THE GENDER REVOLUTION IN AN ISLAMIC SOCIETY: STALLED OR A STILL UNFOLDING? COHORT DYNAMICS IN GENDER ROLE ATTITUDES IN PAKISTAN FROM 1945 TO 1994

Saba Aslam Khan, Ineke (FA) Nagel, Harry BG Ganzeboom
Department of Sociology, VU University Amsterdam

Australian National University, Canberra AU

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Presented by Harry Ganzeboom

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  - British Sociological Association, Newcastle UK, July 9, 2024.
  - NSV Day of Sociology, Nijmegen NL, June 17, 2024.
  - SILC Seminar VU University Amsterdam, June 10, 2023; May 21, 2024.
  - European Consortium for Sociological Research, Prague CZ, September 9, 2023 (poster).

Background: GRA

- Gender Role Attitudes [GRA, also: gender role ideology] refer to normative beliefs about the roles women and men should hold in society.
- GRA are related to but do not necessarily reflect gender role behaviour, such as gender unequalities in caring, education, labour market participation, earning, household organization, etc.
- GRA have been studied for decades in national and international social attitudes survey projects, such as BSA, GSSS, ISSP, EVS, WVS and many more.
- GRA is typically measured as a multiple-indicator construct. The indicators vary between survey projects, and within these projects by wave.

Clash of Civilizations

- Huntington [1993, “The Clash of Civilizations”] defined “civilizations” as being divided by religious legacies, with major and enduring consequences for the political institutions [democracy] of societies.
- Recent echo: Acemoglu & Robinson (2012). “Why Nations Fail” [Nobel Prize 2024].
- Inglehart & Norris (2003). “The True Class of Civilizations”: the major dividing lines between civilizations are in gender roles and gender role attitudes.
- Major source: Inglehart & Norris (2003). “Rising Tide”. Examined GRA cross-nationally using WVS R1-R3, but with little attention to Islamic societies.

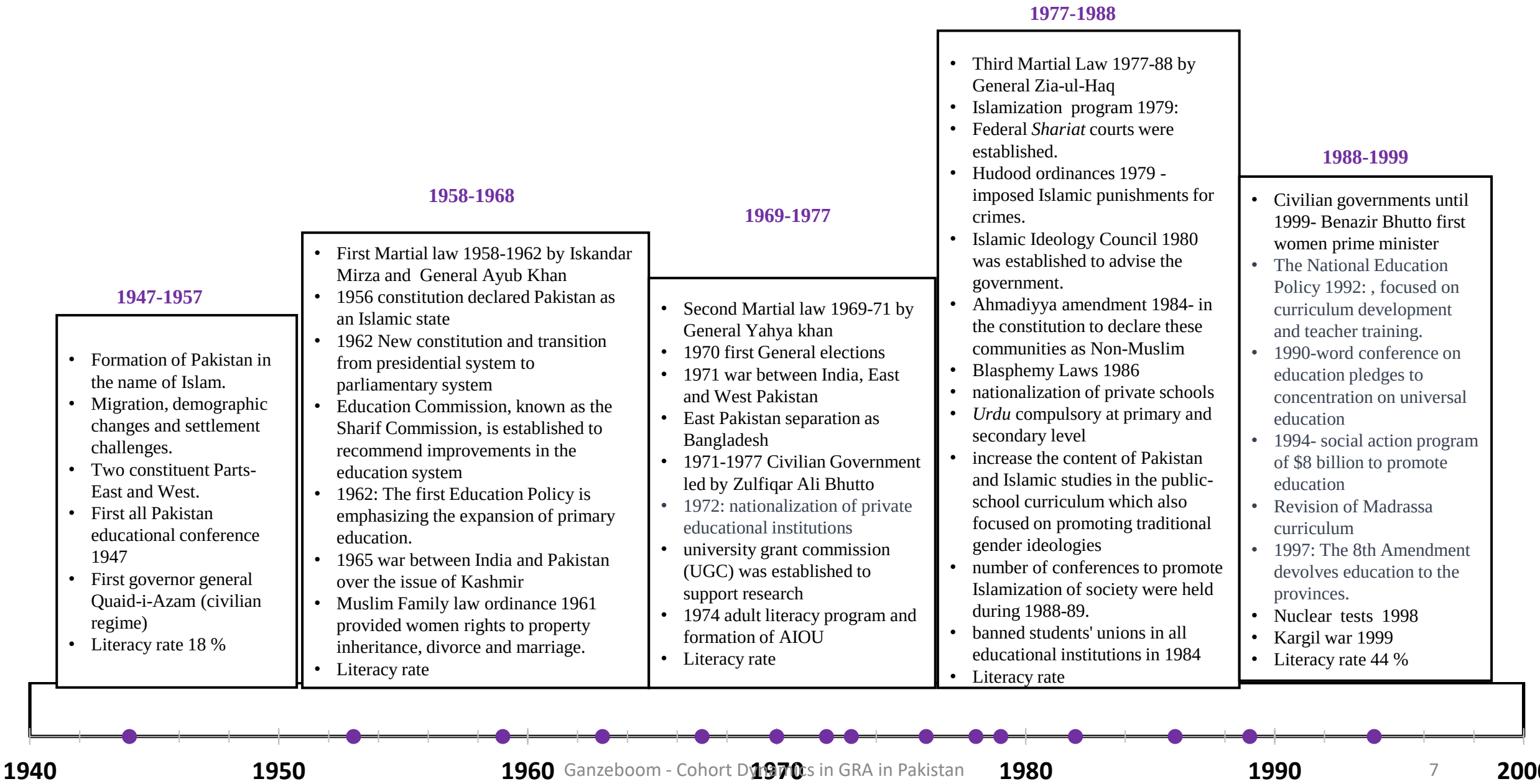
GRA literature

- Two stylized facts:
  - GRA are developing in a steady (linear) trend toward more egalitarian attitudes.
  - Women hold more egalitarian attitudes than men.
- Open issues:
  - Can GRA be regarded a one-dimensional concept: shared caring vs shared earning; more complicated types produced by latent class analysis.
  - Is the gender role revolution still developing in a steady (linear) way, or is it “stalled” (slowing down, trend reversal)?
  - Is the gender gap in GRA narrowing or widening?

Religion and Islamization in PK

- Women's positions in Pakistan cannot be understood without knowing the religio-political history of Pakistan.
- Islamization has had a long history in Pakistan, but it became primary policy during the regime of General Zia-ul-Haq after his military coup in 1977 until 1988.
- Xial enforced strict Islamic laws (sharia law; called *Nizam-e-Mustafa* – Rule of the Prophet)
- Zia took numerous steps to impose it on the institutional level, e.g., by establishing Islamic judicial courts, that declared adultery, fornication and blasphemy as crimes and imposed corporal punishments like whipping and lapidation.
- Similarly, school textbooks were revised with Islamic content and values.
- Through media programs Zia bolstered the role of Islamic clergy and scholars and he also appointed many Islamic activists on government posts for continuation of the Islamist agenda.

Islamization and State Of Education Under Various Regimes In Pakistan 1947-2000



Research Questions

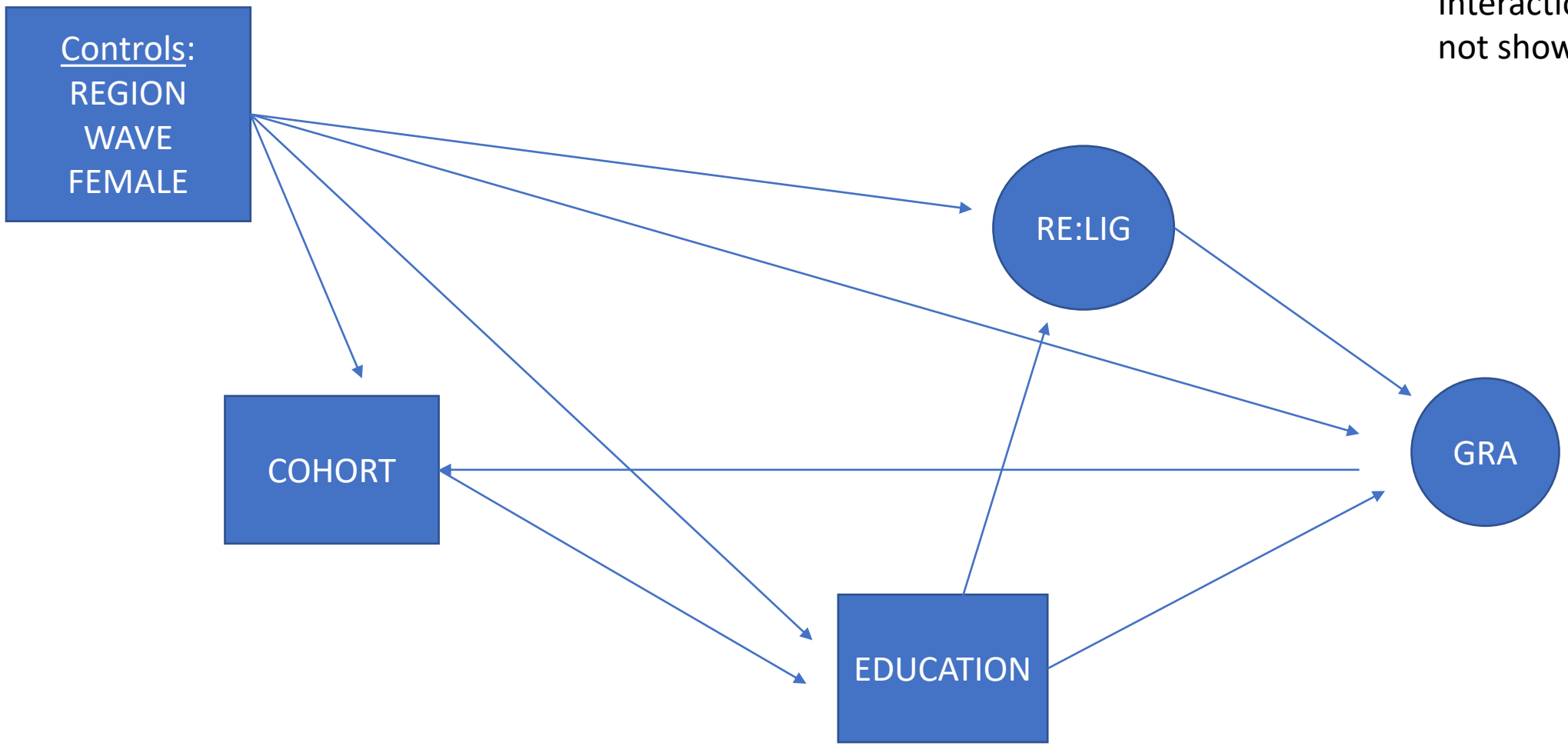
- Historical trend in GRA in Pakistan: Becoming more egalitarian? Linear (steady) or non-linear (=fractured; trend reversal)?
- How are these trends different between women and men: Women more egalitarian and faster moving toward egalitarian positions (=widening gap)?
- How are cohort trends mediated by (A) educational expansion and (B) changes in religiosity (due to Islamization)?

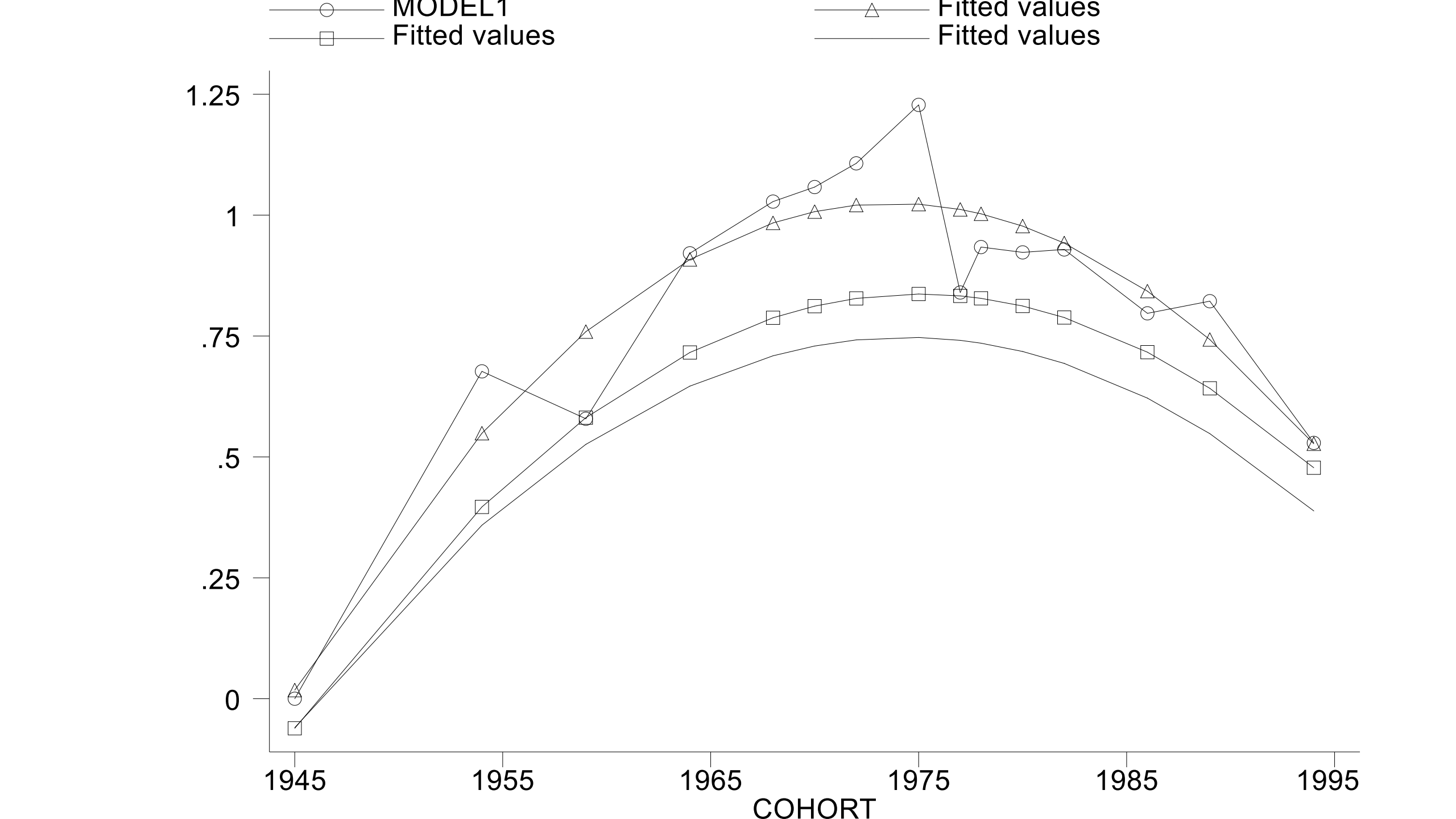
Research Design

- Four waves of the World Value Study: 1997, 2001, 2012, 2018.
- N=5928. After harmonization (21-64): N=5473..
- Focal variables:
  - GRA: Gender Role ideology: multiple indicator measurement
  - Cohort
  - Education
  - Religiosity: multiple-indicator measurement
- Gender: control and moderator variable.
- Control variables:
  - Wave (= year of survey)
  - Region: Sindh, Punjab, Baluchistan, Khyber-Pashtun
  - Urban / Rural
- Model: OLS → SEM regression: constructed variable measurement → latent variables measurement.

Basic causal model

Interactions with gender not shown




MODEL1
Fitted values
Fitted values
Fitted values
1.25
1
.75
.5
.25
0
1945
1955
1965
1975
1985
1995
COHORT

Conclusions

- GRA across cohorts develops in a strongly non-linear trend: cohorts 1945-1980 develop steadily towards more egalitarianism, cohorts born after 1985 become gradually more conservative.
- The turning point is for cohorts born around 1980-1985. These were in their sensitive ages around 2000, rather than in the Islamization period (1978-1988).
- Educational expansion and secularization explain part of the steady uoward trend in egalitarian GRA – but are not responsible for the curvilinearity in the trend.
- Mediation by educational expansion is stronger than mediation by secularization.

Subsidiary conclusions

- Both GRA and RELIG in WVS can well be captured by a one-dimensional model.
- Measurement of both GRA and in particular RELIG is measured with much unreliability in WVS, partly due to incompleteness of the indicators across waves.
- Measurement problems can be repaired with partially invariant measurement models in SEM, that allow for comparison of effects across cohorts.
- WVS-PK data have rather striking peculiarities. However, they are the best data to analyze trends in GRA in PK.

IVS: Integrated WVS & EVS

- We analyze data from the Integrated Values Survey 1980-2018, version 3 , 2022.
- Merges all available data from: European Value Survey Trend Files 1980-2017 [ZA7503_v3-0-0.sav] and WVS_trends_3_0.sav“ [doi:10.14281/18241.23].
- Post-harmonized by GESIS.
- PK surveys were collected by:
  - 1997 & 2002: Department of Rural Sociology, University of Agriculture Faisalabad.
  - 2008 & 2018: Gallup Pakistan.
- All samples are “stratified by province, urban/rural areas and districts/municipalities”.
- Within PSUs, households were selected by random walk, household member selected by Kish grid.

Methodological problems

- GRA indicators are incomplete: 4 completely measured vs 5 incompletely measured
- RELIG indicators are incomplete: 8 indicators, none completely available.
- Measurement quality of both GRA and RELIG:
  - Highly unreliable
  - Reliability is heterogeneous by survey.
- Sampling procedures are heterogeneous by survey:
  - Wave 3 covers only 1 region (Punjab)
  - Measurement of urban / rural and education is demonstrably heterogeneous by survey.
- Still: ***the WVS data are the best data available to answer the research questions – they are the only ones***.

Solutions to the methodological problems

- Focus on **cohort developments**: period effects are used as controls, not substantively interpreted; age effects are implicit in the survey controls.
- Measurement heterogeneity is repaired by **latent-variable measurement**. (We will compare this to **constructed-variable measurement**.)
- We develop a **partially metric invariant** measurement model for GRA and RELIG, by eliminating invalid indicators, but keeping enough indicators to support partial measurement invariance between waves.
- Missing values (non-available indicators) are handled by **phantom variable** construction.
- Heterogeneity between surveys is treated by **split-half parcelling**.

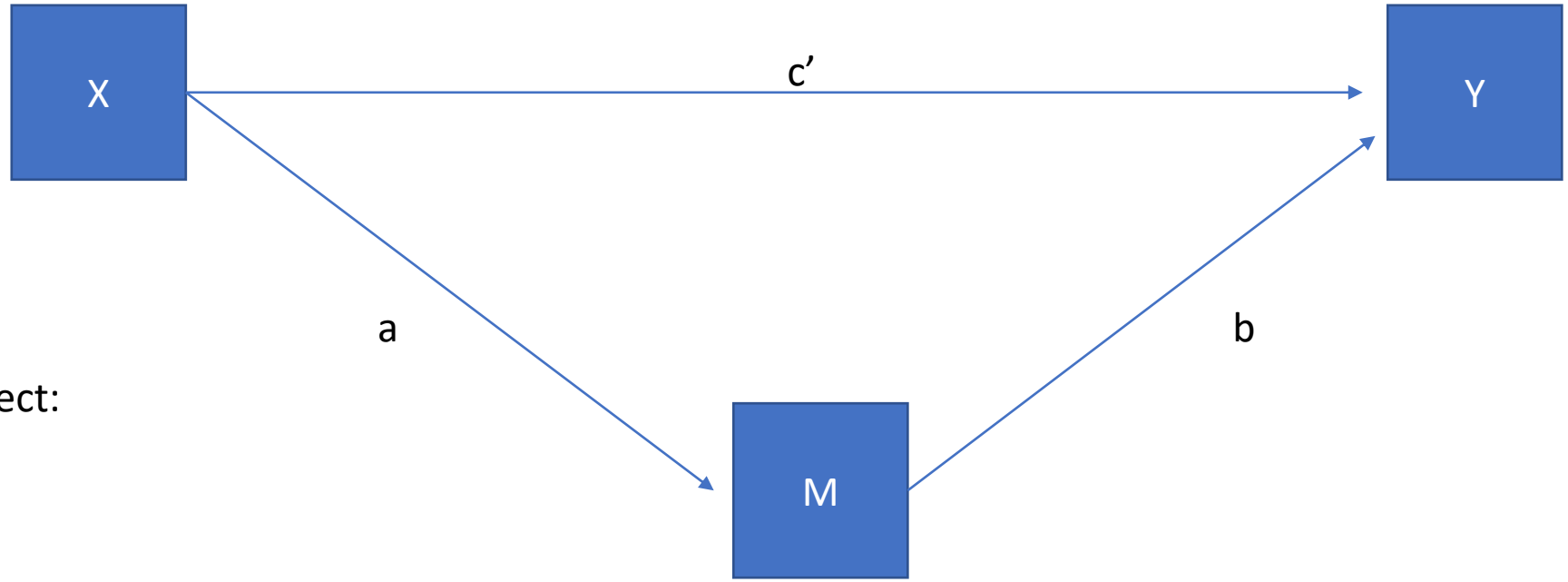
APC

- Age, Period and Cohort effects cannot be uniquely decomposed: they are linear (and logically) dependent.
- AP, PC and AC give all different interpretations (‘readings’) of a model’s coefficient.
- We focus on Cohort effects, and control Period (=wave) effects. Aging effects (how attitudes change when you grow older) is implicit in the model.
- Cohort replacement is widely assumed in this literature (Inglehart) to be the prime mechanism of social change, and this can be assumed with more plausibiliy for the two mediation processes we examin: educational attainment, religiosity. We can safely assume that these are shaped in early life and do not change thereafter.
- Wave effects are are hard to interpret as true historical period effects – we assume that survey difference within the same cohort are primarily produced by survey heterogeneity: how sampling and measurement has taken place in different waves.

Mediation and measurement unreliability

- In mediation models we explain the effect of X-var on Y-var by testing a mediator M (controlling for confounders C).
- Degree of mediation is measured by calculating the indirect effect (a*b). We must derive SE / CI for indirect effects analytically (sobel test) or by simulalation (bootstrapping).
- (Most researchers look at c – c' to test mediation, but this does not always work well and does not address CI or SE for the mediation.)
- The degree of mediation found is crucially dependent upon the quality of measurement (in particular the reliability) of M.
- ***M needs to be perfectly measured – with any random measurement error.***

Mediation



Indirect effect:
a*b = c-c’

Perfect measurement = latent-variable measurement

- We usually quantify the reliability of a constructed variable by Cronbach's Alpha (or McDonald's Omega).
- While it is technically possible to correct for attenuation by measurement unreliability, nobody seems to care… (procedures how to do this have been developed in the 1950's).
- An even better way to achieve perfect measurement is by a latent-variable measurement model in SEM (Structural / Simultaneous Equation Models). In SEM the measurement model is estimated simultaneously with the structural [causal] model.

COHORT

- We measure COHORT as a categorization of birthyear in 15 **equally sized** groups.
- Using equal cohort sizes has the advantage that sampling variation is about equal between the cohorts. The consequence is that cohorts are not equally spaced: cohorts are closer where we have more data.
- Cohorts are scaled by the mean values of theit birthyears. COHx re-expresses this in a 0..1 continuum: 0: 1945 1: 1994.
- We use COHx to model linear development.
- COHx2 is the squared polynomial term of COHx. It is constructed to be orthogonal (uncorrelated) with COHx by 'centering'. This implies that we can interpret the linear component independent of the curvilinear component.
- Notice: Cohorts will be in their sensitive age at age 15-20. This implies that the WVS cohorts will be affected by external conditions (such as Islamization) between 1960 and 2010.

Control variables: FEMALE, RURAL, REGION

- These are all measured as 0.1 variables.
- In REGION Punjab (PK's major province) is the reference. Notice that this region is the only one covered by WVS3.
- Examining cross-wave distributions revealed some imperfections:
  - FEMALE: no problems.
  - REGION: Distribution changes by wave.
  - RURAL: Distribution changes by wave and goes in unexpected direction (no urbanization).

Education: EDUC

- Measurement of education (highest completed degree) differs between surveys, but is all surveys rather detailed (8 – 15 categories), in particular when your delve up the original data.
- GESIS (WVS & EVS) provided a harmonized measure in 6 categories, based in ISCED-97.
- We were able to improve the measurement of education a bit by taking more details into account via scaling a scaling harmonization approach that scored all qualifications between 0 (illiterate, no formal education) and 8 (MA degree)
- Testing model: EDUC = COHORT + COHORT*FEMALE + controls.
- Our own recoding upped adj.R2 from 23.3% to 25.1% -- which we take as an indication that we did better than EVS/WVS.
- Unfortunately, a second indicator on level on education (duration) is only available in one wave.
- There is no information in EVS/EVS whether respondents have attended religious education (Madrassas).

Table 7: Educational Expansion by COHORT

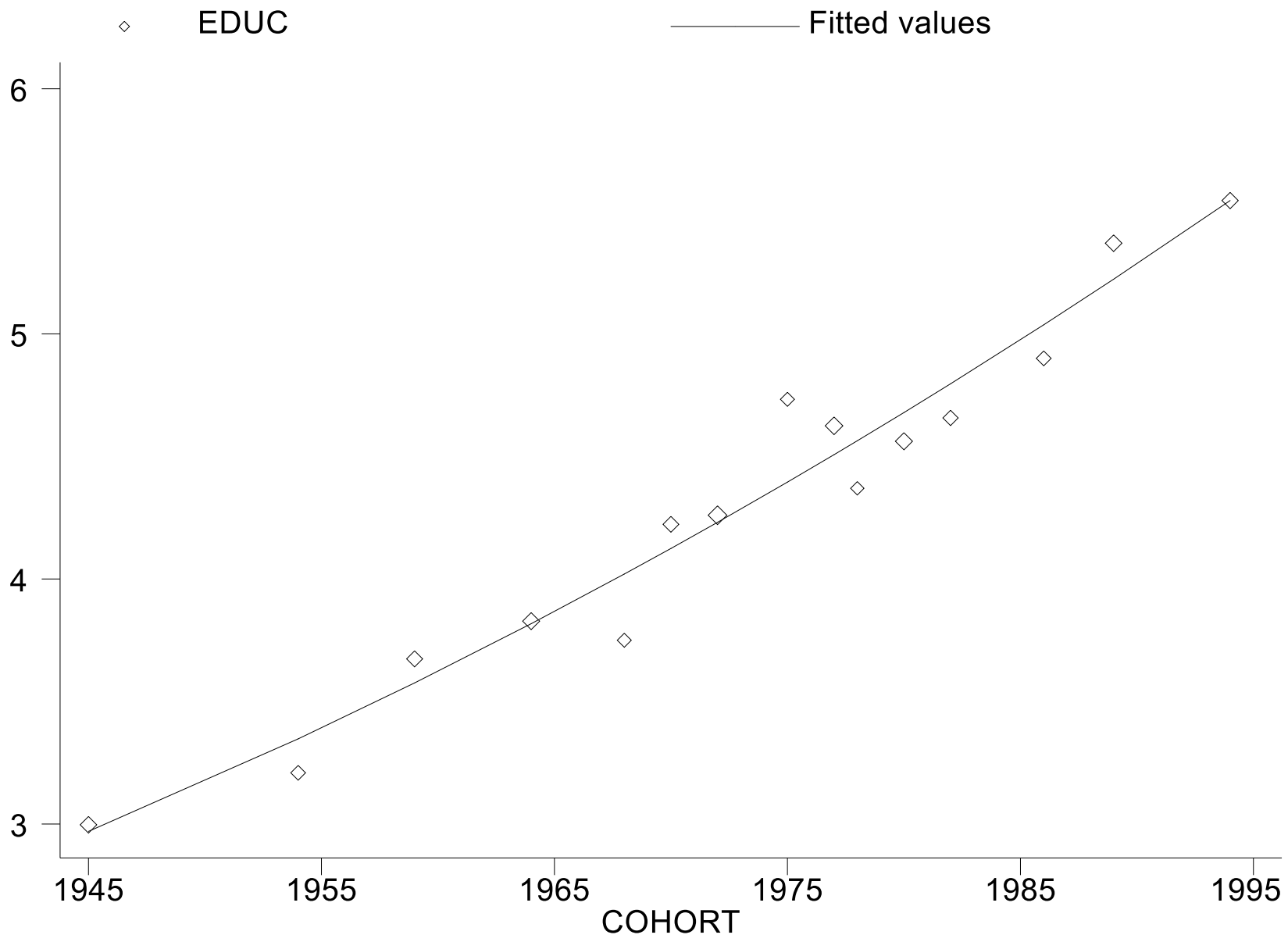
Parameter	B	SE	t
Intercept	2.729	.195	14.0
[WAVE=3]	.539	.122	4.4
[WAVE=4]	.608	.090	6.8
[WAVE=6]	-.094	.092	-1.0
[WAVE=7]	0		
[REGION=1]	.040	.134	0.3
[REGION=2]	.211	.144	1.5
[REGION=3]	.579	.155	3.7
[REGION=4]	0		
RURAL	-2.191	.063	-34.8
COHx	2.659	.175	15.2
COHx2	.173	.095	1.8
FEMALE	-.859	.148	-5.8
FEMALE * COHx	-.227	.234	-1.0

B is statistically significant ($p < .05$, two-tailed) if $|t| > 1.96$

The trend model for EDUC

- Model confirms that education expansion in PK is an overwhelmingly linear process: no fractures or slow-downs / spurts.
- Model shows that PK women are lower educated than men.
- Surprisingly, the trend coefficients do NOT show that women's education is expanding more rapidly than men's. This contradicts repeated claims and findings in the literature, as well as one well established result of stratification research worldwide.
- Despite the measurement of EDUC, FEMALE and COHORT being relatively unproblematic, there remain significant survey effects in the model.

EDUCATIONAL EXPANSION BY COHORT



- Expected values from polynomial OLS regression.
- EDUC measured between 0 and 8.
- Expected values refer to men in urban areas, Punjab in wave 7 (2018).

RELIG: religiosity

- Religiosity / religiousness can be measured in WVS by eight indicators (see **Table 8b**).
- Indicators are seriously incomplete. In their original form factor / reliability / sem analyses break down due to lack of coverage (= missing correlations even in the pairwise matrix).
- What is even worse: the measurement quality varies by wave, even for the same items.

Table 8b: Descriptive Statistics RELIG indicators

	N	Min	Max	Mean	SD
CHRELIG Important child qualities: religious faith	5473	0	1	.74	.440
ATTEND How often do you attend religious services	4738	1	8	6.10	2.040
PRAY How often do you pray	2806	1	8	7.08	1.541
RELPERS Religious person	3606	1	3	2.93	.270
RELIMP Important in life: Religion	5460	1	4	3.81	.519
GODIMP Importance of God in your life	3518	1	10	9.59	1.198
RELCOMF Get comfort and strength from religion	2610	0	1	.96	.197
MOSQCONF Confidence:The churches	5451	1	4	3.66	.657
Valid N (listwise)	0				

Table 9b: Means of religiosity items by wave (POMP scores)

	WAVE				Trend
	3	4	6	7	Slope
pCHRELIG	80.7	86.0	72.2	58.8	-28.0
pATTEND		86.9	57.5	66.1	-31.0
pPRAY			85.3	87.8	10.2
pRELPERS		95.5		97.2	2.9
pRELIMP	97.4		95.3	94.8	4.5
pGODIMP #	90.5	92.2	95.8	95.0	-2.7
pRELCOMF #	96.4	95.8			-2.5
pGODCOMF #	96.6	95.8	95.3	94.8	-1.5
pMOSCONF	71.0	85.9	95.6	94.8	18.7

All items have been coded in the direction of more religiosity.

GODCOMF combines GODIMP and RELCOMF

Table 10a: Correlations Religiosity indicators - available data

	pRELIMP	pRELPERS	pRELCOMF	pGODIMP	pMOSCONF	pCHRELIG	pPRAY	pATTEND
pRELIMP	1.000	.333	.277	.162	.148	.172	.032	.149
pRELPERS	.333	1.000	.246	.178	.095	.067	.132	.144
pRELCOMF	.277	.246	1.000	.819	.078	.102		.226
pGODIMP	.162	.178	.819	1.000	.011	.107	.116	-.035
pMOSCONF	.148	.095	.078	.011	1.000	-.003	.029	-.089
pCHRELIG	.172	.067	.102	.107	-.003	1.000	-.037	.085
pPRAY	.032	.132		.116	.029	-.037	1.000	.187
pATTEND	.149	.144	.226	-.035	-.089	.085	.187	1.000
pRELIMP	5460	3603	2609	3509	5441	5460	2797	4727
pRELPERS	3603	3606	1821	1765	3595	3606	1766	3589
pRELCOMF	2609	1821	2610	694	2603	2610	0	1916
pGODIMP	3509	1765	694	3518	3507	3518	2795	2787
pMOSCONF	5441	3595	2603	3507	5451	5451	2796	4720
pCHRELIG	5460	3606	2610	3518	5451	5473	2806	4738
pPRAY	2797	1766	0	2795	2796	2806	2806	2791
pATTEND	4727	3589	1916	2787	4720	4738	2791	4738

Table 10b: Correlations Religiosity indicators - available data after combining GODIMP and RELCOMF

	pRELIMP	pRELPERS	pGODCOMF	pMOSCONF	pCHRELIG	pPRAY	pATTEND
pRELIMP	1.000	.333	.187	.148	.172	.032	.149
pRELPERS	.333	1.000	.212	.095	.067	.132	.144
pGODCOMF	.187	.212	1.000	.058	.088	.116	.054
pMOSCONF	.148	.095	.058	1.000	-.003	.029	-.089
pCHRELIG	.172	.067	.088	-.003	1.000	-.037	.085
pPRAY	.032	.132	.116	.029	-.037	1.000	.187
pATTEND	.149	.144	.054	-.089	.085	.187	1.000
pRELIMP	5460	3603	5424	5441	5460	2797	4727
pRELPERS	3603	3606	3586	3595	3606	1766	3589
pGODCOMF	5424	3586	5434	5416	5434	2795	4703
pMOSCONF	5441	3595	5416	5451	5451	2796	4720
pCHRELIG	5460	3606	5434	5451	5473	2806	4738
pPRAY	2797	1766	2795	2796	2806	2806	2791
pATTEND	4727	3589	4703	4720	4738	2791	4738

Dimensional analysis of the RELIG items

- Standardize all items within waves: this repairs heterogeneity of answering scales between and within indicators.
  - Two alternatives for standardization: Z-scores (standardization on SD) or POMP-scores (standardization in range).
- Missing correlation has been repaired by merging two items.
- Correlations can be analysed with factor analysis on pairwise correlation matrix or SEM factor analysis with FIML/MLMV. These procedures assume MAR: Missings at Random.
- SEM factor analysis can be helped by phantom variables construction.

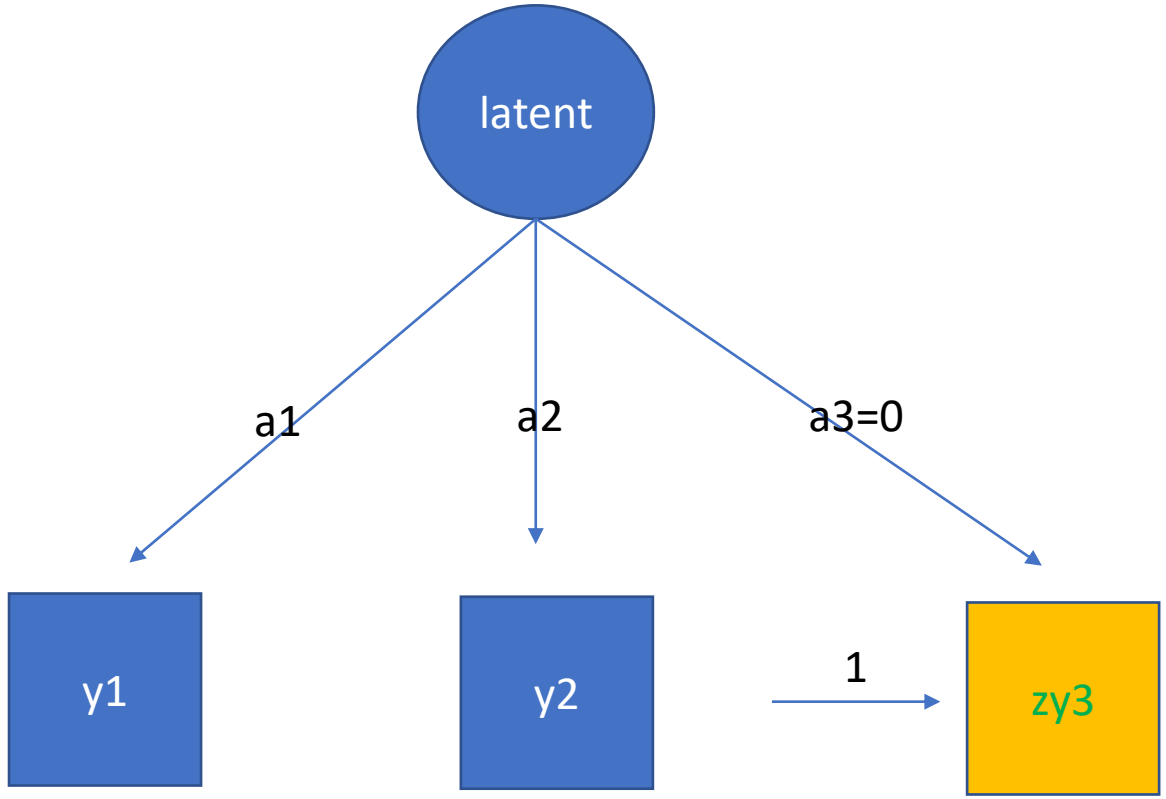
Measurement invariance (equivalence)

- Measurement invariance: we want the measurement model to be equal between waves.
- Three / four varieties:
  - Configural invariance: the same indicators are used in each wave.
  - Metric invariance: the measurement coefficients (factor loadings) can be constrained to be equal between waves. This allows for the identification of the latent covariances.
  - Scalar invariance: the intercepts of the measurement coefficients can be constrained to be equal between waves. This allows for the identification of latent means, i.e. the means of the waves.
  - Error variances invariance: the residual variances In the observed indicators van be constrained to be equal between waves. This would inform you that the latent mean are measured with the same degree of reliability.
- SEM programs (such as Stata's SEM) have standard options available to impose these invariance constraints

Phantom indicators in measurement models

- Generate a Z-standardized random variables for the missing indicator.
- Constrain the measurement model in SEM:
  - Measurement coefficient = 0.
  - Variance of phantomized indicator = 1.
  - These constraints make that the phantomized indicators do not contribute to the misfit of the model.
- Technically, this is a partially invariant measurement model.
- It is also the way in which the standard MLMV / FIML analysis of incomplete data works.
- ***However, I believe that any dimensional analysis best begins by examining the correlation matrix.***

Phantom variable measurement



Partially equivalent measurement model for Religiosity

Table 11d: Reliability of Religiosity; factor loadings (PAF) and Cronbach's alpha - FINAL

	WAVE				All waves	
	3	4	6	7	PAF	SEM
pRELIMP	.964	.739	.398	.336	.642	.621
pRELPERS	x	.670	x	.424	.536	.591
pGODCOMF	.692	.289	.269	.360	.333	.346
pMOSCONF	.142	.120	.241	.338	.160	.188
pCHRELIG	.456	.297	.131	.207	.220	.224
pPRAY	x	x	#	.311	.271	.189
pATTEND	x	.756	#	#	.221	.226
RELIABILITY (CA-unstandardized)	.515	.509	.133	.255	na	na
RELIABILITY (CA-standardized)	**.619**	**.609**	**.226**	**.366**	na	na

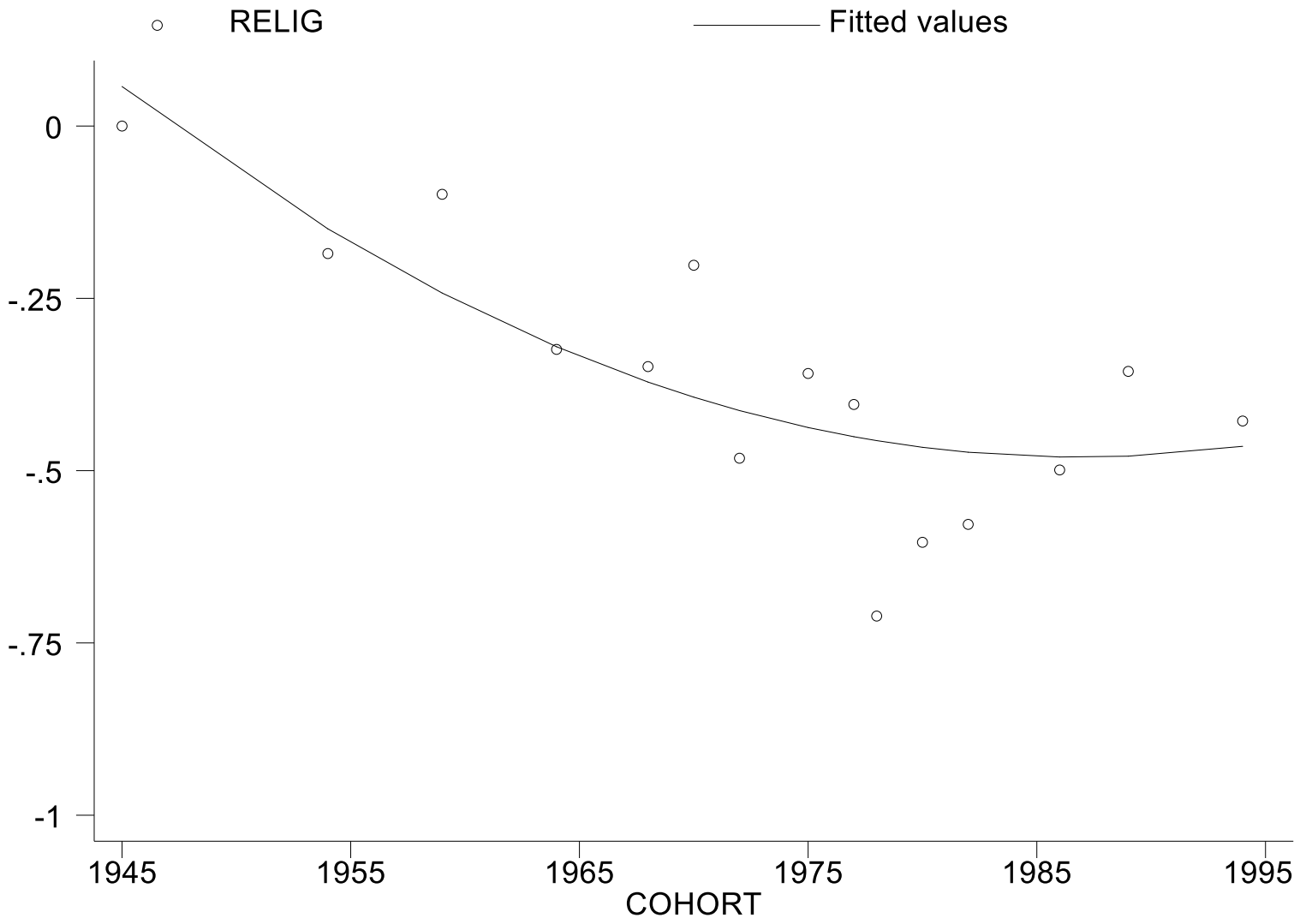
All items have been coded in the direction of more religiosity, x: not available. #: item removed due to negative item-rest correlation. SEM analysis contains one resdidual correlation cov(e.zppray*e.zpattend). L2=211.3 / 13, RMSEA =.053.

Table 11e: Trend in Religiosity

			Latent variable measurement				Constructed variable measurement	
region1	ref	ref	ref	ref	ref	ref	ref	ref
region2	-0.055	-1.0	-0.050	-1.0	-0.044	-0.8	-0.034	-1.0
region3	0.523	8.1	0.524	8.1	0.545	8.4	0.393	9.2
region4	0.101	1.2	0.119	1.4	0.118	1.3	0.066	1.2
wave3	-0.546	-6.9	-0.523	-6.6	-0.502	-6.3	-0.346	-6.6
wave4	-0.148	-2.6	-0.114	-1.9	-0.090	-1.5	-0.060	-1.5
wave6	0.191	3.2	0.220	3.7	0.217	3.6	0.155	3.9
wave7	ref	ref	ref	ref	ref	ref	ref	ref
rural	0.281	6.8	0.279	6.8	0.196	4.3	0.131	4.4
cohx	-0.552	-6.0	-0.551	-5.9	-0.453	-4.7	-0.311	-4.9
cohx2			0.747	3.0	0.773	3.2	0.487	3.0
female			0.073	1.8	0.036	0.9	0.013	0.5
zedtyp					-0.099	-4.3	-0.067	-4.4

Measurement coefficient assumed to be homogeneous across waves at 0.533 for split-half parcels, MLMV, N=5473.

RELIGIOSITY BY COHORT



- Expected values from latent variables measurement model.
- Control variables: region, rural, wave
- Reference: men, cohort1945, urban, wave7.
- Curvilinearity is statistically significant.
- No significant difference between men and women

Table 12c: Means of gender role items by wave - POMP scores

	WAVE			
	3	4	6	7
pMENJOBS Unemployment: When jobs are scarce, men should have more right to a job than women	22.8 ##	25.6	25.0	11.1
pMENPOL On the whole, men make better political leaders than women do	35.6	47.0 ##	30.2	25.7
pBOYEDUC A university education is more important for a boy than for a girl	56.9	66.4	45.4	41.1
pHOUSEWIFE Being a housewife is just as fulfilling as working for pay	39.2	30.8	53.5	38.9
pWARMMOTH Relationship working mother	52.6	37.7		
pEQINCOME1 Husband and wife should both contribute to income	62.3	63.6		
pEQINCOME2 Problem if women have more income than husband (3 categories)			48.8	19.5
pCHILDSUF Pre-school child suffers with working mother			35.9	24.6
pMENBUSMen make better business executives than women do			29.1	27.0

All items have been coded in the direction of more equal gender roles. ## PMENJOBS and PMENPOL have been removed from the analysis in this wave due to negative measurement coefficients.

Table 14: Indicator analysis of GRA

	WAVE				SEM1	SEM2
	3	4	6	7	pooled	grouped
pMENJOBS	.077 #	.167	.214	.454	0.303	0.270
pMENPOL	.772	-.007 #	.612	.663	0.667	0.479
pBOYEDUC	.726	.291	.363	.541	0.488	0.4 (ref)
pHOUSEWIFE	.879	.651	.147	.342	0.446	0.430
pWARMMOTH	.889	.540	x	x	0.741	0.574
pEQINCOME1	.816	.415	x	x	0.602	0.509
pEQINCOME2	x	x	.267	.379	0.367	0.271
pCHILDSUF	x	x	.248	.473	0.426	0.363
pMENBUS	x	x	.649	.655	0.639	0.679
RELIABILITY (CA-unstandardized)	.829	0.394	.469	.692	na	na
RELIABILITY (CA-standardized)	.839	0.429	.494	.697	na	na

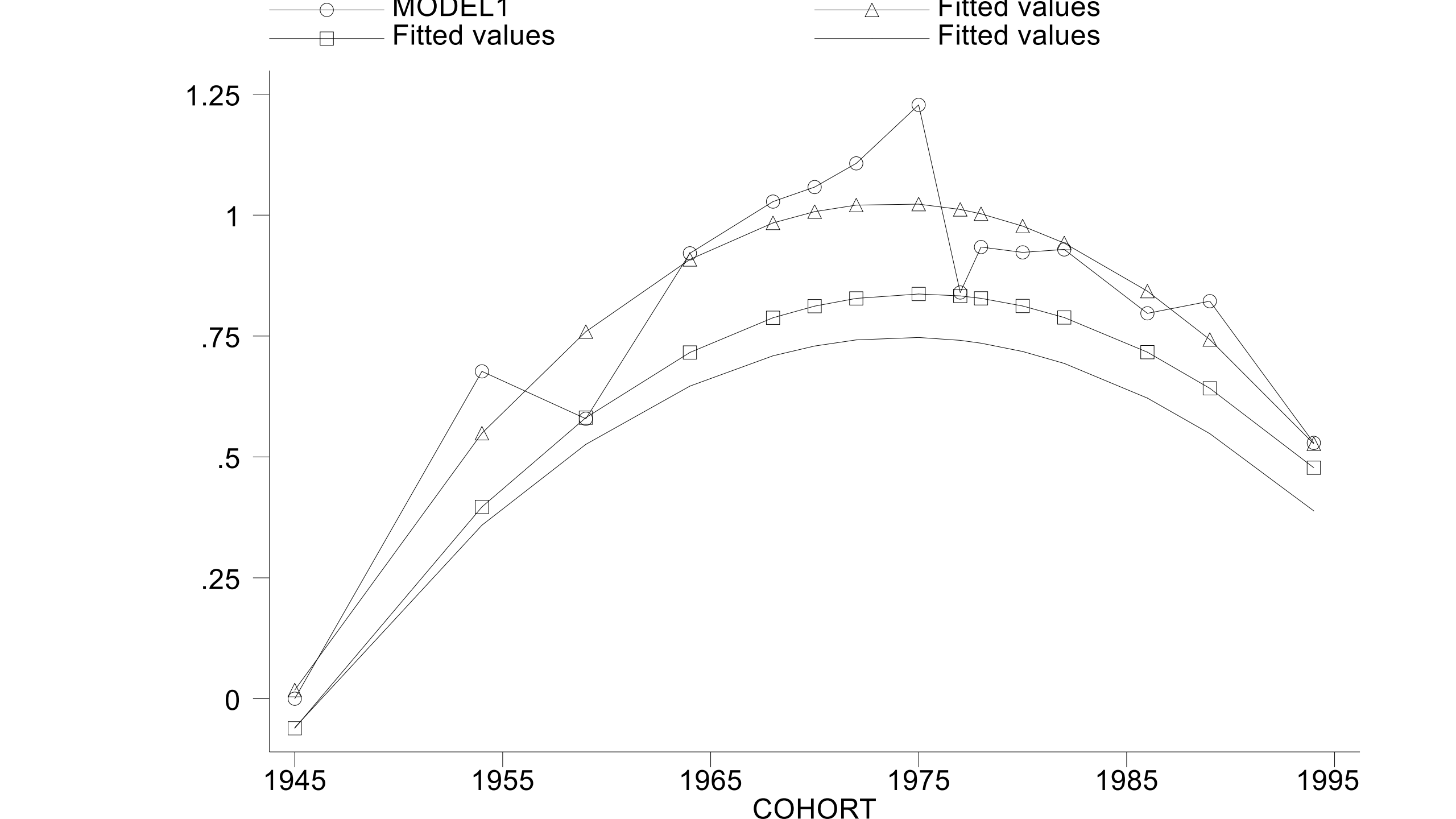
x: indicator not available, # indicator removed. SEM1: "fit statistics not reported because model is not of full rank". SEM2 (partially metric invariant): L2=601, DF=132, RMSEA=0.051

Table 19: stepwise estimate of causal model, SEM estimates with split halves correction for measurement unreliability in RELIG and GRA, half-standardized coefficients.

	0	(A)	(B)	(C)	(D)	(E)
Structural coefficients						
		zGRA9			zRELIG	
FEMALE		0.439	0.564	0.515	-0.089	-0.139
		12.4	15.6	13.6	1.8	2.7
RURAL		-0.007	0.211	0.263	0.314	0.207
		0.2	5.4	6.3	6.1	3.7
COHx		0.945	0.673	0.557	-0.566	-0.435
		11.3	8.0	6.3	4.9	3.7
				-x-		
COHx2		-2.538	-2.617	2.411	0.758	0.785
		12.0	-12.6	11.1	2.5	2.6
zEDUC			0.297	0.254		-0.132
			14.1	11.3		4.7
zRELIG				-0.292		
				6.7		

continuation

	0	(A)	(B)	(C)	(D)	(E)
Measurement (split half loadings)						
zgra-wave3	0.887	0.89	0.89	0.89		
zgra-wave4	0.467	0.47	0.47	0.47		
zgra-wave6	0.478	0.48	0.48	0.48		
zgra-wave7	0.711	0.71	0.71	0.71		
zrelig-wave3					0.57	0.57
zrelig-wave4					0.42	0.42
zrelig-wave6					0.330	0.330
zrelig-wave7					0.41	0.41
L2	8.5	65.1	347	585	174	172
DF	7	32	39	93	32	39
RMSEA	0.012	0.03	0.08	0.06	0.06	0.050
N	5472	5472	5472	5472	5473	5473


MODEL1
Fitted values
Fitted values
Fitted values
1.25
1
.75
.5
.25
0
1945
1955
1965
1975
1985
1995
COHORT