

## **Zeuthen Workshop Program**

### **Friday May 20**

#### *Session I*

14:00 – 14:45: “Agricultural income and fertility”, Philipp Ager.

14:45 – 15:30: “French Fertility and Education Transition: Rational Choice vs. Cultural Diffusion”, Faustin Perrin.

15:30 – 16:00: Coffee break

#### *Session II*

16:00 – 16:45: “The Economic Effects of Long-Term Climate Change”, Maria Waldinger.

16:45 – 17:30: “All Along the Watchtower: Linear Defenses and Serfdom in Russia”, Andrea Matranga.

*Workshop dinner 18:00:* at restaurant [Höst](#)

### **Saturday May 21**

#### *Session III*

10:30 – 11:15: “Adapting to the Sea - cooperation and individuality in fishing societies”, Anne Beck Sofie Knudsen.

11:15 – 12:00: “Population Diversity, Division of Labor and Comparative Development”, Ömer Özak.

12:00 – 13:00: Lunch

#### *Session IV*

13:00 – 13:45: “Engineering Growth: Innovative Capacity and Development in the Americas”, Felipe Valencia Caicedo.

13:45 – 14:30: “Elite Education, Mass Education, and the Transition to Modern Growth”, Katharina Werner.

14:30 – 15:00 Coffee break

#### *Session V*

15:00 – 15:45: “Instrumental Variables in the Long Run”, Gregory Casey.

15:45 – 16:30: “The International Epidemiological Transition and the Education Gender Gap”, Mariko Klasing.

#### *Practical information*

- The workshop takes place at the University of Copenhagen, [building 26](#), 26-2-21 (“store seminarrum” on the 2<sup>nd</sup> floor).
- There will a projector attached to a PC in the room (remember to bring a memory stick to transfer your presentation to the PC).
- The workshop dinner takes place at restaurant Höst (you find a link in the program). Please let me know if you have some special dietary requests.
- Abstracts and co-author(s) information are available on the next pages.
- If you have any (last-minute) questions or requests, do not hesitate to contact my via [e-mail](#) or cell: +4522883244

## Zeuthen-Workshop: Abstracts

**Presenter:** Philipp Ager

**Title:** Agricultural income and fertility

**Abstract:** This paper provides new insights on the relationship between income and fertility. We exploit plausibly exogenous variation in agricultural production from the boll weevil infestation of the Southern US cotton economy at the end of the 19th century to estimate the causal effect of agricultural income on fertility. Our main finding is that an increase in female agricultural income affects fertility positively. This positive relationship can be explained by relatively low opportunity costs of child-rearing in the agricultural sector. Consistent with the quantity-quality model of fertility we also document that a decline in female income from farm work -- a relatively low-skilled job -- led to higher literacy rates of school-age children. Our findings support the view that industrialization and the associated investment in children's education contributed to the demographic transition.

**Co-author(s):** Brückner and Benedikt Herz

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**Presenter:** Andrea Matranga

**Title:** All Along the Watchtower: Linear Defenses and Serfdom in Russia

**Abstract:** Before the 1580s, most Russian peasants were free to leave their current landowner to seek better conditions elsewhere. Over the course of the following century, their rights were progressively eroded, and new obligations placed upon them, so that by the 1650s they had been reduced to the status of serfs. This development is all the more perplexing, since it is exactly the opposite process to what had happened in Western Europe over the previous centuries. Why did Russia introduce serfdom just when much of Europe had gotten rid of it? I argue that the threat of Tatar raids from the south made it essential for the nascent Russian polity to enact a perimeter defense, which naturally required substantial manpower for its garrisoning. I use a simple model to show that under certain conditions a perimeter defense is incompatible with the free movement of labor, and present several kinds of data suggesting that these conditions applied to Russia.

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**Presenter:** Felipe Valencia Caicedo

**Title:** Engineering Growth: Innovative Capacity and Development in the Americas

**Abstract:** This paper offer the first systematic historical evidence on the role of a central actor in modern growth theory- the engineer. We collect cross-country and state level data on the population share of engineers for the Americas, and county level data on engineering and patenting for the US at the dawn of the Second Industrial Revolution. These are robustly correlated with income today and remain so after controlling for literacy, other types of higher order human capital (e.g. lawyers, physicians), demand side factors, and instrumenting engineering using the Land Grant Colleges program. A one standard deviation increase in engineers in 1880 accounts for a 16% increase in US county income today, and patenting capacity contributes another 10%. Our estimates also help explain why countries with similar levels of

income in 1900, but tenfold differences in engineers diverged in their growth trajectories over the next century. We support the statistical results with historical case studies from the US and Latin America.

**Co-author(s):** William F. Maloney

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**Presenter:** Maria Waldinger

**Title:** The Economic Effects of Long-Term Climate Change

**Abstract:** Recent studies have consistently found important economic effects of year-to-year weather fluctuations. This paper studies the economic effects of long-term and gradual climate change, over a period of 250 years, when people have time to adapt. In particular, I study the effects of the Little Ice Age, a historical episode of long-term climate change. Results show significant negative economic effects of long-term climate change. Cities with good access to trade were substantially less affected. Results from yearly historical wheat prices and yield ratios show that temperature change impacted economic growth through its effect on agricultural productivity. Further evidence shows a lack of adaptation. I show evidence of the relevance of these results to the context of contemporary developing countries and recommend ways in which these findings may improve Integrated Assessment Models.

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**Presenter:** Katharina Werner

**Title:** Elite Education, Mass Education, and the Transition to Modern Growth

**Abstract:** We propose an innovation-driven growth model for the very long run in which individual education is determined by family background and ability. This notion allows us to develop a new perspective on the education-growth nexus. Specifically, we show that compulsory schooling can move a society from a steady state of elite education to mass education such that the increasing supply of human capital eventually triggers market R&D and the take-off to modern growth. The theory, however, is also capable of replicating the conventional view of unified growth theory, according to which the rise of technological progress increases demand for human capital, which triggers mass education. We illustrate our findings with calibrations of the model for Britain and Sweden. According to the British way, the onset of market R&D causes mass education whereas according to the Swedish way, mass education causes the onset of market R&D. In both cases the take-off of growth is strongly associated with the take-off of education.

**Co-author(s):** Holger Strulik

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**Presenter:** Gregory Casey

**Title:** Instrumental Variables in the Long Run

**Abstract:** In the field of long-run economic growth, it is common to use historical or geographical variables as instruments for contemporary endogenous regressors. We study the interpretation of these conventional instrumental variable (IV) regressions in a simple, but general, framework. We are interested in estimating the long-run causal effect of changes in historical conditions. For this purpose, we develop an augmented IV estimator that accounts for the degree of persistence in the endogenous regressor. We apply our results to estimate the long-run effect of institutions on economic performance. Using panel data, we

find that institutional characteristics are imperfectly persistent, implying that conventional IV regressions overestimate the long-run causal effect of institutions. When applying our augmented estimator, we find that increasing constraints on executive power from the lowest to the highest level on the standard index increases national income per capita three centuries later by 1.2 standard deviations.

**Co-author(s):** Marc Klemp

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**Presenter:** Mariko Klasing

**Title:** The International Epidemiological Transition and the Education Gender Gap

**Abstract:** We explore the impact of the international epidemiological transition on educational outcomes of males and females over the second half of the 20th century. We provide clear evidence that the large declines in mortality rates from infectious diseases that followed the transition gave rise to differential life expectancy gains across genders, with females benefiting more due to their greater responsiveness to vaccination. We also document that these gender differences in life expectancy gains were subsequently reflected in similar differential increases in educational outcomes for males and females. Using an instrumental variables strategy that exploits pre-intervention variation in mortality rates across different infectious diseases, we confirm the causal nature of these effects and show that the magnitude of the effects account for a large share of the reduction in the education gender gap that emerged over this period.

**Co-author(s):** Petros Milionis

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**Presenter:** Faustin Perrin

**Title:** "French Fertility and Education Transition: Rational Choice vs. Cultural Diffusion"

**Abstract:** We analyze how much a rational-choice model can explain the temporal and spatial variation in fertility and school enrollment in France during the 19th century. The originality of our approach is in our reliance on a structural estimation technique that exploits the restrictions implied by the first-order conditions to identify the deep parameters. Another new dimension is our use of gendered education data, allowing us to have a richer theory that includes mothers, fathers, boys and girls. Results indicate that the rational-choice model explains 38 percent of the variation of fertility over time and across counties, as well as 71 percent and 83 percent of school enrollment of boys and girls, respectively. The analysis of the residuals (unexplained by the economic model) indicates that additional insights might be gained by considering cross-county differences in family structure and cultural barriers.

**Co-author(s):** David de la Croix

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**Presenter:** Anne Sofie Beck Knudsen

**Title:** Adapting to the Sea - cooperation and individuality in fishing societies

**Abstract:** I present empirical results from studying the cultures of historical fishing societies. In particular, I show that fishing was associated with higher levels of trust and individuality historically and that these cultural aspects have persisted up until today. My study thus provides insights on the positive correlation

between trust and individuality, which before has been documented across groups and individuals, and which at first sight may appear as a puzzle. Besides using contemporary survey data, I make use of two historical sources of cultural information: The Standard Cross-Cultural Sample and 19th century name records of individuals that lived in Scandinavia and Britain.

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**Presenter:** Ömer Özak

**Title:** Population Diversity, Division of Labor and Comparative Development

**Abstract:** This research explores the emergence and prevalence of economic specialization and trade in pre-modern societies. It advances the hypothesis, and establishes empirically that population diversity had a positive causal effect on economic specialization and trade. Based on a novel ethnic level dataset combining geocoded ethnographic, linguistic and genetic data, this research exploits the exogenous variation in population diversity generated by the ``Out-of-Africa'' migration of anatomically modern humans to causally establish that higher levels of population diversity were conducive to economic specialization and the emergence of trade-related institutions that, in turn, translated into pre-modern era differences in comparative development. Additionally, this research provides suggestive evidence that regions historically inhabited by pre-modern societies with high levels of economic specialization have higher levels of contemporary occupational heterogeneity, economic complexity and development.

**Co-author(s):** Emilio Depetris-Chauvin

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