

Trade liberalization and vulnerability to poverty :A synthetic cohort analysis in Indonesia, Korea and Thailand

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Motivation

- Trade liberalization known to produce permanent structural changes in factor rewards and therefore personal incomes
- Could it also produce changes in short-run variability of incomes? (Through trade shocks, cycles in foreign demand and international prices.)
- If so, trade liberalization could increase the "vulnerability" of workers to poverty and therefore long-run poverty

Questions

- Does the variability of personal earnings increase with the exposure to foreign trade ?
- How does vulnerability to poverty depend on the variability of earnings?
- What kind of evidence can be drawn from repeated labor forces surveys in 3 East-Asian countries during the last decades?

Methodological issues I

- *Ideally*, panel data analysis on earnings and job status of a sample of workers:

$$\begin{aligned} a) w_{it} &= J_{it} [X_{it} \mathbf{b}_t + u_i + v_{it}]; & v_{it} &= \mathbf{r} \cdot v_{it-1} + \mathbf{e}_{it}; \\ \mathbf{e}_{it} &\text{ iid with } E(\mathbf{e}_{it}) = 0 \text{ and } V(\mathbf{e}_{it}) = \mathbf{s}_t^2 \\ b) &\text{ Duration model on } J_{it} (= 1/0) \end{aligned}$$

- "Vulnerability" = probability of falling in poverty at time t+1 conditionally on earnings at time t)
- Then, comparative analysis of vulnerability or parameters of preceding models across trade differentiated time periods or sectors of employment

Methodological issues II

- *Practically*, panel data not available but possible to work on synthetic cohorts (e.g. women, born in 1965, with less than secondary education) observed each year during some period.
- Possible to recover some parameters of the preceding models by considering the evolution of the distribution of job status within a synthetic cohort as well as that of the mean and the variance of earnings.

Methodological issues II

$$a) w_{it} = J_{it} [X_{it} \mathbf{b}_t + u_i + v_{it}]; \quad v_{it} = \mathbf{r} \cdot v_{it-1} + \mathbf{e}_{it};$$
$$\mathbf{e}_{it} \text{ iid with } E(\mathbf{e}_{it}) = 0 \text{ and } V(\mathbf{e}_{it}) = \mathbf{s}_t^2$$

b) Duration model on J_{it} ($= 1/0$)

Roughly speaking:

- Evolution of the distribution of Job status within a cohort (net flows) gives information on stability of employment
- Earnings model estimates on repeated cross sections permits identifying β_t , ρ , σ_t and $V(u_i)$.
- The latter are obtained from running time series regressions on the variance of earnings or their residuals.

Methodological issues III

In particular, it may be shown that in the simple case where the fixed effect u_i is ignored vulnerability is given by:

$$V_{it}^j = pr(w_{it}^j < \underline{w} | X_{it}^j, \mathbf{e}_{it-1}^j) = \Phi\left(\frac{z - X_{it}^j \hat{\mathbf{b}}_t^j - \hat{r} \mathbf{e}_{it-1}^j}{\hat{\mathbf{s}}_t^2}\right)$$

where z is the poverty line

Empirical results I

The extent of trade liberalization

Country	Decade	Export duties as % of total export value	Import duties as % of total import value	Export and import duties as % of govt. revenue
Indonesia	1980s	0.89	4.69	6.15
	1990s	0.17	3.7	4.97
Korea	1980s	0.00	8.36	16.39
	1990s	0.00	5.15	8.37
Thailand	1980s	1.87	12.24	23.80
	1990s	0.11	7.67	16.68

Empirical results II: evolution of the structure of activity in synthetic cohorts

Data:

Labor force surveys, Indonesia (1986-1999),
Thailand (1991-2001); Establishment and labor
for surveys, Korea (1981-2000)

Figure 1. Occupation of the synthetic cohort "Men, born in 1950-1954, primary education": Korea

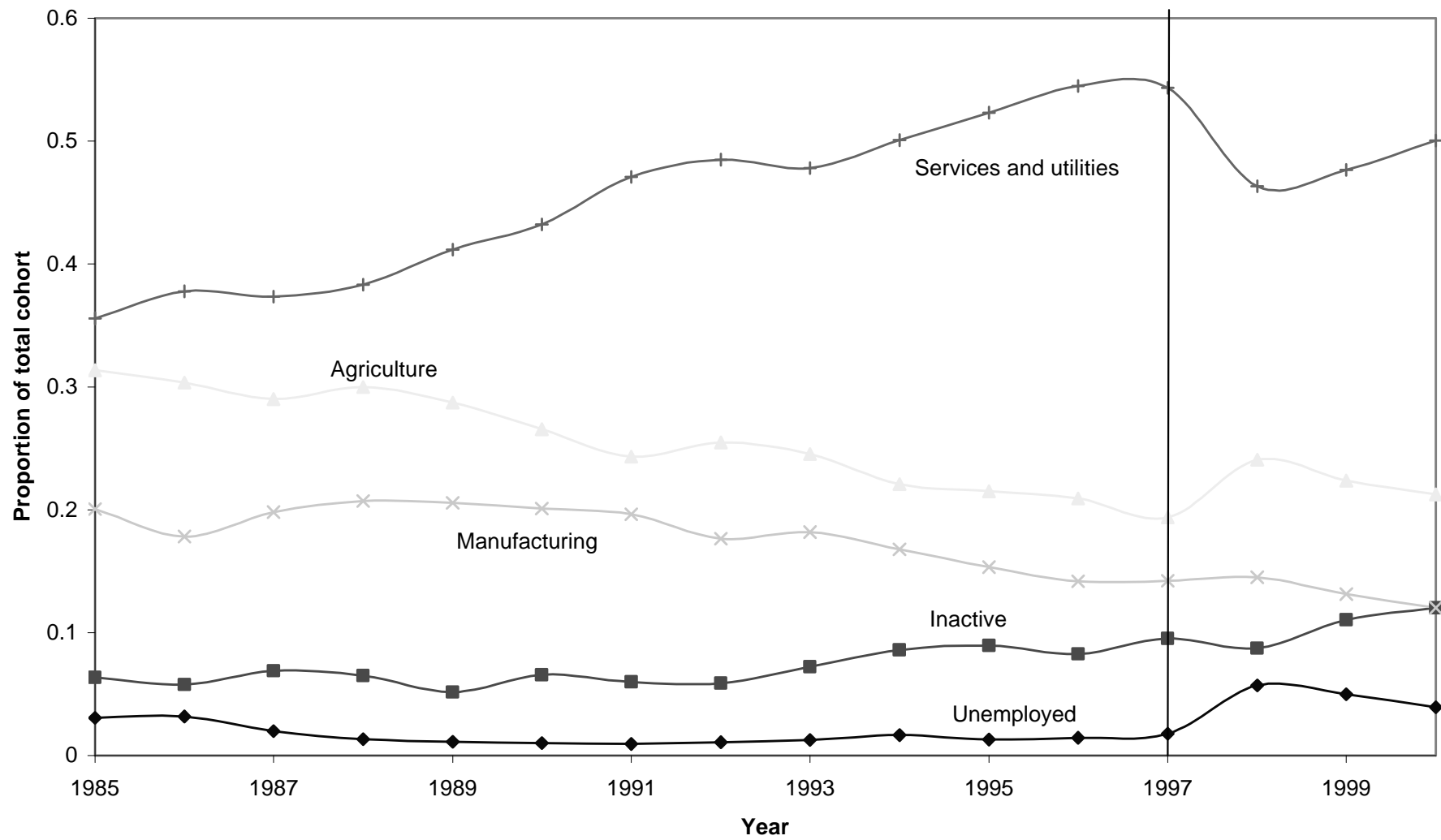


Figure 2. Trade exposure of the synthetic cohort "Men, born in 1950-1954, primary education": Korea

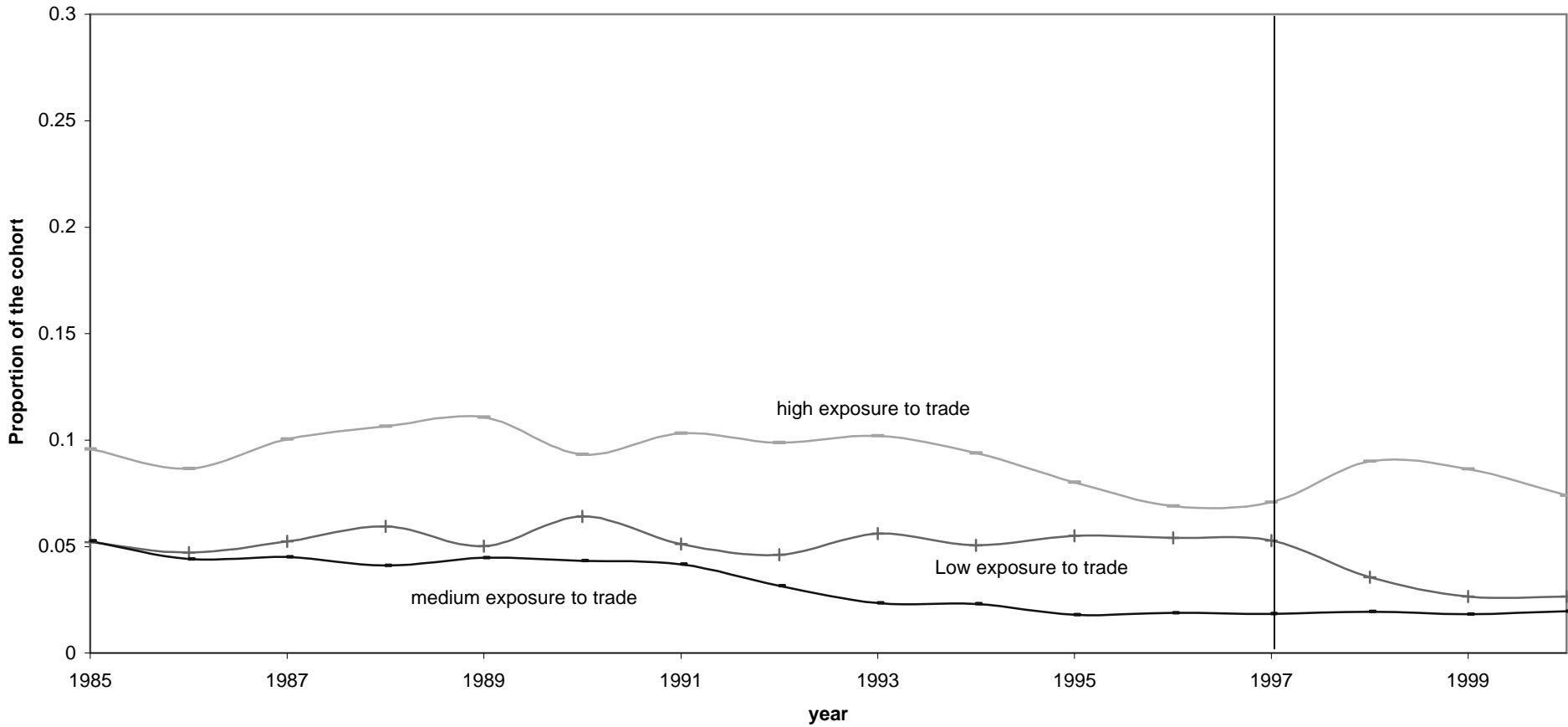
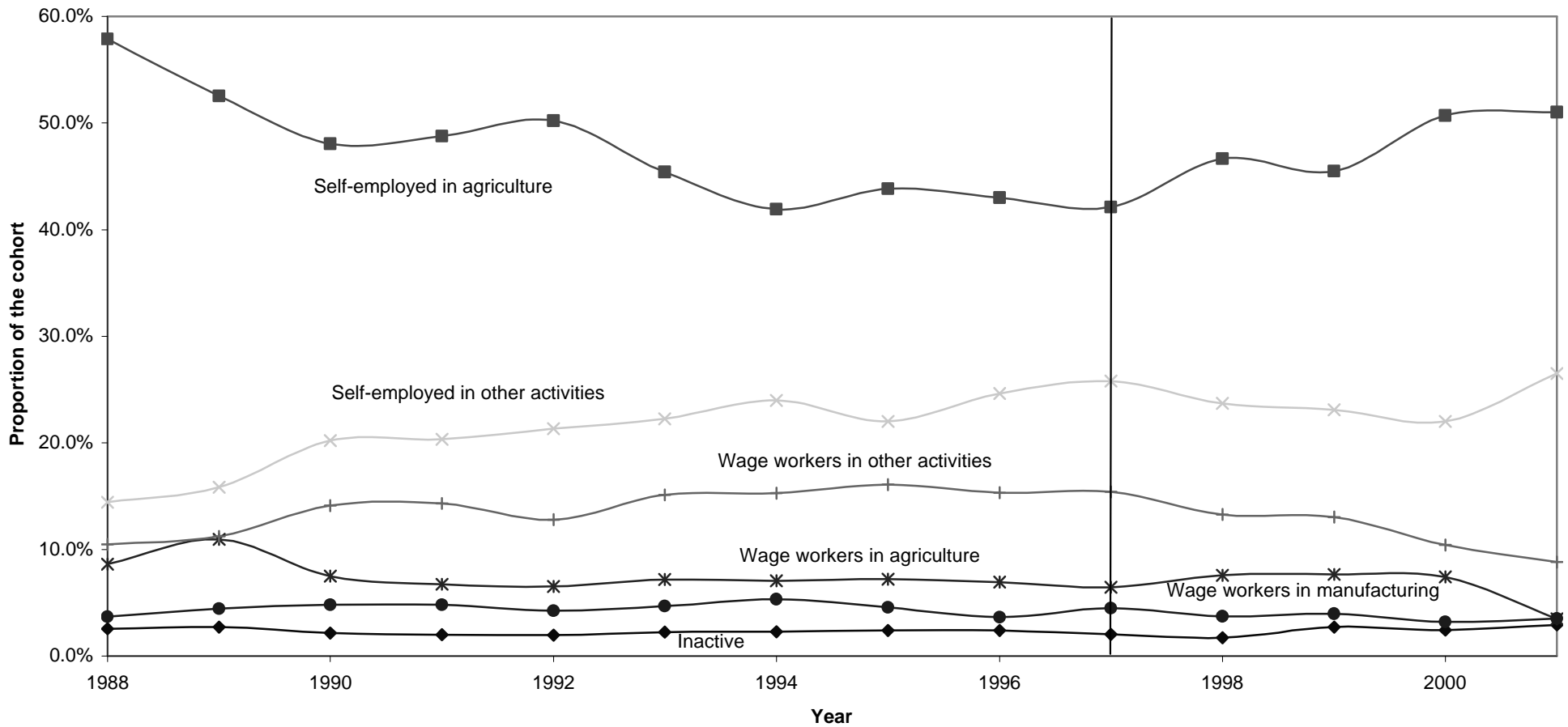
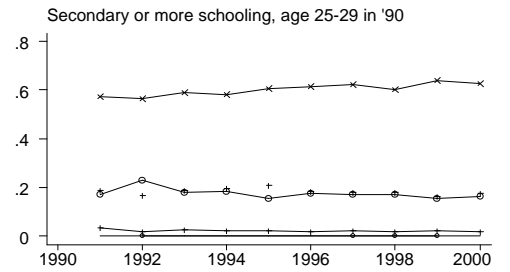
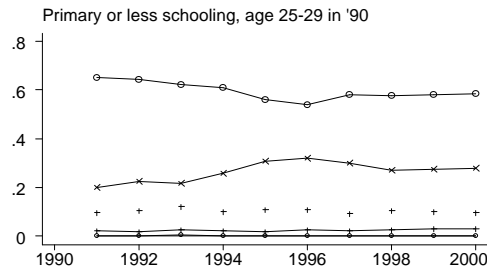
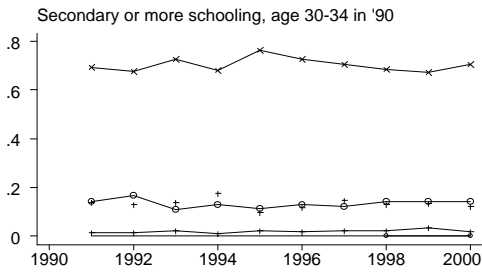
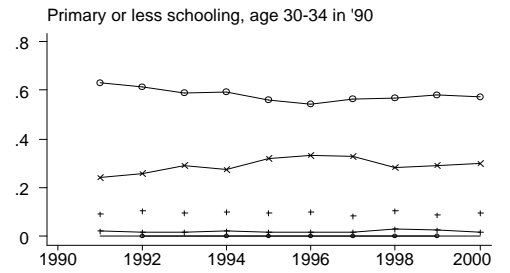
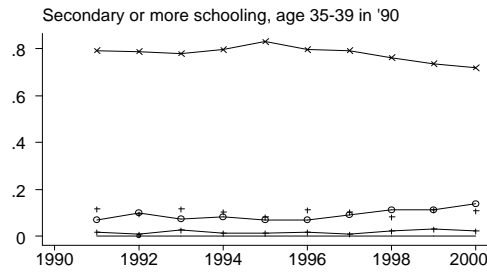
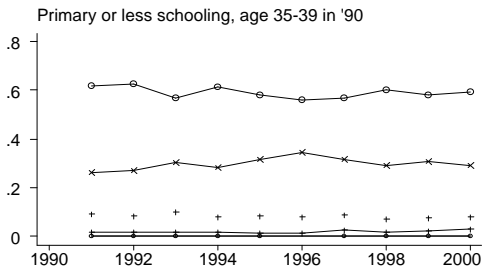


Figure 3. Occupational structure of the synthetic cohort "Men, born in 1950-54, less than secondary" : Indonesia



(O)agric (+)manuf (x)services (-)unemployed
 (-+-)non-in-labor-force (o) temp/seasonal



percentage %

Year

1st set of conclusions

In the three countries:

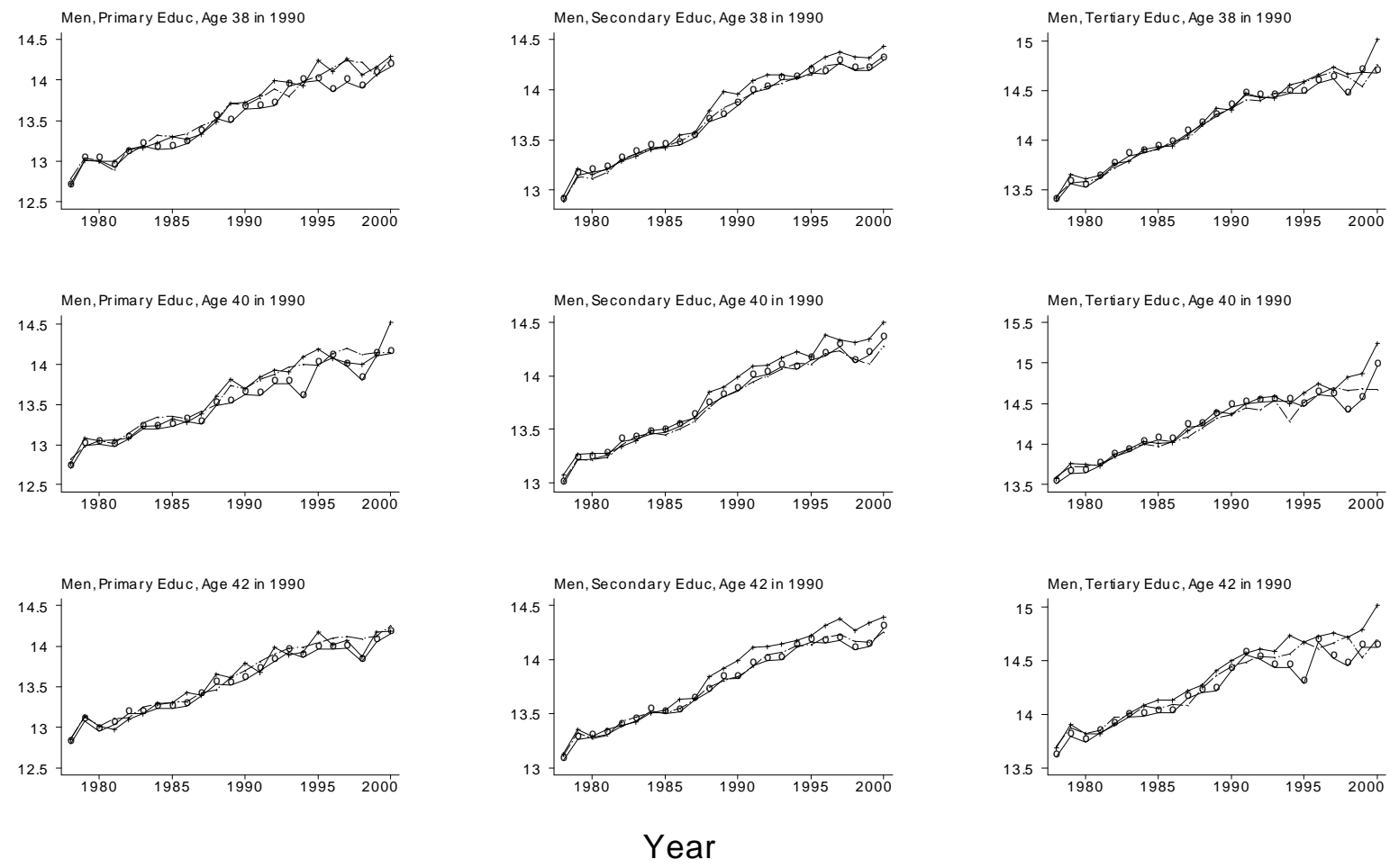
- Trade liberalization *apparently* did not result into an increased variability of the occupational structure within cohorts.
- Occupations more exposed to trade apparently do not show more instability in terms of net flows than others
- More formal test still to be developed

Empirical results II: evolution of the mean and variance of earnings in synthetic cohorts

Figure 7.6: Mean real wage rate of male cohort-cells, by trade exposure in manufacturing : Korea, 1976-2000

Men's Wages By Trade Exposure in Manufacturing
 (o) Low Exposure, (+) Medium Exposure, (-.-) High Exposure

Log Real Wages

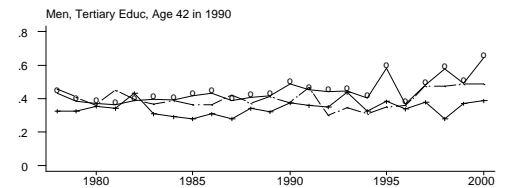
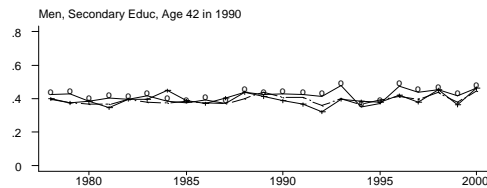
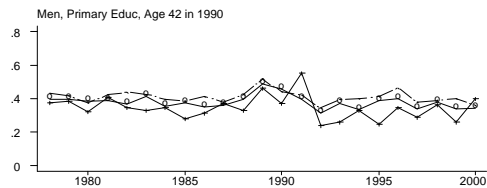
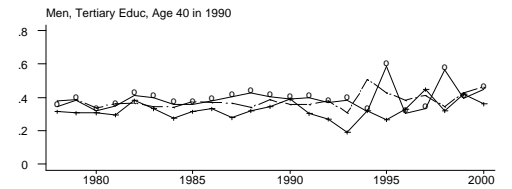
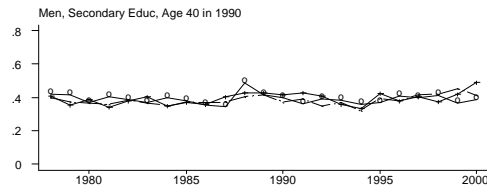
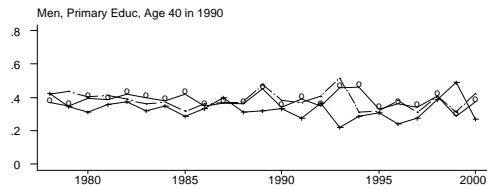
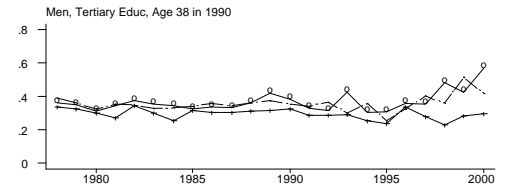
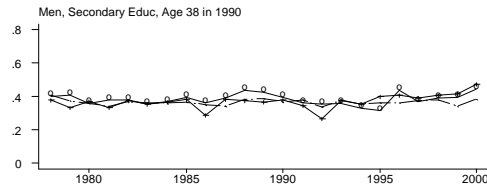
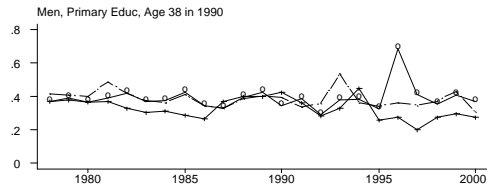


Year

Figure 7.7: Standard deviation of Log of real wage rates of male cohorts, by trade exposure in manufacturing : Korea, 1976-2000

Men's Wage Dispersion By Trade Exposure in Manufacturing
 (o) Low Exposure, (+) Medium Exposure, (-) High Exposure

Standard Deviation of Log Real Wages



Year

Table 7.9: Estimated ρ^2 (correlation of variance of residual earnings): Indonesia

Education	Manufacturing		Non-tradable	
	male	female	male	female
Primary or less	0.3548	0.3746	0.4583	0.4098
Secondary	0.3547	0.3549	0.1841	0.0617
Tertiary	0.4124	---	0.2165	---

2nd set of conclusions

In the three countries:

- Trade liberalization *apparently* did not result into an increased variance of earnings within cohorts in sectors exposed to trade.
- Earning rate growth was apparently not dependent on trade exposure
- Parameters of earning dynamic models do not differ significantly with respect to trade exposure

Empirical results III: vulnerability to poverty

Figure 7.21: Vulnerability. Estimated conditional probability of individual earnings falling below poverty line: Korea, all workers (Job loss risk ignored)

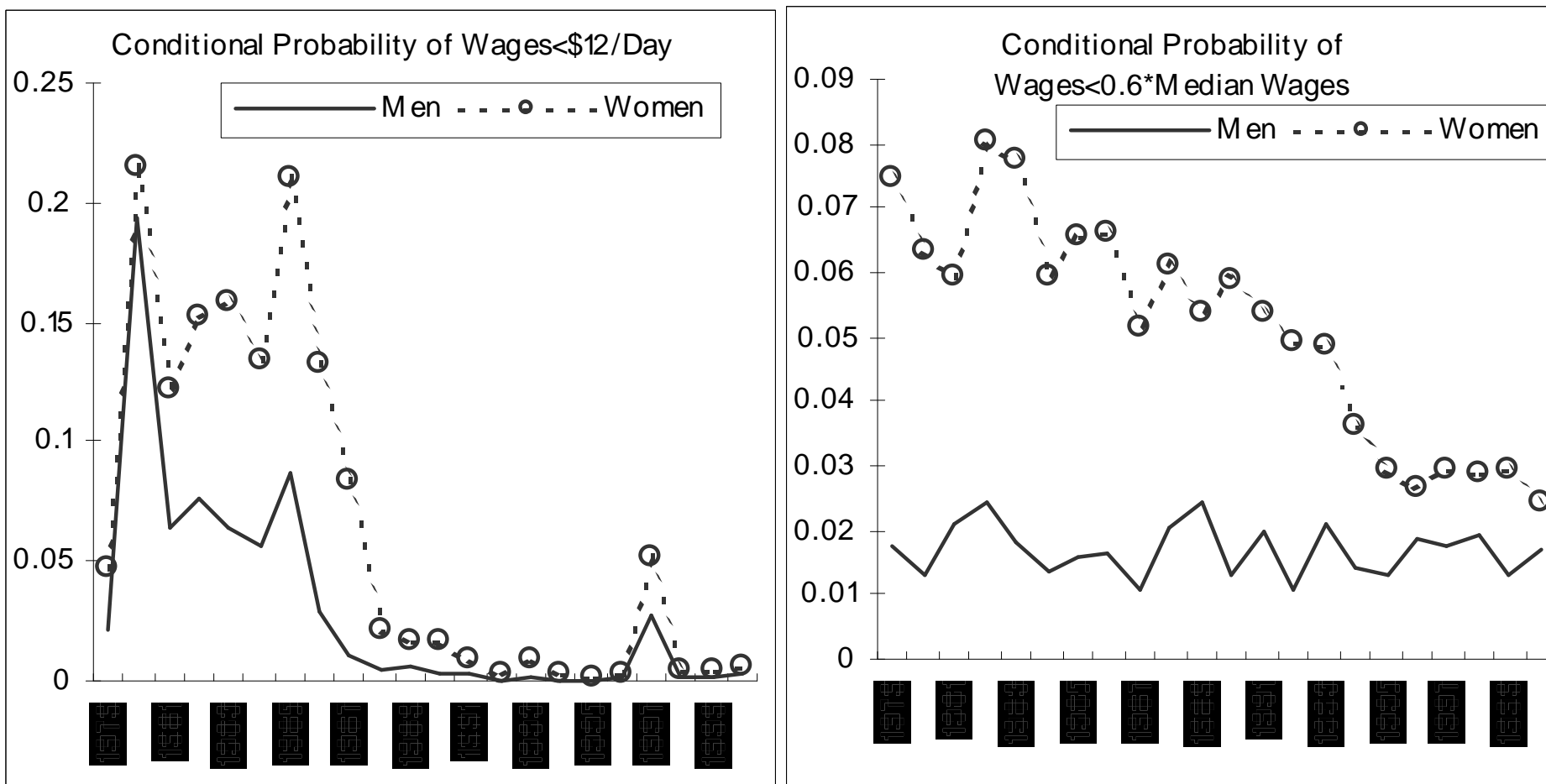
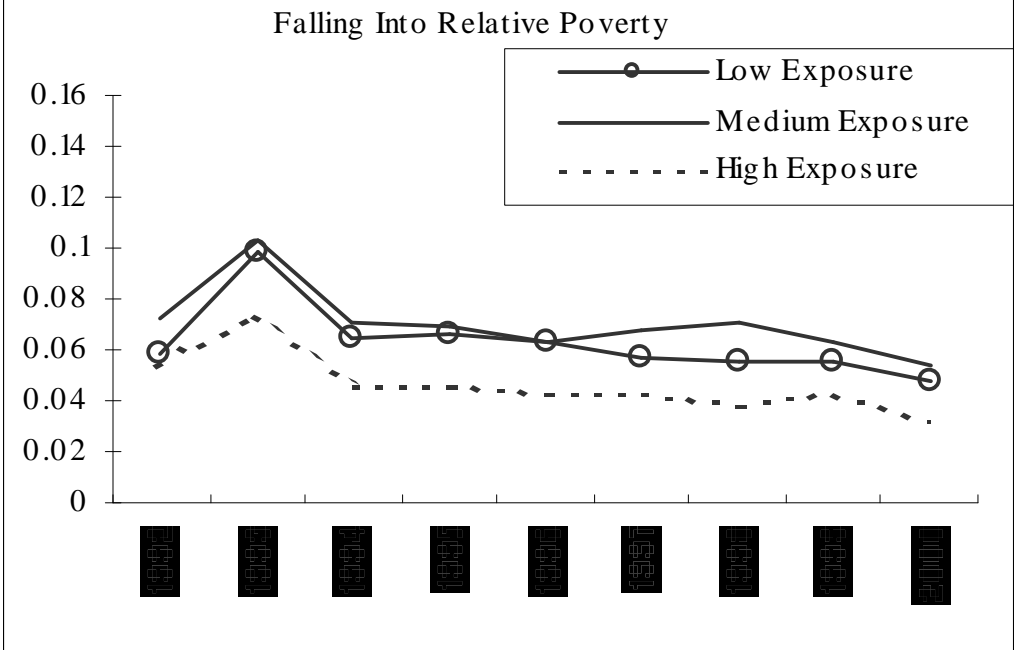
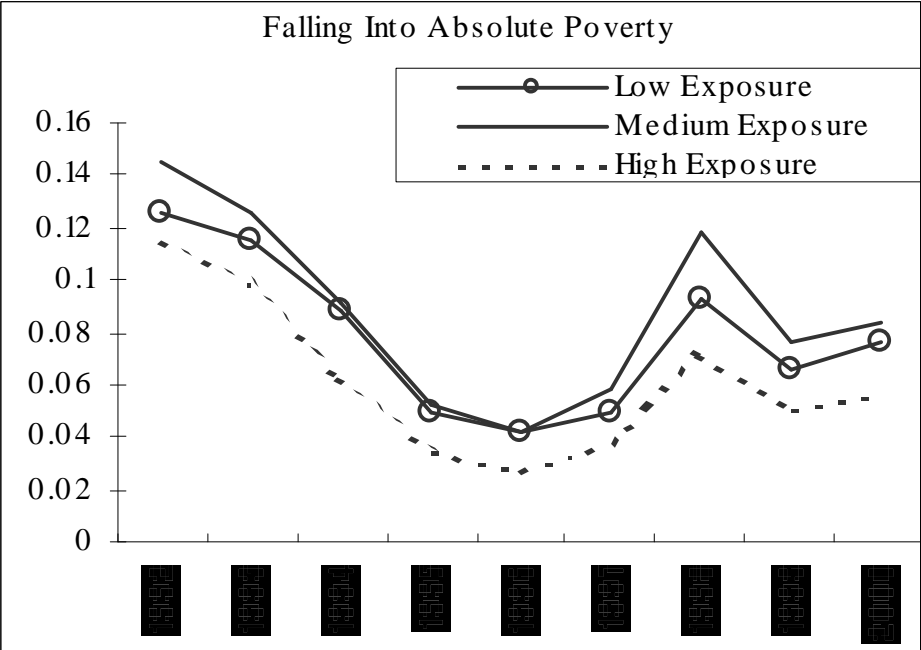


Figure 7.21: Vulnerability by trade exposure. Estimated conditional probability of individual earnings falling below poverty line: Thailand, all workers (Job loss risk ignored)



General conclusion

- Available indirect evidence does not suggest that trade liberalization in the 1990s has been associated with more vulnerability to poverty
- As they can be estimated on cross-sections and on synthetic cohorts, basic parameters of earning – and job status? – dynamics have not changed markedly over time.
- No systematic difference in the manufacturing sector across activities with different exposures to trade
- All these results confirm the fluidity of the (wage) labor market in the 3 countries.

Necessary extensions

- Need for further evidence that could come only from panel data.
- The issue of the counterfactual not solved. (Yet, note that the indirect method proposed here is validated by the 1997-2000 crisis period).
- Necessary to fully integrate the modeling of earning dynamics and that of occupational changes to obtain stronger conclusion. (Transition matrices, almost necessarily independent on income)
- How to move from individual earnings to household income?