AUT

Dynamic relationships between criminal offending and victimisation

NEW ZEALAND
WORK RESEARCH INSTITUTE

Christopher Erwin, Juliane Hennecke,
Lisa Meehan, Gail Pacheco

Disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit https://www.stats.govt.nz/integrated-data/.

Motivation

- Seminal work of Becker (1968) motivated theoretical literature on causes and consequences of crime
- Increasing empirical interest in determinants of criminal behaviour and victimisation in economic research
- Descriptive evidence of victim-offender overlap (VOO): offenders more likely to be victims and vice versa
  - Long history in criminology and sociology studies
  - Existing literature largely focuses on population heterogeneity as explanation for VOO
- First attempts to identify dynamic links
  - Past offending explains victimisation, but not vice versa
  - But, unrepresentative cross-sectional survey data

Motivation

"If you go and talk to the prisoners, which I have done over my time as a member of parliament, you'll often find people who were victims before they were offenders, so the cycle of offending can be a long time in the making"

- Chris Hipkins, Police Minister, Q+A 26 June 2022

This paper

Research question

Is there a dynamic relationship between criminal offending and victimisation or is population heterogeneity the main driver of the victim-offender overlap?

Contribution: First study to systematically examine VOO using:

- Population-level administrative data: External validity, representativeness and information accuracy
- Longitudinal data: Dynamic perspective, able to control for time-constant population heterogeneity

Limitations: Under-reporting in official statistics

Relevance of NZ: Moderate crime rates and criminal justice system similar to UK, US, Canada, Australia (common law)

Theoretical considerations

- Population heterogeneity
  - Routine activities and lifestyles theories
  - Cultural explanations (subculture-of-violence; code of the street)
  - Personality and preference profiles (risk preferences, self-control)
  - Rational choice theory implication that VOO stronger for violent crimes than property crimes
- Dynamic links
  - Simultaneous events
  - Rational enforcement in repeated games
  - Anger, negative reciprocity, retaliation (behavioural economics)

Data

- Stats NZ Integrated Data Infrastructure (IDI)
- Main data source: NZ Police data (2014-2020)
  - Recorded Crime Offenders Statistics (RCOS) and Recorded Crime Victims Statistics (RCVS)
    - Record of all alleged offending and victimisation incidents
    - Information available on victim and offender (if known) of each recorded crime, type of crime, date and time, location, police / court action taken

Population of interest

- Spine: Estimated resident population (ERP)
  - Monthly police incidents
  - 10% random sample of population (computational limits)
- Sample restrictions
  - Adult population (18+ years)
  - Only incidents that result in at least an informal warning
  - Minor offences excluded (lowest seriousness score e.g. traffic offences)
- 20,467,500 monthly observations for 393,000 individuals

Descriptive statistics

Bivariate frequencies: any victimisation or offending, 2014–2020

		Victim		
		No	Yes	Total
Offender	No	353,800 *(90.5%)*	20,200 *(5.1%)*	374,000 *(95.2%)*
	Yes	15,000 *(3.8%)*	4,000 *(1.0%)*	19,000 *(4.8%)*
	Total	368,800 *(93.8%)*	24,300 *(6.2%)*	393,000

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Conditional probabilities

$\Pr(O_i = 1 | V_i = 0) = 4.1\%$

$\Pr(O_i = 1 | V_i = 1) = 16.5\%$

$\Pr(V_i = 1 | O_i = 0) = 5.4\%$

$\Pr(V_i = 1 | O_i = 1) = 21.1\%$

Descriptive statistics

Characteristics of victim / offender groups

	$V_i = 0, O_i = 0$	$V_i = 0, O_i = 1$	$V_i = 1, O_i = 0$	$V_i = 1, O_i = 1$
Female (%)	52.1	16.7	49.4	39.8
Age (years)	46.9	37.6	38.3	34.1
European (%)	64.4	40.4	54.1	36.6
Māori (%)	12.5	43.0	22.2	50.7
Pacific Peoples (%)	5.9	11.0	6.5	7.4
Asian (%)	15.1	4.5	15.5	4.0
MELAA (%)	1.5	1.1	1.6	1.2
Other ethnicity (%)	0.6	<0.1	0.1	<0.1
Parent has court charge (%)	3.4	9.1	6.2	11.0
Annual earnings ($)	31,399	20,402	32,590	12,872
Observations	*353,800*	*15,000*	*20,200*	*4,000*

Descriptive statistics

Share of offence types

	$V_i = 0, O_i = 1$	$V_i = 1, O_i = 0$	$V_i = 1, O_i = 1$
Offender:	**%**	**%**	**%**
Simultaneous victim/offender	-	-	4.4
Retaliatory	-	-	5.6
Repeat offending	39.3	-	52.2
Violent	53.8	-	57.1
Property	26.3	-	36.2
Family	27.1	-	30.6
Intimate partner violence	21.1	-	23.7
Sexual	6.1	-	4.2
Weapon	17.2	-	22.5
Victim:			
Simultaneous victim/offender	-	-	2.6
Retaliatory	-	-	4.1
Repeat victimisation	-	14.2	30.9
Violent	-	32.1	61.0
Property	-	71.4	50.2
Family	-	8.9	20.4
Intimate partner violence	-	9.0	21.1
Sexual	-	4.5	5.0
Weapon	-	6.3	18.3

Estimation method

1. Recursive bivariate probit: Fully simultaneous relationship between offending and victimisation
2. Event study model with individual and time fixed effects

$$O_{it} = \alpha_0 + \sum_{j=1}^{12} \beta_j \, O_{i,t-j} + \sum_{k=0}^{12} \gamma_{k+1} \, V_{i,t-k} + \boldsymbol{X_{it}\delta_{it}} + \theta_i + \theta_t + \varepsilon_{it}$$

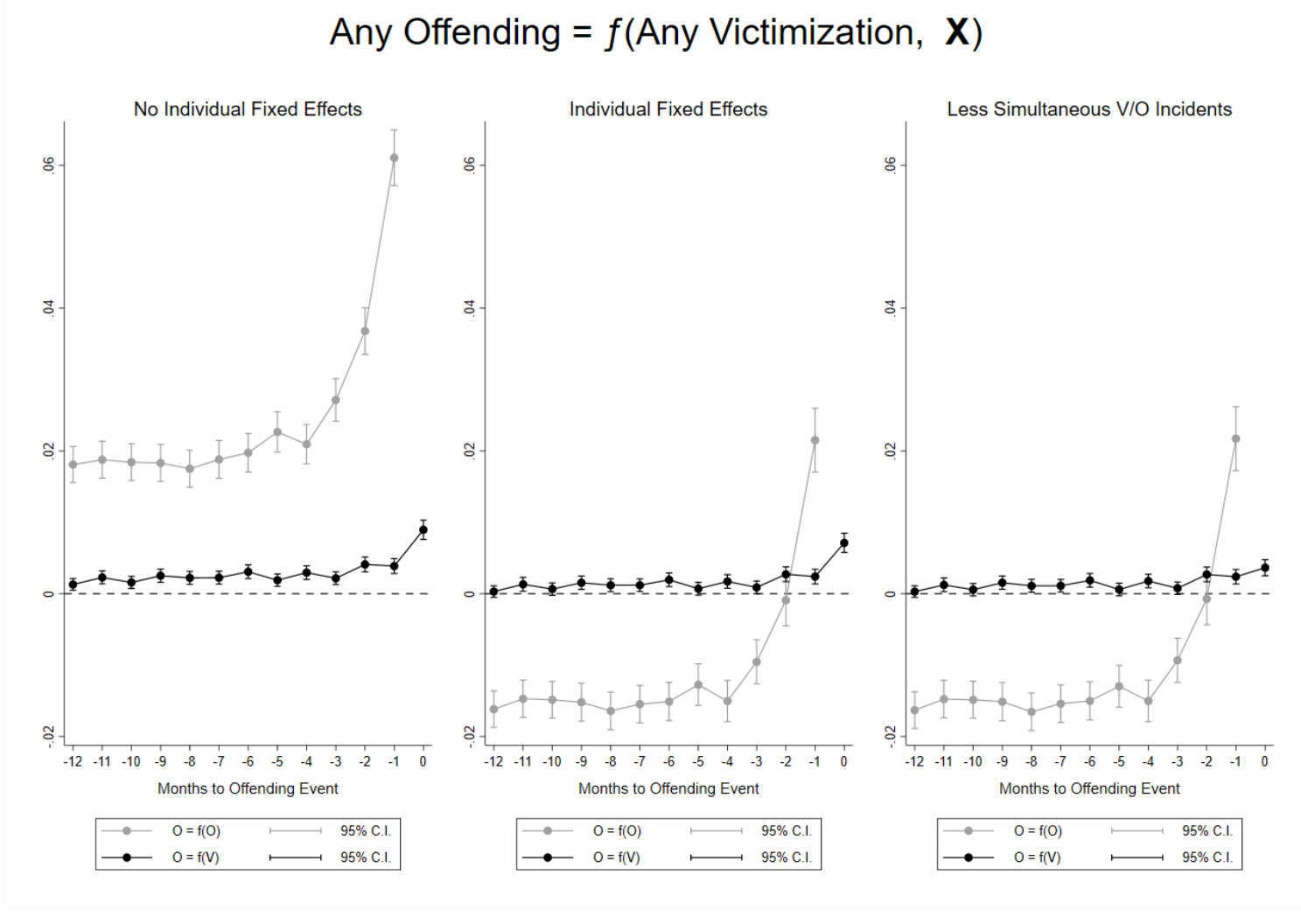
$$V_{it} = \alpha_0 + \sum_{j=1}^{12} \beta_j \, V_{i,t-j} + \sum_{k=0}^{12} \gamma_{k+1} \, O_{i,t-k} + \boldsymbol{X_{it}\delta_{it}} + \theta_i + \theta_t + \varepsilon_{it}$$

3. Dynamic panel estimate (Arellano and Bond, 1991)
   - Goal: Address endogeneity of lagged dependent variable in (2)
   - Identifying assumption of no autocorrelation in idiosyncratic errors holds
   - Result: Support findings in event study model

Main results

Outcome: Offending

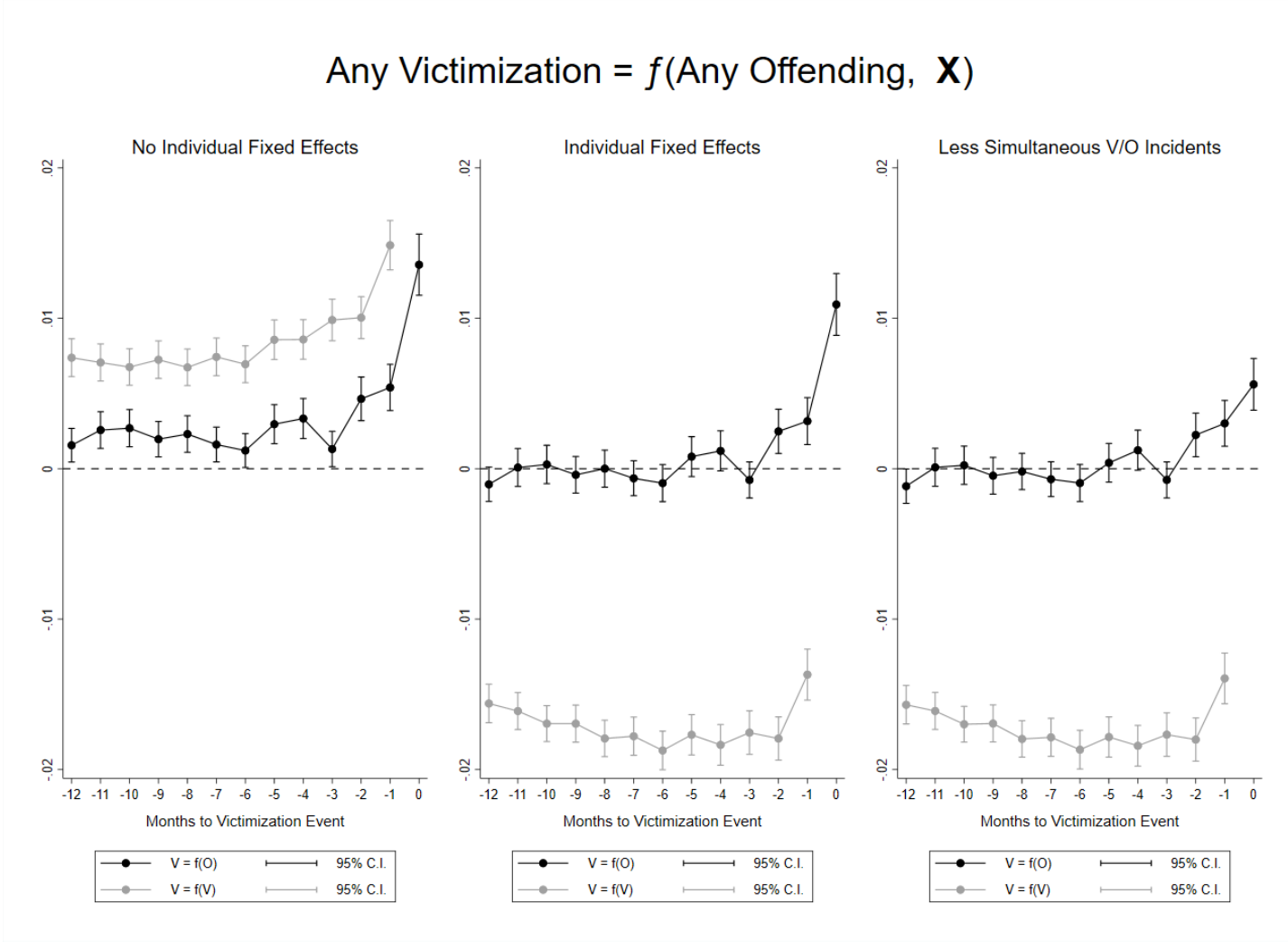
$$O_{it} = \alpha_0 + \sum_{j=1}^{12} \beta_j \, O_{i,t-j} + \sum_{k=0}^{12} \gamma_{k+1} \, V_{i,t-k} + \boldsymbol{X_{it}\delta_{it}} + \theta_i + \theta_t + \varepsilon_{it}$$



Main results

Outcome: Victimisation

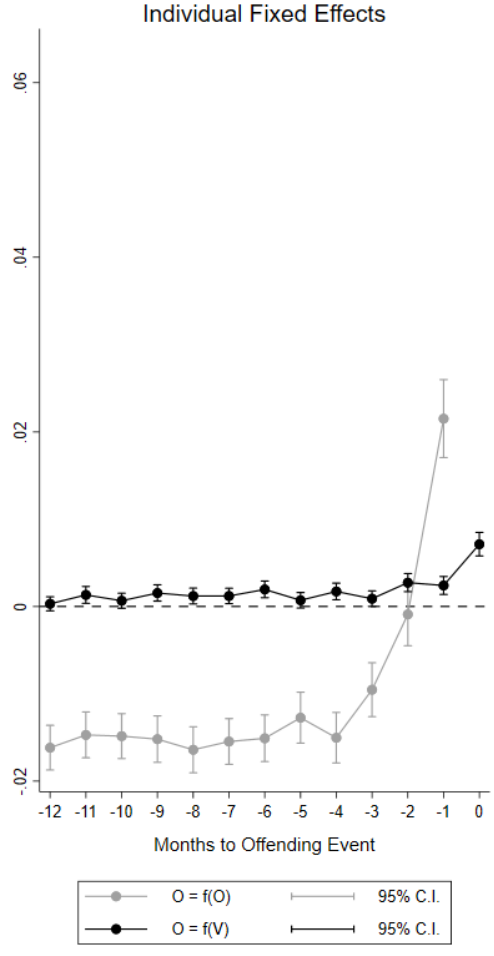
$$V_{it} = \alpha_0 + \sum_{j=1}^{12} \beta_j V_{i,t-j} + \sum_{k=0}^{12} \gamma_{k+1} O_{i,t-k} + \boldsymbol{X_{it}\delta_{it}} + \theta_i + \theta_t + \varepsilon_{it}$$



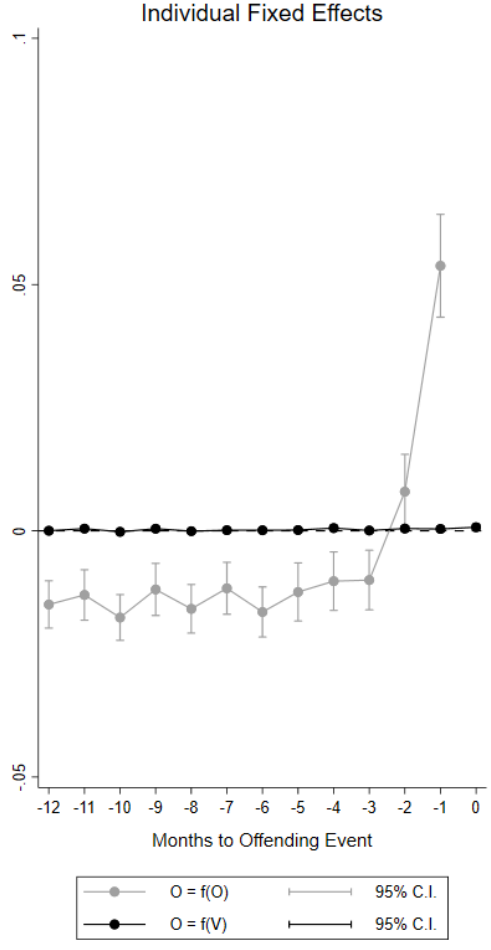
Heterogeneity – Crime Type

Outcome: Offending – violent vs. property

Violent Offending = *f* (Violent Victimisation, **X**)



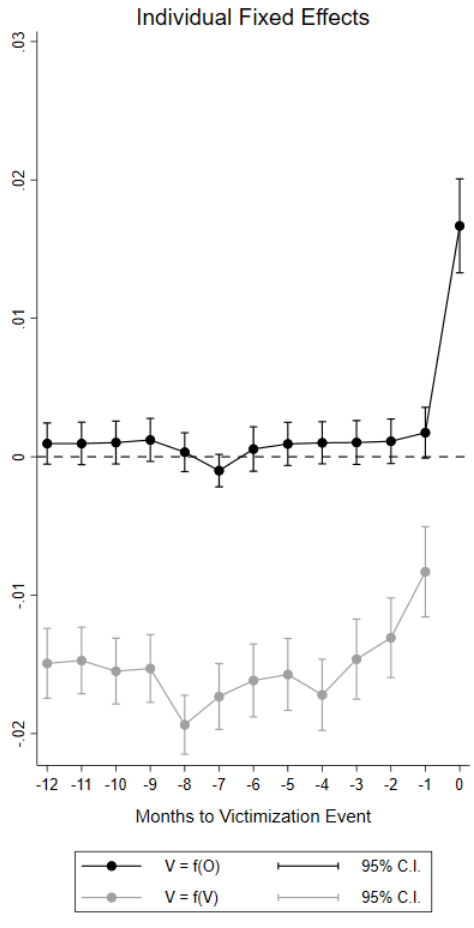
Property Offending = *f* (Property Vicitmisation, **X**)



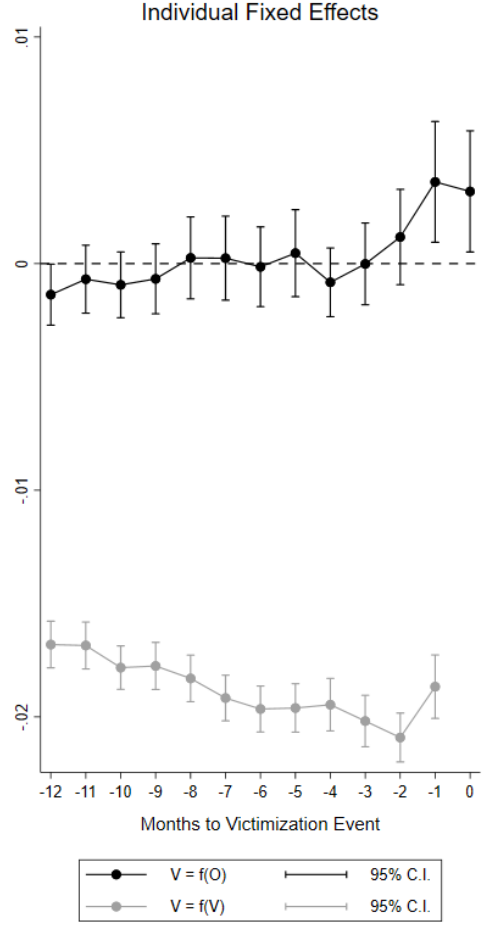
Heterogeneity – Crime Type

Outcome: Victimization – violent vs. property

Violent Victimisation = *f*(Violent Offending, **X**)



Property Victimisation = *f*(Property Offending, **X**)



Conclusions

- Key results
  - Victimisation and offending are jointly determined
  - Victim/offender overlap largely driven by fixed environmental and individual characteristics and simultaneous events
  - Dynamic overlap exists, but is relatively small and may be overstated in earlier research
  - Events that produce victim/offender overlap tend to occur close together in time (usually within 2 months of each other)
- Limitations and outlook
  - Endogeneity of reporting especially for victimisation (previous offenders are less likely to report)
  - Heterogeneity between crime types (not only within)
  - Increase 10% random sample

lisa.meehan@aut.ac.nz

Extra slides

Dynamic panel estimates, 2019

	(1)	(2)	(3)	(4)
	Only lagged dependent variables considered endogenous		All V/O variables considered endogenous	
Variable	*Victim(t)*	*Offender(t)*	*Victim(t)*	*Offender(t)*
Offender(*t*)	.014*** (.004)		.194*** (.065)	
Offender (*t-1*)	.010*** (.005)	.066*** (.007)	-.005 (.034)	.039*** (.011)
Offender (*t-2*)	.013*** (.003)	.027*** (.005)	.024 (.025)	.025*** (.008)
Offender (*t*-3)	-.004 (.004)	.012*** (.004)	.015 (.030)	.013** (.005)
Victim(*t*)		.006** (.002)		.194** (.092)
Victim (*t-1*)	.010*** (. 003)	.009*** (.002)	.005** (.002)	-.019 (.0082)
Victim (*t-2*)	.008*** (.003)	-.003 (.002)	.004* (.002)	-.087 (.093)
Victim (*t-3*)	.006** (.003)	.0004 (.002)	.002* (.001)	-.005 (.066)
Tests for zero autocorrelation in first-differenced errors:				
order	*p*-value	*p*-value	*p*-value	*p*-value
1	.000	.000	.0000	.000
2	.665	.570	.819	.120
year effects	YES	YES	YES	YES
individual effects	YES	YES	YES	YES
Observations	2,926,600	2,926,600	2,926,600	2,926,600