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INEQUALITY OF OPPORTUNITY IN INCOME AND CONSUMPTION IN EGYPT: A COMPARATIVE PERSPECTIVE

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Based on papers prepared for the ERF Research Project "Inequality of Opportunity in Income and Consumption in MENA:

Assaad, R. C. Krafft, J. Roemer and D. Salehi-Isfahani, 2015. "Inequality of Opportunity in Income and Consumption in the Middle East and North Africa in Comparative Perspective."

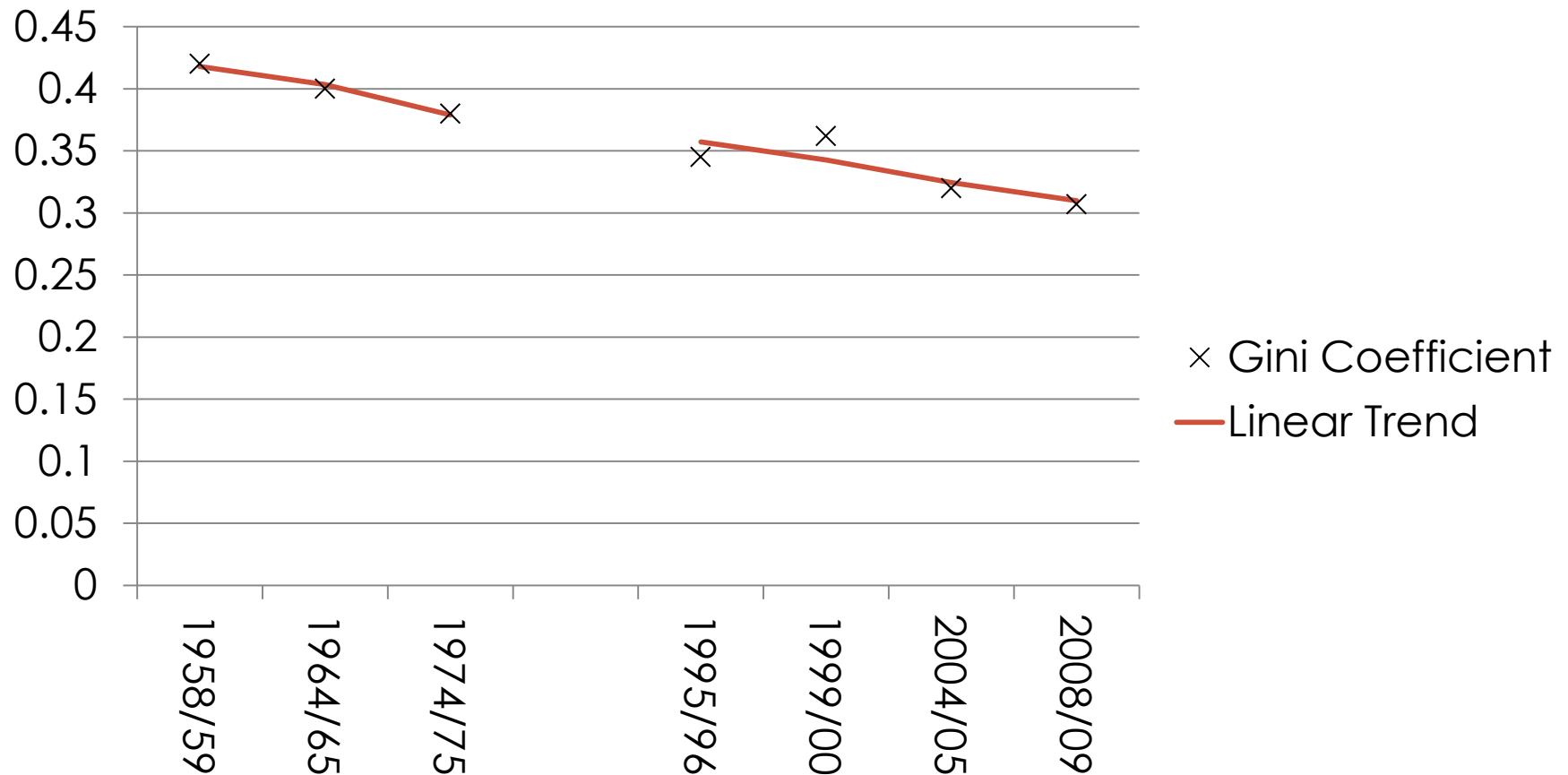
Assaad, R., C. Krafft and J. Roemer. 2015. Inequality of Opportunity in Income and Consumption in Egypt."

INTRODUCTION

- There is a great deal of public debate in Egypt about whether high income inequality is a real problem and about whether inequality is rising or falling?
- Public perceptions, especially in light of January 25th uprisings, is that it is both high and rising
- **Available data do not support these perceptions:**
 - Inequality of consumption in Egypt does not appear to be particularly high by international standards and appears to have fallen over time (World Bank 2014, Verme et al. 2014)
 - Some doubts remain about measurement
 - Consumption inequality may understate income inequality
 - Questions remain about quality of measurement of consumption of upper 5-10% of income distribution, although some of those doubts are being dispelled by papers presented in this very conference

INEQUALITY TRENDS IN EGYPT

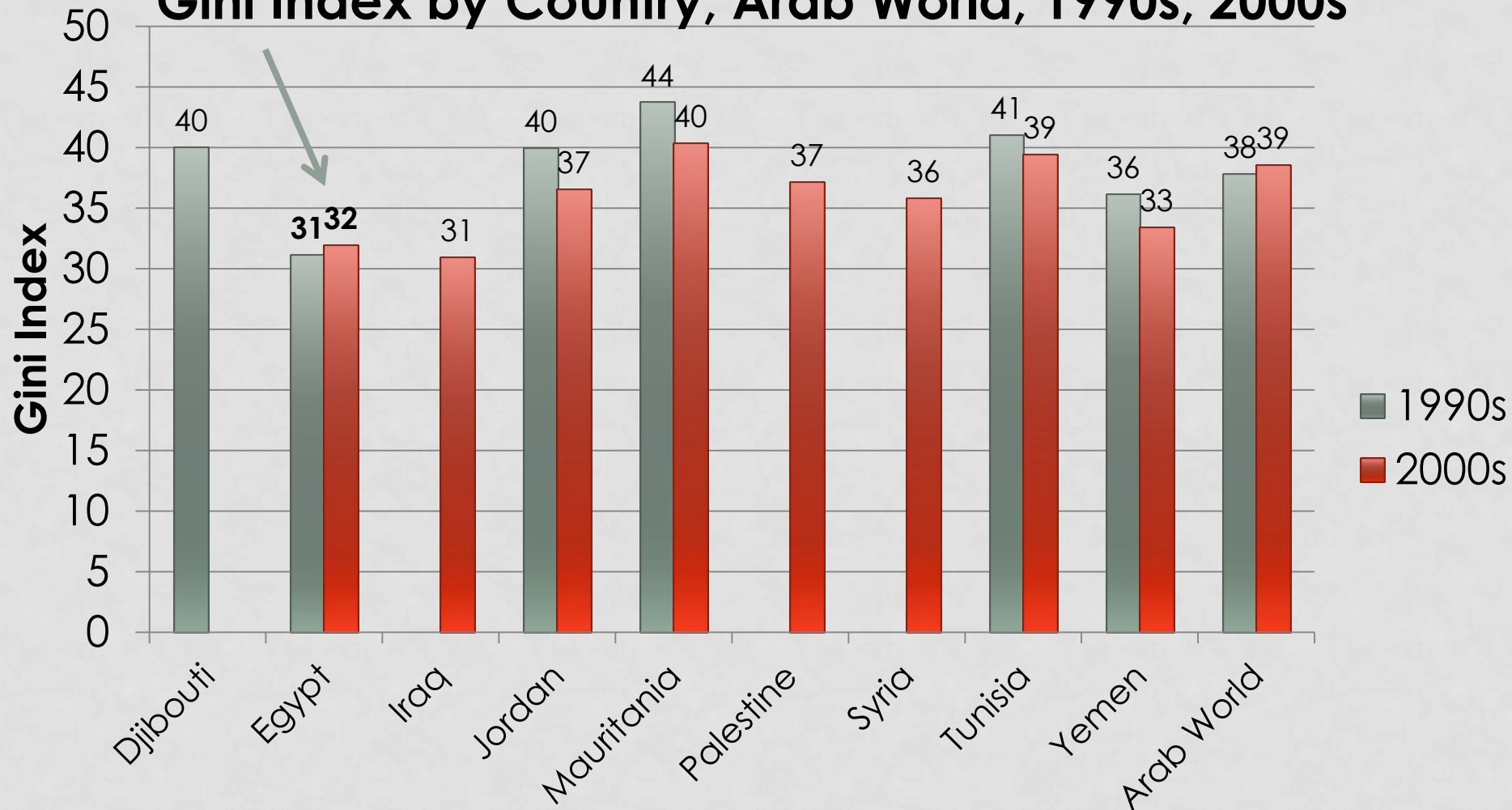
Gini Coefficient of Consumption, Egypt, Various Years



Source: El-Issawy (1982) for 1958/59, 1964/65, 1974/75, World Bank (2007) for 1995/96, 1999/00, 2004/05, World Bank (2011) for 2008/09. See World Bank (2014) *Inside Inequality in the Arab Republic of Egypt: Facts, Perceptions across People, Time and Space*.

Egypt has relatively low inequality compared to other Arab countries. Worldwide, Egypt's Gini in 2008/09 is at the 40th percentile of the world distribution of Gini coefficients

Gini Index by Country, Arab World, 1990s, 2000s



INEQUALITY VS. INEQUALITY OF OPPORTUNITY

Could it be that expressed grievances are not about inequality *per se* but about a growing sense that the economic game is rigged?

Is it possible that subjective grievances are more concerned about inequality of opportunity than about inequality of outcomes?

THIS TALK

Introduces Inequality of Opportunity Framework and Measures

Examines trends in Inequality of Opportunity (IOp) in Wages and Consumption in Egypt from 1988-2012

Investigates which circumstances contribute most to inequality of opportunity

Exploits panel data from Egypt Labor Market Panel Survey to investigate additional dimensions of IOp

Provides comparisons between IOp Measures in Egypt and other countries

JOHN ROEMER'S INEQUALITY OF OPPORTUNITY FRAMEWORK

Inequality of opportunity is that part of inequality of outcomes that is due to circumstances beyond an individual's control, as opposed to inequality resulting from an individual's own choices and effort

Circumstances include:

- Socioeconomic status of family in which the individual was raised
- Gender
- Location of birth
- Race and ethnicity

Effort includes:

- Choices about how much education to get
- What occupation to enter
- How much to study
- How hard to work

INEQUALITY OF OPPORTUNITY (IOp)

Inequality due to circumstances is morally unjustifiable

But inequality due to individual choices and effort is ethically admissible and may actually be efficient and good for growth

Outcomes over which inequality is calculated can vary

- Here I consider three outcomes:
 - Income, wages, and consumption
 - Data for wages and income are from the Egypt Labor Market Panel Survey (ELMPS)
 - Consumption is imputed using two-sample technique using corresponding Household Income, Expenditure and Consumption Survey and ELMPS.

PROBLEMS IN DECOMPOSING INEQUALITY INTO SHARES DUE TO CIRCUMSTANCES AND EFFORT

1. Effort is hard to measure
 2. Circumstances are only measured imperfectly
 3. Effort is itself a function of circumstances
 4. Some circumstances such as native ability are hard to distinguish from effort
- We therefore treat effort as a *residual*. What we cannot explain by *observed* circumstances
 - This provides lower bound estimates of the share of inequality due to circumstances since there are many unobserved circumstances that are captured in the residual

DEFINING TYPES

A **type** is a set of persons having the same set of measurable circumstances


The more circumstances we take into account, the finer the typology of individuals

- However, we quickly run into data limitation problems
- A distribution of an outcome, such as income, *within* a type is assumed to be the result of the distribution of effort
- Differences in outcomes *between* types reveals inequality of opportunity

NON-PARAMETRIC DECOMPOSITION OF INEQUALITY

- It is possible to decompose inequality into inequality **between** types and inequality **within** types
- Need to use decomposable inequality measure such as the General Entropy class of inequality measures
 - Gini index is not decomposable
 - We use the mean log deviation ($GE(0)$), but it can also be done using Theil-T ($GE(1)$) or half the square of the coefficient of variation ($GE(2)$).

MEASURES OF IOp



Ratio of mean outcome of lowest type to that of highest type
Ratio of mean outcome of lowest type to that of all other types
Share of between-type inequality to total inequality (IOp share)

Measuring the IOp Share in Practice

Non-parametric approach

- Following Ferreira and Gignoux (2008)
- Define a “smoothed” distribution as follows:
 - $\{\mu_i^k\}$ is the distribution that results by replacing every y_i in $\{y_i^k\}$ with the average y in the type k .
 - i.e. eliminate all within-type inequality
- Define a “standardized” distribution as follows:
 - $\{v_i^k\}$ is the distribution that results by replacing every y_i in $\{y_i^k\}$ with $y_i(\mu/\mu_k)$ where μ is the overall mean of y and μ_k is the mean of y in type k
 - i.e. eliminate all between-type inequality

TWO PATHS TO MEASURE OF IOp SHARE

$$\theta_d = \frac{I(\{\mu_i^k\})}{I(\{y_i^k\})}$$

Ratio of inequality of the smoothed distribution to total inequality. This *directly* summarizes between-type inequality

$$\theta_r = 1 - \frac{I(\{v_i^k\})}{I(\{y_i^k\})}$$

One minus the ratio of inequality of the standardized distribution to the total inequality. This is a *residual* way of calculating between-type.

ARE THE TWO PATHS EQUIVALENT?

- Among all decomposable inequality indices that satisfy the Pigou-Dalton Sensitivity axiom the only one that is “path-independent” is $GE(0)$, the mean log-deviation.
- For $I = GE(0)$, $\theta_r = \theta_d$
- All other decomposable inequality measures, like other GE measures and Atkinson measures, are not path-independent

Measuring the IOp Share in Practice

Parametric Approach

- Regress outcome variable on a set of observable circumstances $\ln y_i = C_i \varphi + \varepsilon_i$
- Obtain the estimated *residuals* from this regression $\hat{\varepsilon}_i$
- Set all circumstances to their mean to predict outcomes for standardized distribution (i.e. eliminate effect of circumstances) $\tilde{y}_i = \exp(\bar{C} \hat{\varphi} + \hat{\varepsilon}_i)$
- IOp share $\theta_r^P = 1 - \frac{I(\{\tilde{y}_i\})}{I(\{y_i\})}$
- Partial effects capturing the contribution of particular circumstances to inequality can be obtained in order to assess contribution of each set of circumstances to inequality of opportunity

DATA SOURCES

Sources: Special round of LFSS of October 1988, Egypt Labor Market Panel Survey (ELMPS) rounds in 1998, 2006, 2012

Outcomes:

- Imputed consumption only available for 1998, 2006, and 2012 (sample of Household Heads)
- Wages available for 1988-2012 (males 30-49)
- “Adjusted” wages (doubled for formal jobs based on Assaad 1999)
- Full income (including self-employment income) is only available from ELMPS 2012

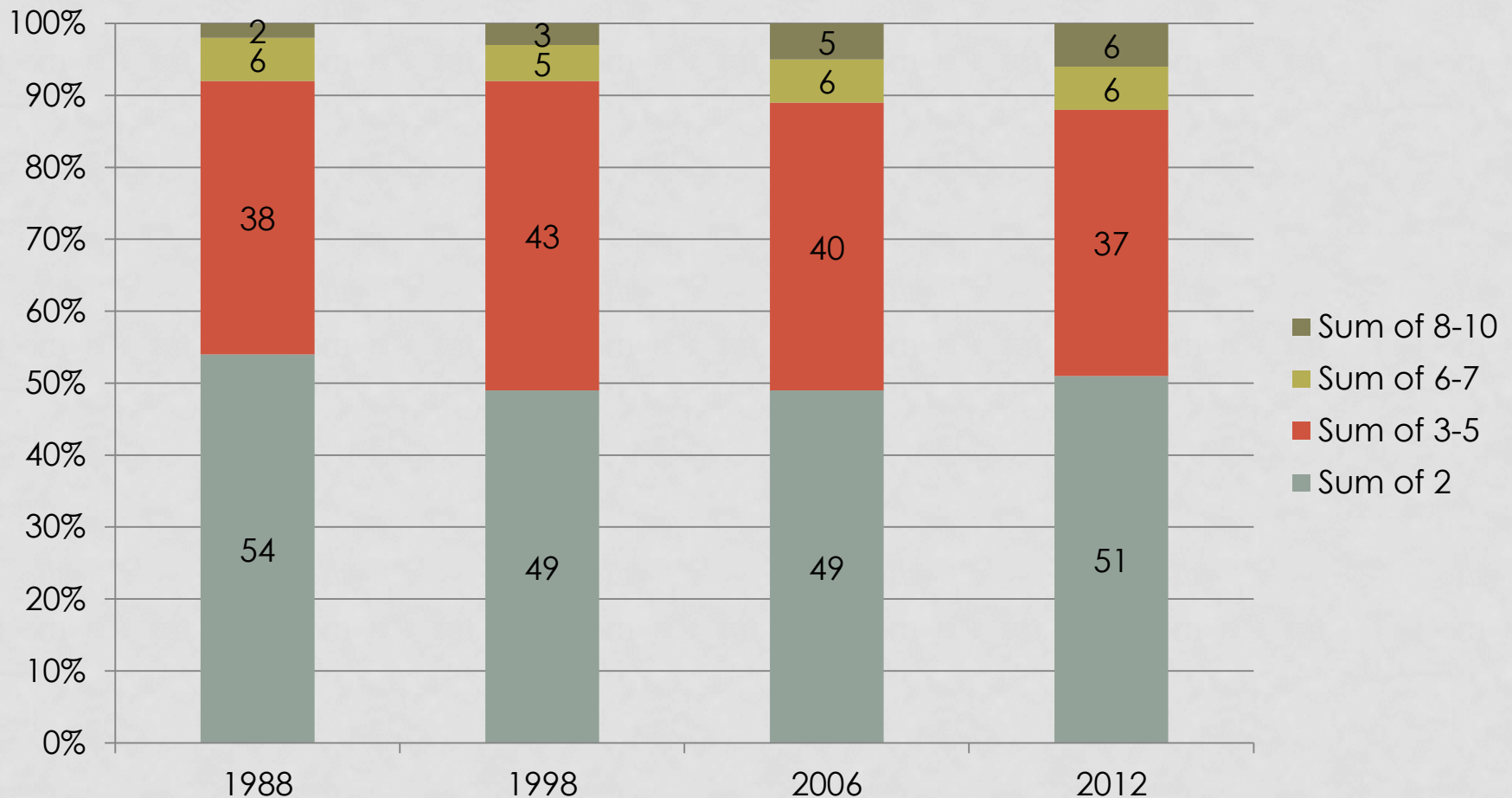
Panel sample:

- Observed in natal household in 1998 (used to measure natal household wealth and grandparents' characteristics)
- 26-36 in 2012 (12-22 in 1998)
- Outcomes observed in 2012

START WITH SIMPLE TYPOLOGY BASED ON FATHER'S AND MOTHER'S EDUCATION ONLY

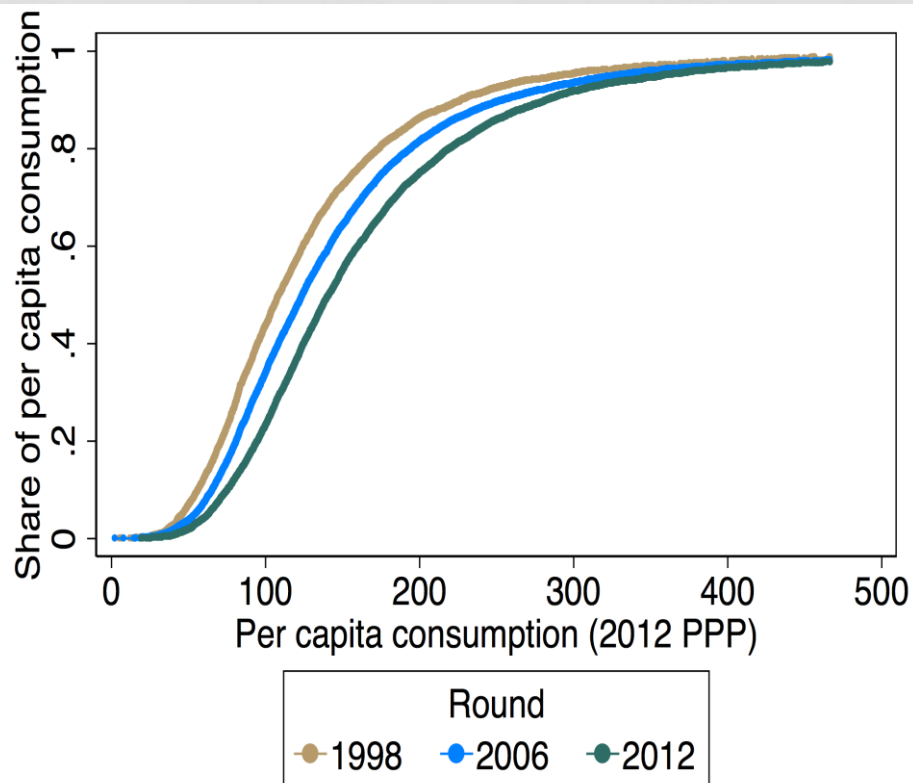
- Father's and mother's education expressed in 5 categories each
 - Illiterate, literate, basic, secondary/post-second, university
- Sum of father's and mother's education yields numbers from 2-10
- **Type I:** sum of 2 (both parents illiterate)
- **Type II:** sum of 3-5 (from one parent literate, to one parent secondary)
- **Type III:** sum of 6-7 (from both parents having basic education to one parent having university education)
- **Type IV:** sum of 8-10 (from both parents secondary to both parents university)

DISTRIBUTION OF ADULT MALE WAGE WORKERS, 30-49, BY TYPE, EGYPT: 1988, 1998, 2006, 2012

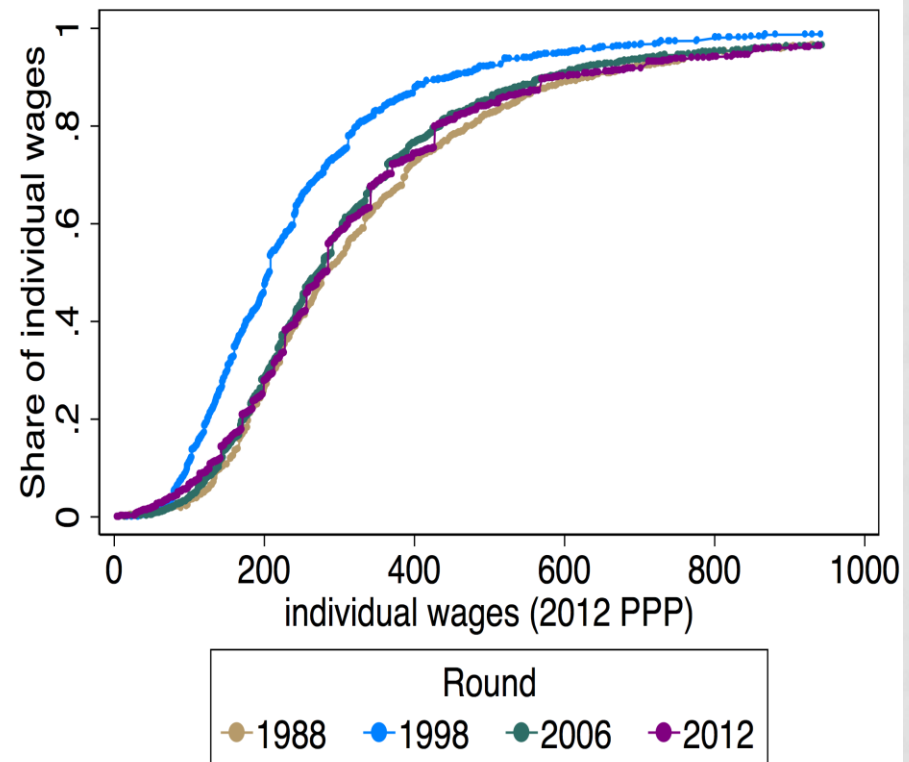


EVOLUTION OF THE CONSUMPTION AND WAGE DISTRIBUTIONS OVER TIME

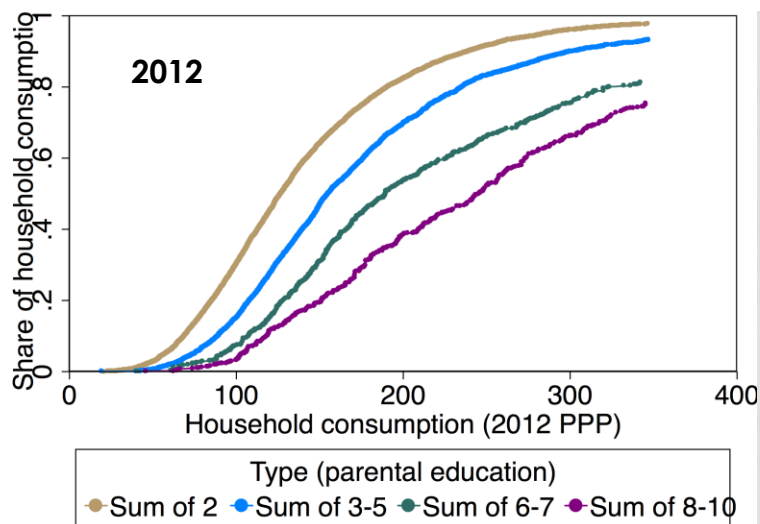
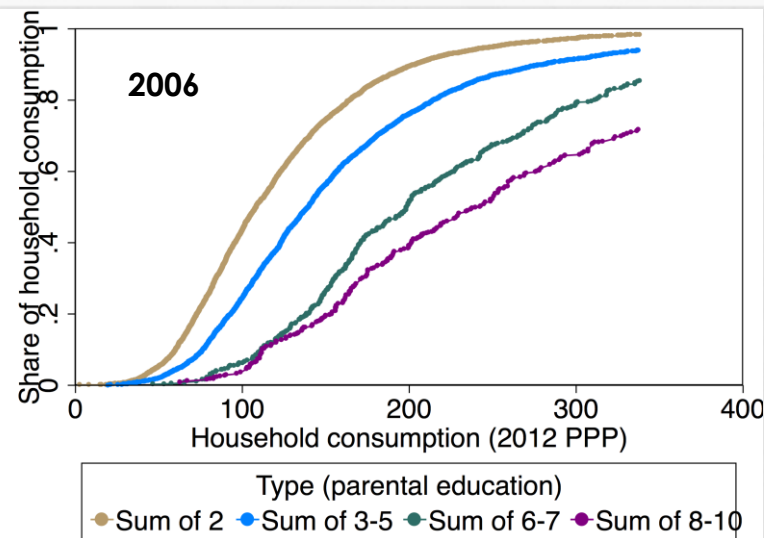
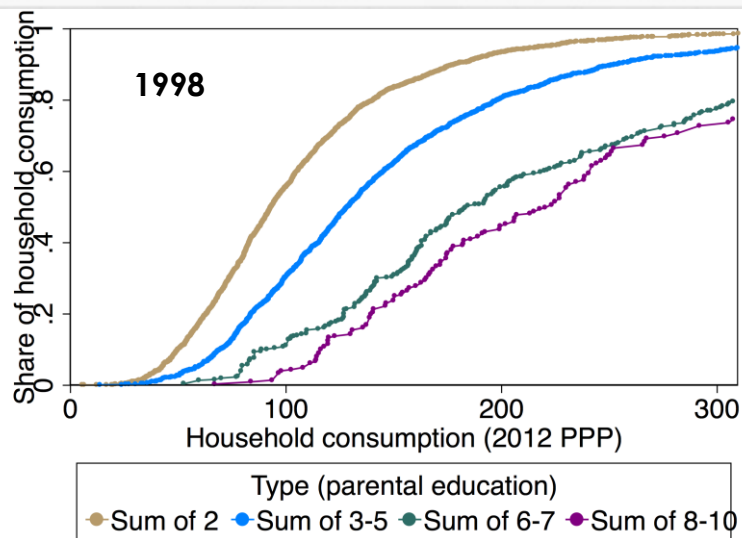
Distribution of Consumption
(Household Heads)



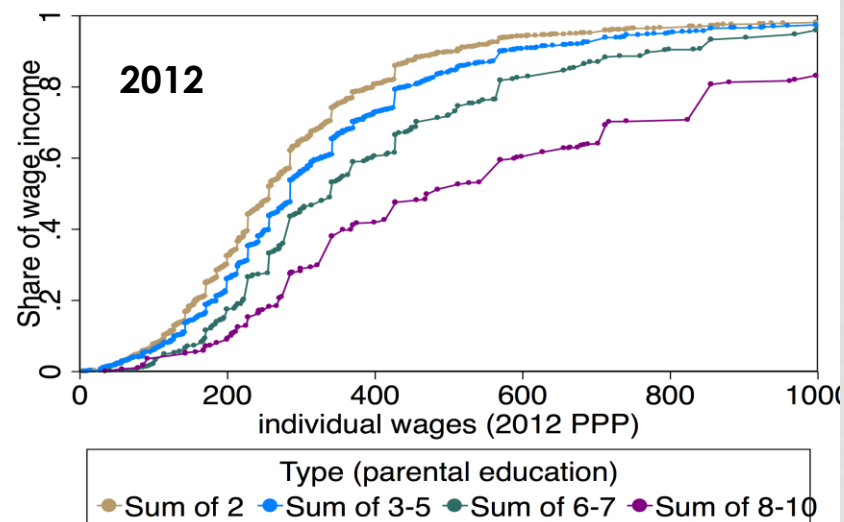
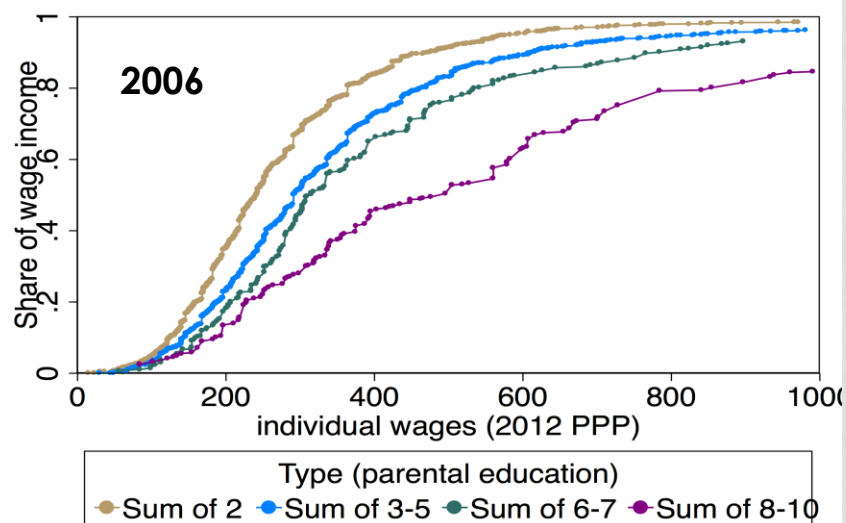
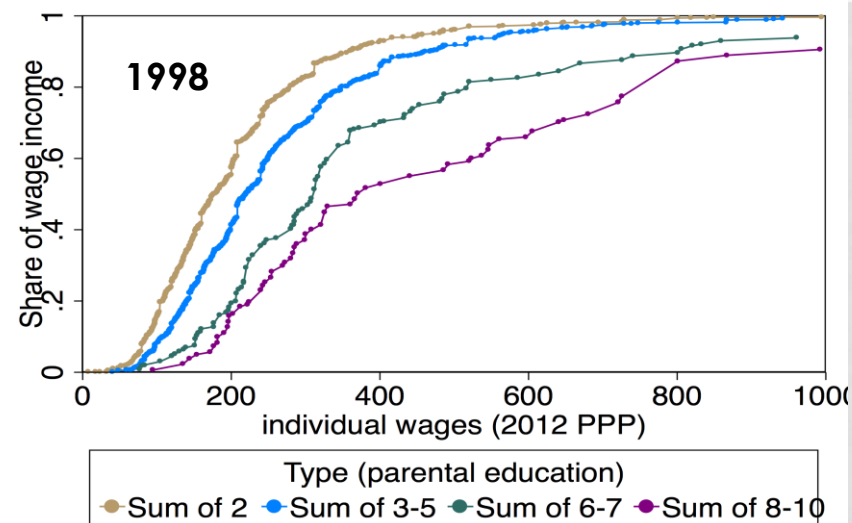
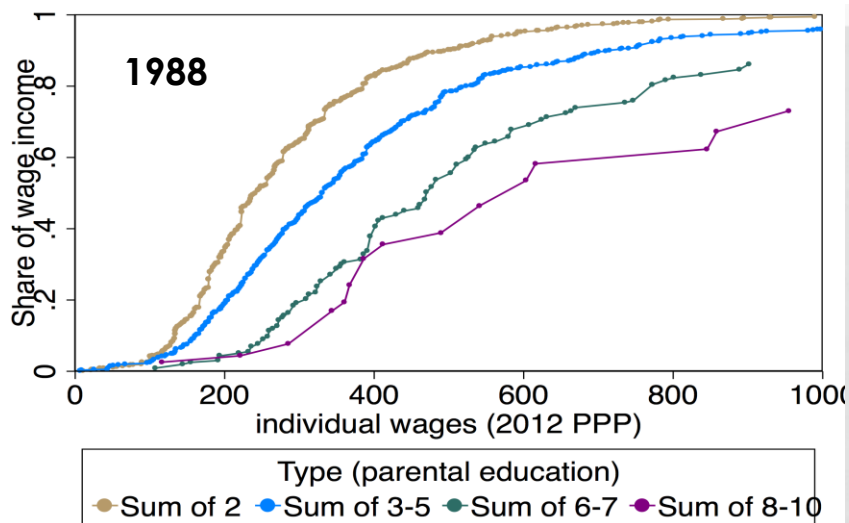
Distribution of Wages
(Male Wage Earners 30-49)



CUMULATIVE DISTRIBUTION OF CONSUMPTION BY TYPE OVER TIME

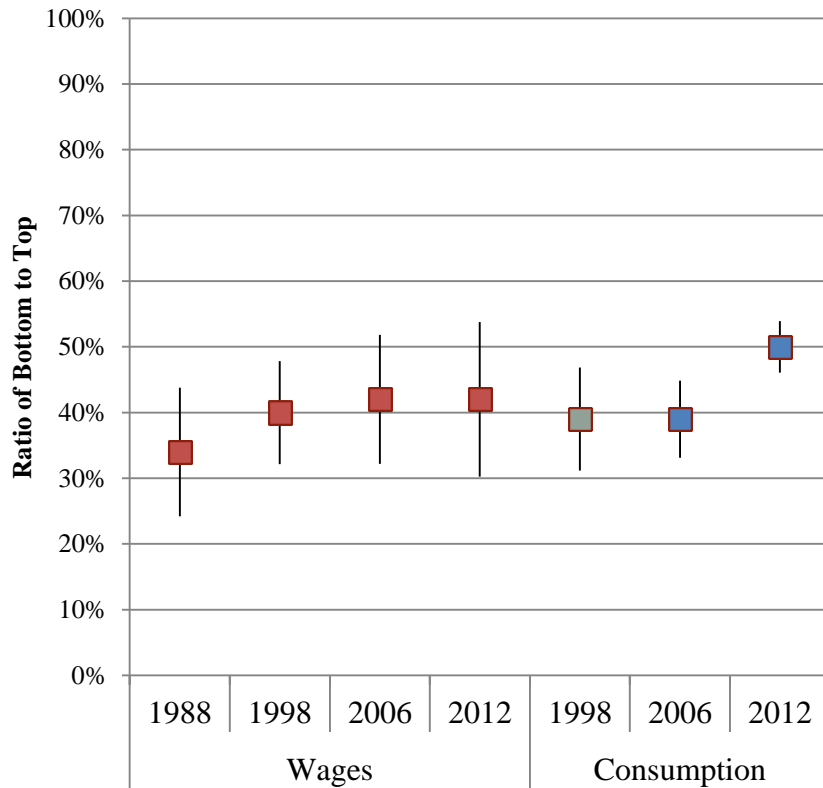


CUMULATIVE DISTRIBUTION OF WAGES BY TYPE OVER TIME (MALES 30-49)

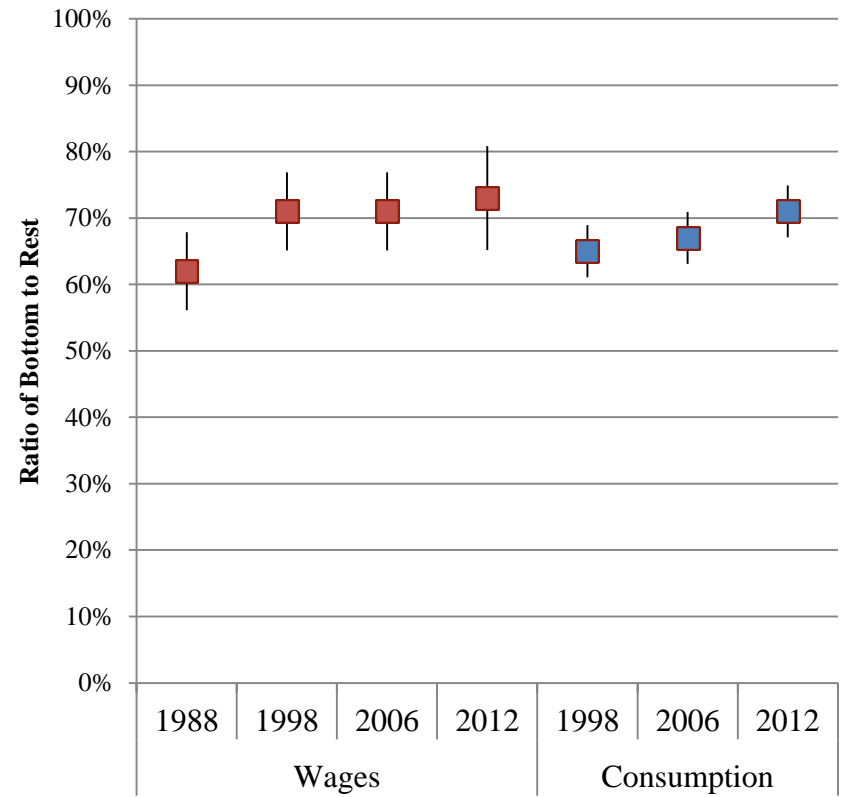


RATIO OF MEAN WAGES AND CONSUMPTION OF BOTTOM TYPE TO TOP TYPE AND BOTTOM TYPE TO ALL OTHER TYPES

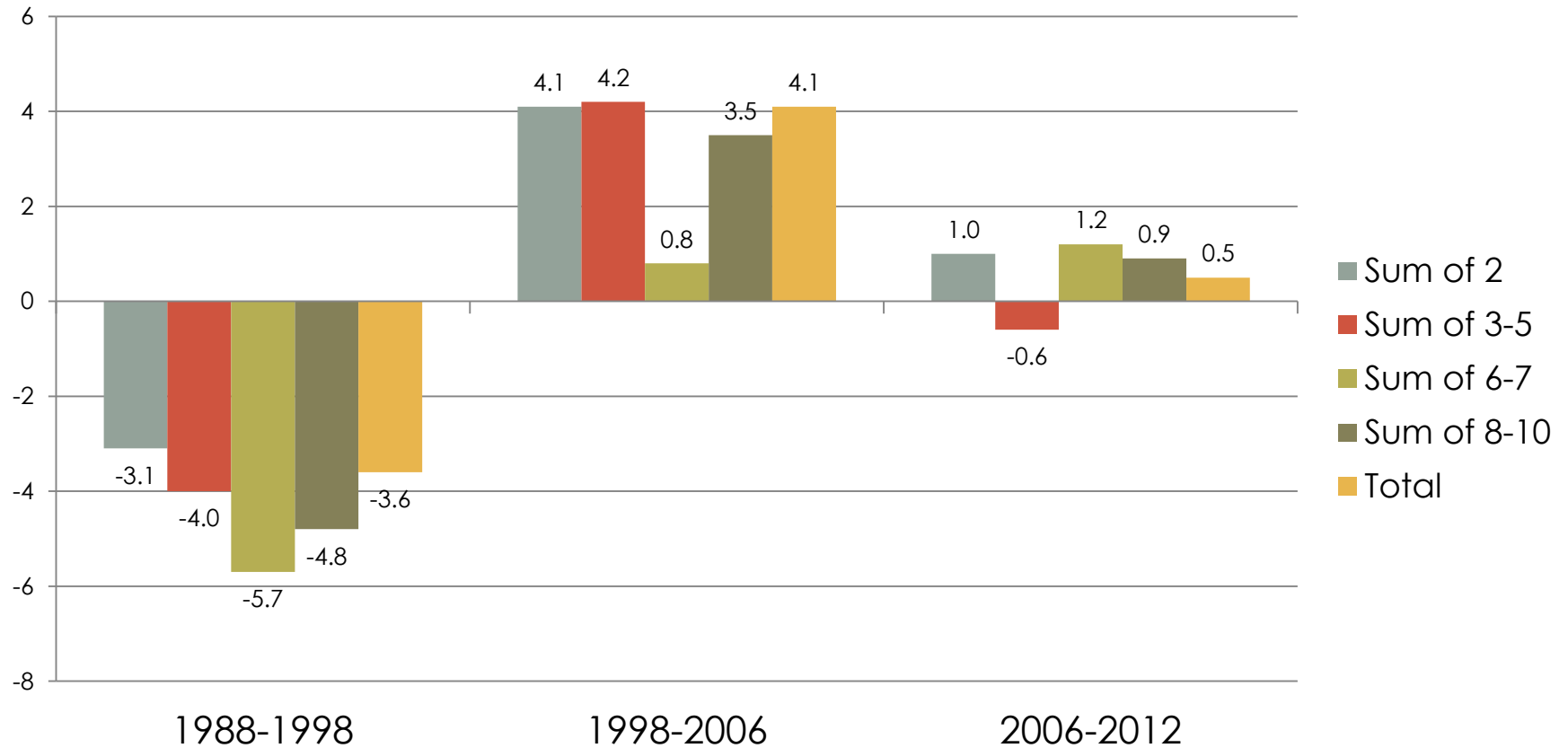
Ratio of Bottom to Top



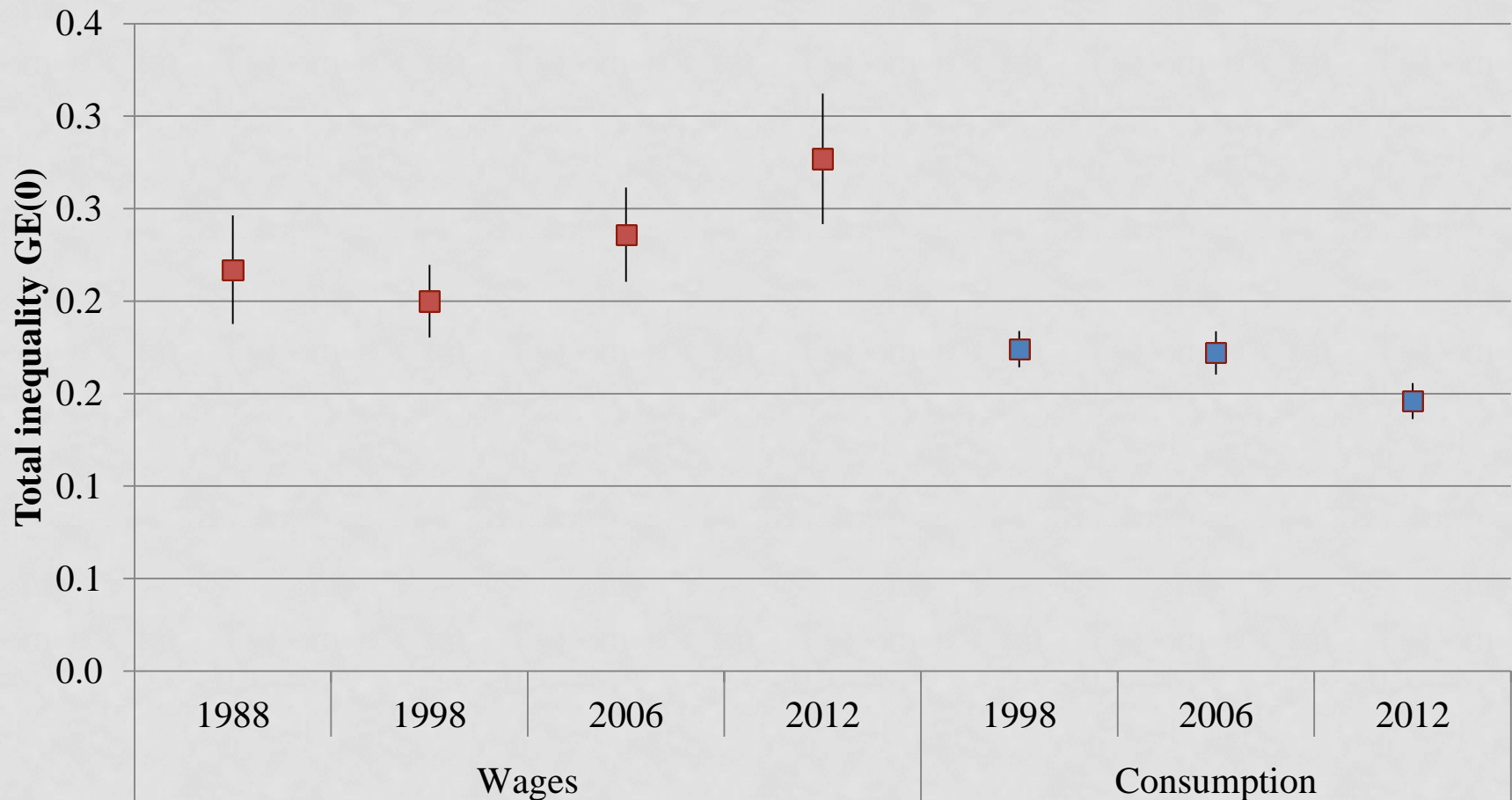
Ratio of Bottom to Rest



RATE OF CHANGE OF REAL WAGES BY TYPE, 1988-2006



THE EVOLUTION OF TOTAL INEQUALITY IN CONSUMPTION AND WAGES LOG MEAN DEVIATIONS (GE(0))

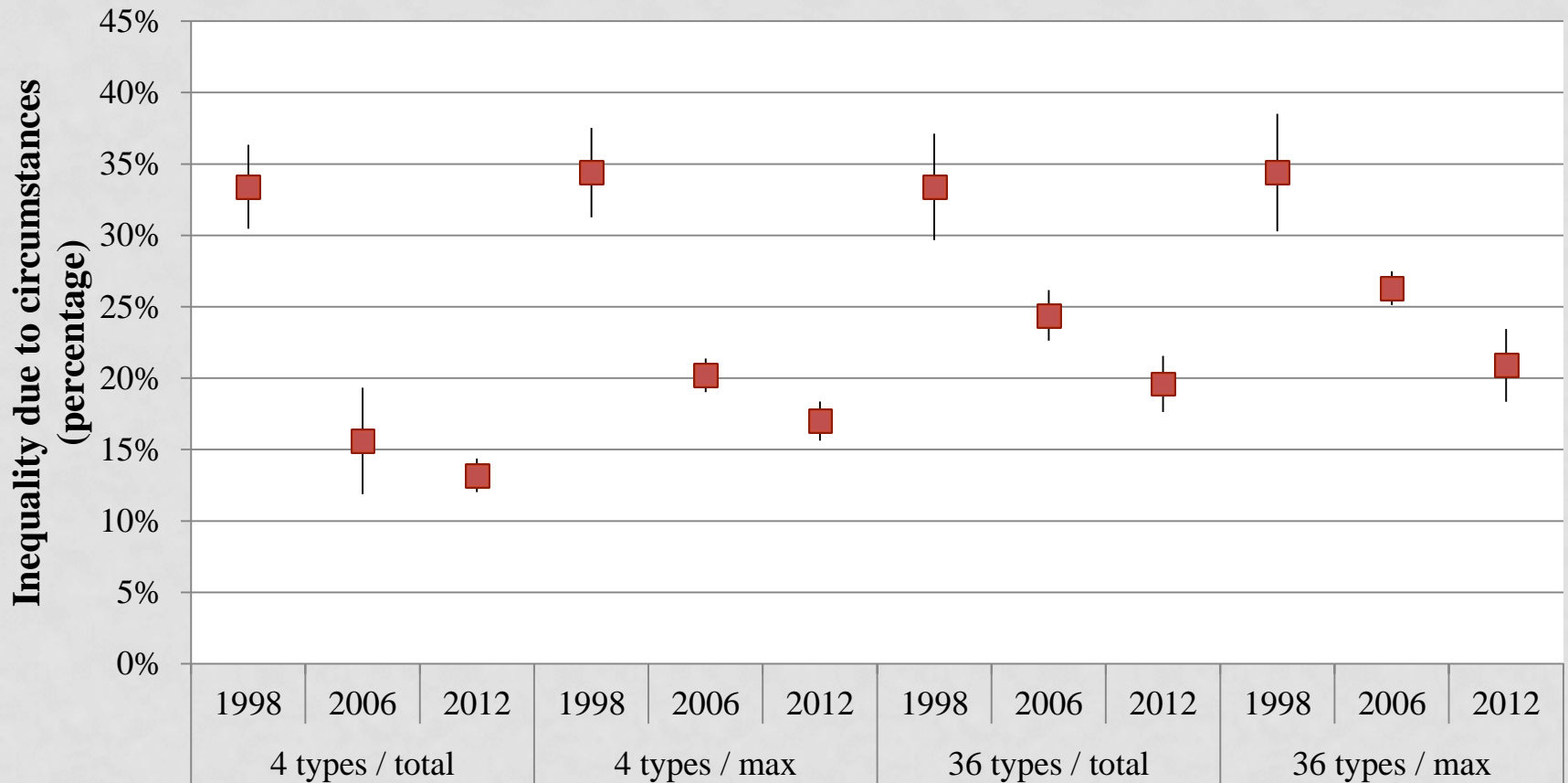


A MORE FINE GRAINED TYPOLOGY OF CIRCUMSTANCES

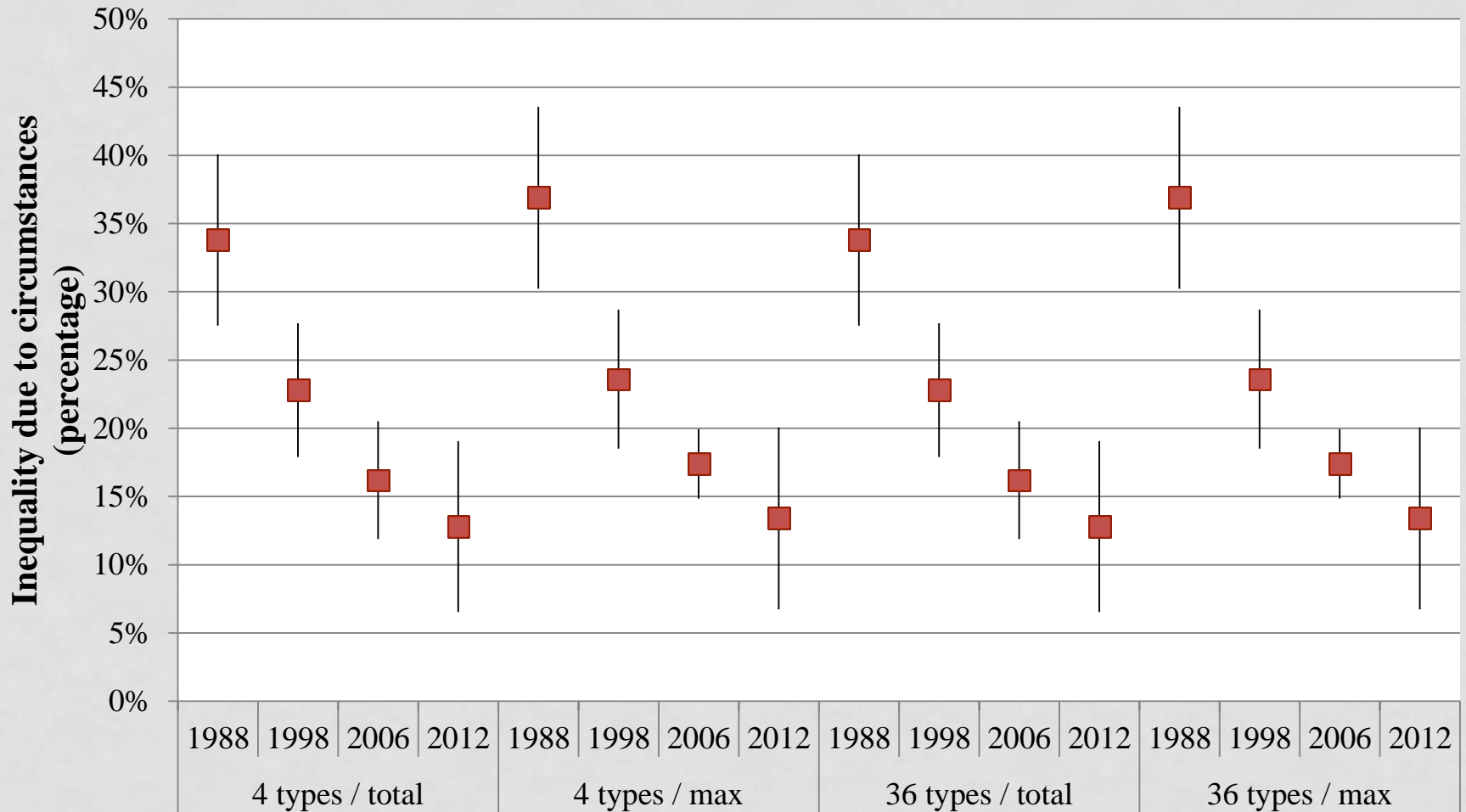
- We develop another 36-type typology of circumstances for our non-parametric analysis
 - We maintain the 4 types of parental education
 - Three categories of region of birth: metropolitan, provincial urban and provincial rural
 - Three categories of father's occupation when respondent was 15: white collar, non-agricultural blue collar, agricultural
- 4 parental ed. X 3 regions X 3 father occupation = 36 types

IOp Shares of Consumption Inequality

Various Measures



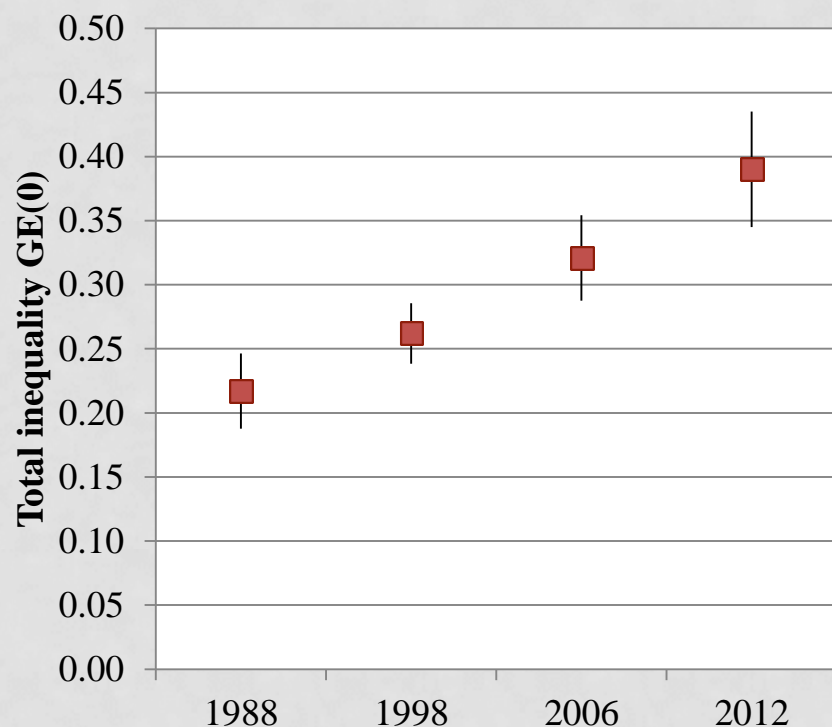
IOp Shares of Wage Inequality



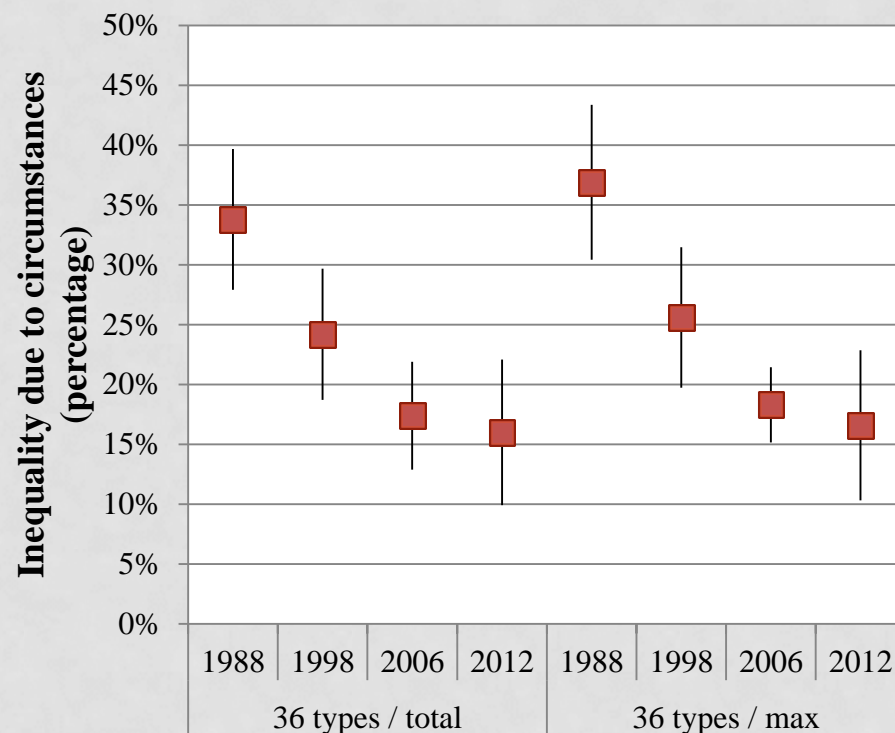
FORMALITY-ADJUSTED WAGES

(MULTIPLY FORMAL WAGES BY 2 TO ACCOUNT FOR NON-WAGE BENEFITS OF FORMAL JOBS)

Total Inequality – Log Mean Deviation



IOp Share



See Assaad (1999) for justification of factor of 2

PARTIAL EFFECTS OF DIFFERENT SETS OF CIRCUMSTANCES ON INEQUALITY OF WAGES AND CONSUMPTION – PARAMETRIC ESTIMATION



What would happen to the IOp share if we could observe more circumstances?

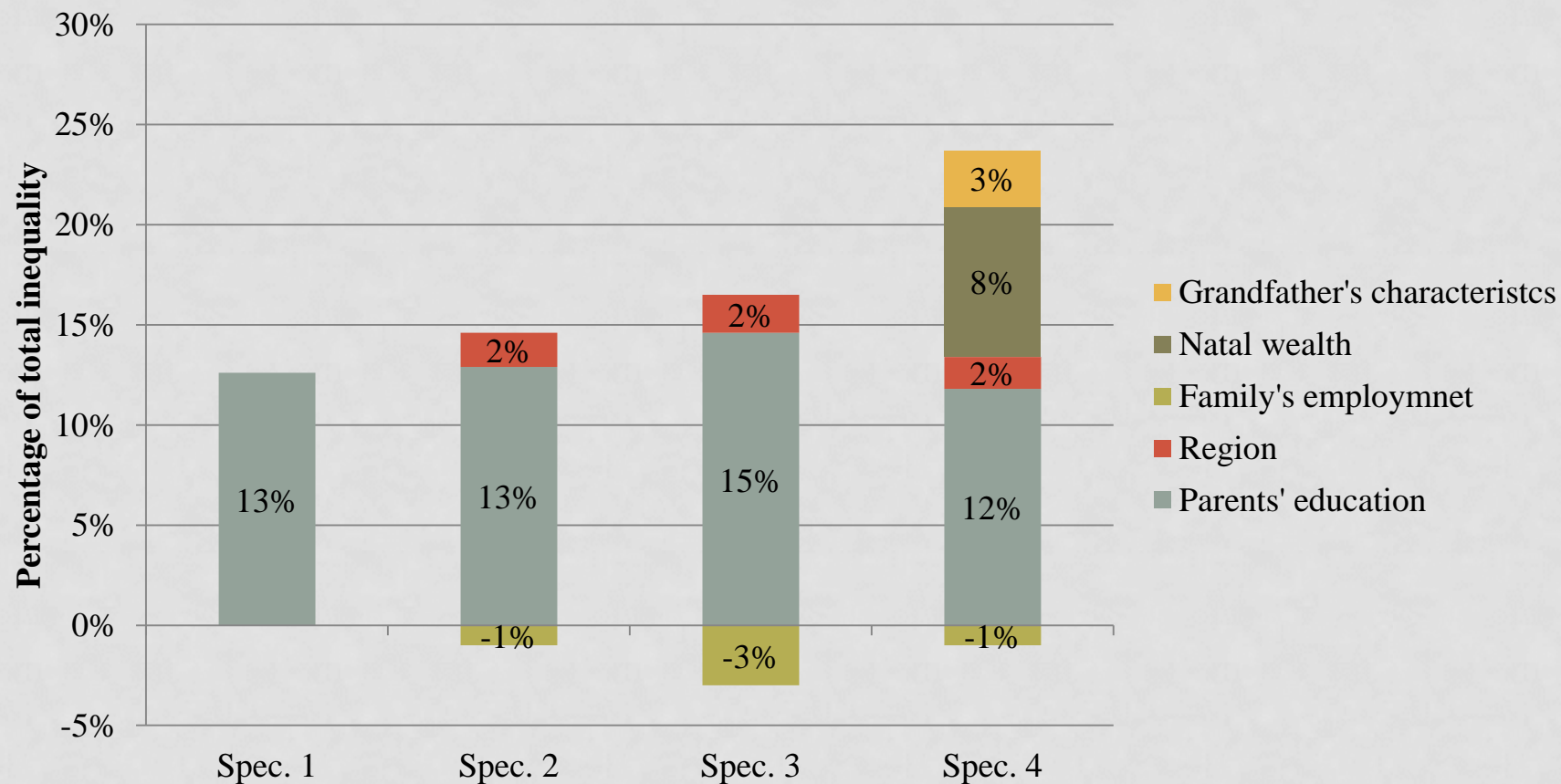
Panel data sample which was observed continuously from 1998 to 2012 allows us to do this

We limit sample to individuals who were observed in their natal household in 1998

- For these individuals, we can observe parental wealth in 1998 and grandfather's education and occupation

Wage outcome is observed in 2012

PARTIAL EFFECTS FROM AUGMENTED SPECIFICATIONS – PARAMETRIC ESTIMATION



CONCLUSIONS

Like overall inequality, IOp is not unusually high in Egypt by global standards and appears to be declining over time

But, drop in inequality of opportunity appears to be due to middle classes converging toward poor

Relative position of elites has remained stable

Need measures that compare position of middle classes relative to elites

Inequality of formality-adjusted wages has increased as middle groups find it increasingly more difficult to obtain formal jobs.

Panel data results suggest that we may be missing in earlier years important dimensions of circumstances that are contributing to inequality of opportunity