***
## md_uer             -0.005899 (0.003)   +
## recession           0.015753 (0.015)
## pgs.swb             0.070438 (0.087)
## male               -0.116186 (0.026) ***
## raedyrs            -0.059483 (0.005) ***
## age                 0.001904 (0.001)   +
## marr               -0.474380 (0.018) ***
## lninc_i            -0.204124 (0.020) ***
## lnwlth_i           -0.278121 (0.119)   *
## negwlth_i           1.740209 (0.104) ***
## lninc_md           -0.026247 (0.006) ***
## lnwlth_md           0.006975 (0.045)
## negwlth_md          0.208865 (0.034) ***
## md_unemp            0.227600 (0.024) ***
## md_ret              0.063449 (0.016) ***
## iunemp              0.892327 (0.068) ***
## iret                0.173689 (0.044) ***
## iuer:pgs.swb       -0.019799 (0.013)
## md_uer:pgs.swb     -0.001386 (0.003)
## recession:pgs.swb -0.035984 (0.015)   *
## pgs.swb:md_unemp   -0.000608 (0.024)
## pgs.swb:md_ret     -0.019949 (0.015)
## pgs.swb:iunemp     -0.123342 (0.060)   *
## pgs.swb:iret       -0.034478 (0.036)
```

Factor based analysis with plm.

```
mktab(
  plm(cesd~age + (ret + unemp)*pm_uer + marr + iwendy +
                (ret+unemp)*pm_uer + lninc+lnwlth+negwlth +
                (pm_uer + (ret+unemp)*pm_uer):pgs.quart5,
           index='hhidpn',model='within',data=analyze)
)
```

```
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
```

```
##                                       Estimate      se sig
## age                                  -0.137430 (0.024) ***
## ret                                  -0.173524 (0.088)   *
## unemp                                 0.010168 (0.141)
## pm_uer                               -0.049939 (0.012) ***
## marr                                 -0.474726 (0.021) ***
```

```
## iwendy                                    0.149268 (0.024) ***
## lninc                                    -0.028320 (0.006) ***
## lnwlth                                   -0.034170 (0.045)
## negwlth                                   0.207563 (0.034) ***
## ret:pm_uer                                0.040162 (0.015)  **
## unemp:pm_uer                              0.033573 (0.023)
## pm_uer:pgs.quart5(-0.83,-0.251]          -0.011340 (0.017)
## pm_uer:pgs.quart5(-0.251,0.26]           -0.004133 (0.017)
## pm_uer:pgs.quart5(0.26,0.835]            -0.011899 (0.017)
## pm_uer:pgs.quart5(0.835,3.45]             0.005256 (0.017)
## ret:pgs.quart5(-0.83,-0.251]             -0.086411 (0.124)
## ret:pgs.quart5(-0.251,0.26]              -0.065801 (0.124)
## ret:pgs.quart5(0.26,0.835]               -0.108736 (0.124)
## ret:pgs.quart5(0.835,3.45]               -0.069007 (0.123)
## unemp:pgs.quart5(-0.83,-0.251]           -0.460172 (0.202)   *
## unemp:pgs.quart5(-0.251,0.26]             0.058849 (0.199)
## unemp:pgs.quart5(0.26,0.835]             -0.145959 (0.203)
## unemp:pgs.quart5(0.835,3.45]              0.058959 (0.206)
## ret:pm_uer:pgs.quart5(-0.83,-0.251]       0.008493 (0.020)
## ret:pm_uer:pgs.quart5(-0.251,0.26]       -0.004158 (0.020)
## ret:pm_uer:pgs.quart5(0.26,0.835]         0.004211 (0.021)
## ret:pm_uer:pgs.quart5(0.835,3.45]        -0.000469 (0.020)
## unemp:pm_uer:pgs.quart5(-0.83,-0.251]     0.075887 (0.033)   *
## unemp:pm_uer:pgs.quart5(-0.251,0.26]      0.010179 (0.033)
## unemp:pm_uer:pgs.quart5(0.26,0.835]       0.011626 (0.034)
## unemp:pm_uer:pgs.quart5(0.835,3.45]      -0.009935 (0.034)
```

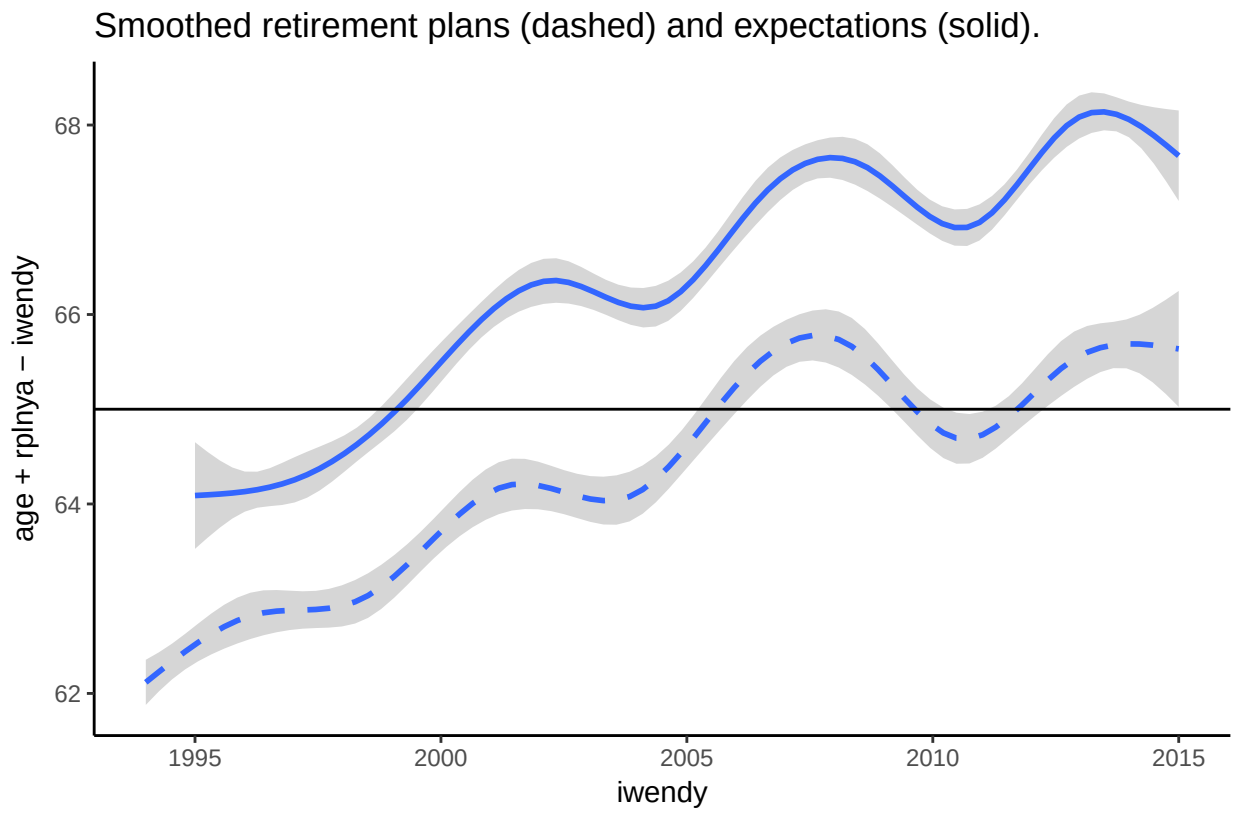
Evidence of increasing uncertainty in retirement.

```
## `geom_smooth()` using method = 'gam'
```

```
## Warning: Removed 380308 rows containing non-finite values (stat_smooth).
```

```
## `geom_smooth()` using method = 'gam'
```

```
## Warning: Removed 398387 rows containing non-finite values (stat_smooth).
```



Full non−retired sample.

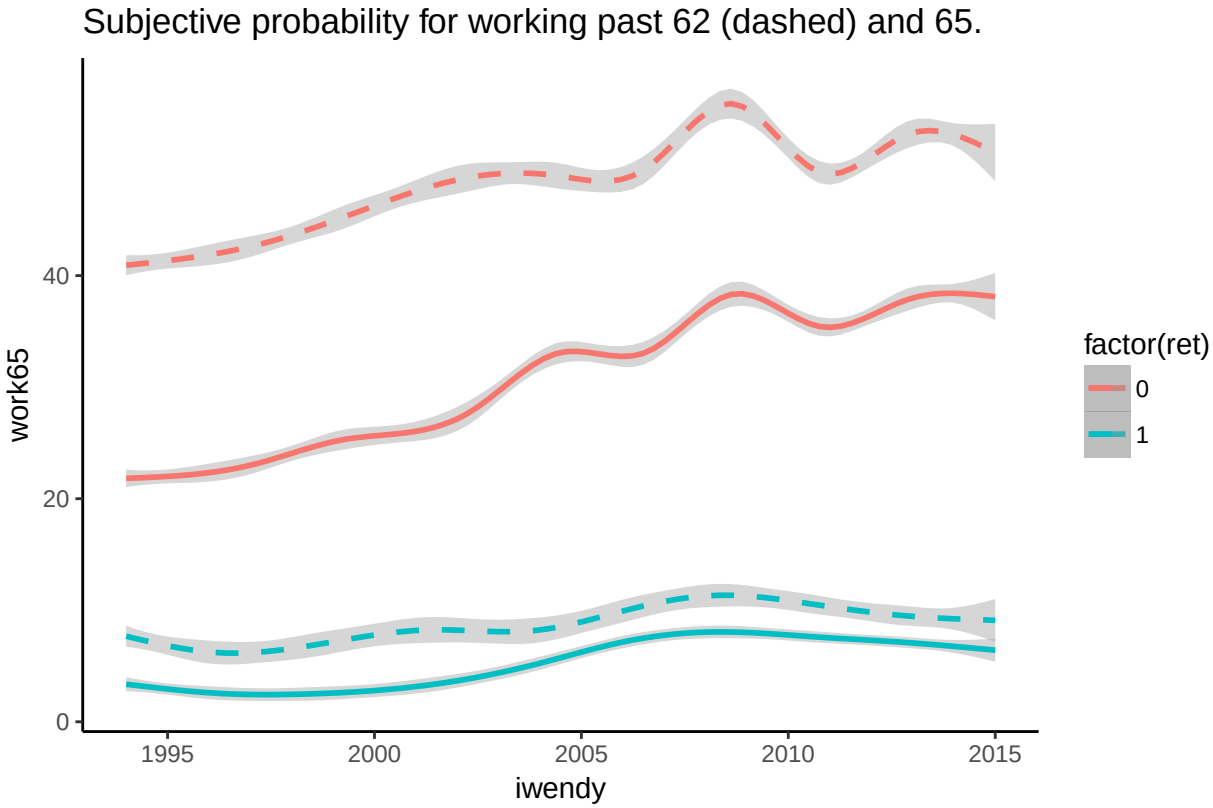
```
ggplot(cleandat,aes(x=iwendy,y=work65,
                    color=factor(ret),group=factor(ret))) +
  geom_smooth() +
  geom_smooth(aes(y=work62),lty=2) +
  theme_classic() + geom_abline(slope=0,intercept=65) +
  labs(title='Subjective probability for working past 62 (dashed) and 65.',
       caption='Full sample.')
```

```
## `geom_smooth()` using method = 'gam'
```

```
## Warning: Removed 331846 rows containing non-finite values (stat_smooth).
```

```
## `geom_smooth()` using method = 'gam'
```

```
## Warning: Removed 344320 rows containing non-finite values (stat_smooth).
```



Full sample.

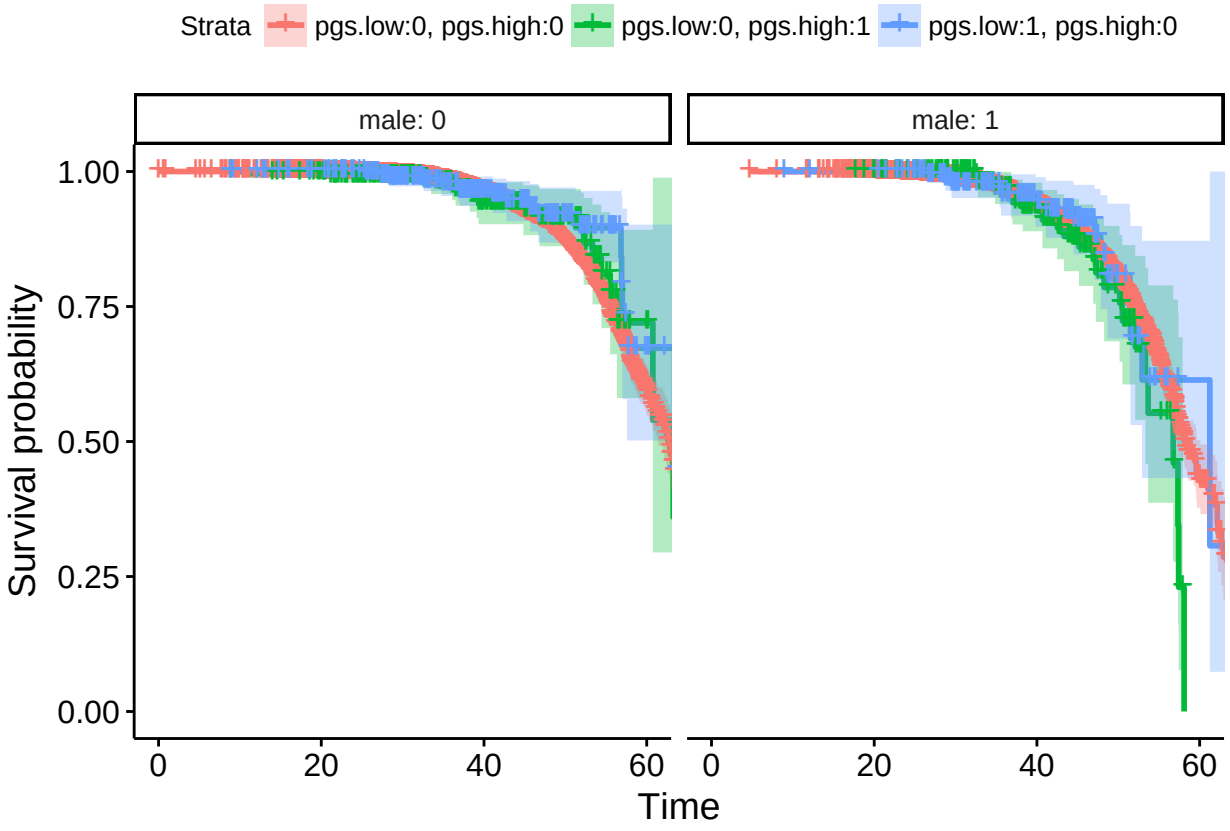
```
analyze = analyze %>%
  mutate(rage = rplnya - iwendy + age)

summary(
  plm(cesd~age + pm_uer + marr + iwendy +
                 lninc+lnwlth+negwlth + rage +
                pm_uer:pgs.quart,
           index='hhidpn',model='within',
      data=analyze )
)
```

```
## These series are constants and have been removed: raracem, has_pgs, iwstat, black.x, orace, greatmod
## Oneway (individual) effect Within Model
##
## Call:
## plm(formula = cesd ~ age + pm_uer + marr + iwendy + lninc + lnwlth +
##     negwlth + rage + pm_uer:pgs.quart, data = analyze, model = "within",
##     index = "hhidpn")
##
## Unbalanced Panel: n=5260, T=1-10, N=14194
##
## Residuals :
##     Min.  1st Qu.   Median  3rd Qu.     Max.
## -4.93241 -0.34031 -0.00133  0.12212  6.17346
##
## Coefficients :
```

```
##                                    Estimate Std. Error t-value     Pr(>|t|)
## age                                -0.07663    0.06533   -1.17       0.2408
## pm_uer                             -0.01643    0.01589   -1.03       0.3011
## marr                               -0.37509    0.06499   -5.77 0.0000000081
## iwendy                              0.06928    0.06536    1.06       0.2892
## lninc                              -0.01077    0.02030   -0.53       0.5956
## lnwlth                              0.24602    0.21766    1.13       0.2584
## negwlth                             0.24486    0.07653    3.20       0.0014
## rage                               -0.00358    0.00378   -0.95       0.3432
## pm_uer:pgs.quart(-0.669,0.00951] -0.01465    0.02125   -0.69       0.4906
## pm_uer:pgs.quart(0.00951,0.674]  -0.00238    0.02063   -0.12       0.9081
## pm_uer:pgs.quart(0.674,3.45]     -0.01582    0.02088   -0.76       0.4486
##
## age
## pm_uer
## marr                               ***
## iwendy
## lninc
## lnwlth
## negwlth                            **
## rage
## pm_uer:pgs.quart(-0.669,0.00951]
## pm_uer:pgs.quart(0.00951,0.674]
## pm_uer:pgs.quart(0.674,3.45]
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Total Sum of Squares:    11900
## Residual Sum of Squares: 11800
## R-Squared:      0.00749
## Adj. R-Squared: -0.579
## F-statistic: 6.12374 on 11 and 8923 DF, p-value: 0.000000000425
```

No appreciable differneces in survival (by quartile)

```
print(survplot)
```


Strata
pgs.low:0, pgs.high:0
pgs.low:0, pgs.high:1
pgs.low:1, pgs.high:0
male: 0
male: 1
Survival probability
1.00
0.75
0.50
0.25
0.00
0
20
40
60
Time