

IV CICSE Conference

**“Structural Change, Dynamics,
and Economic Growth”**

PROGRAM and ABSTRACTS

September 12 - 14, 2013

Villa Letizia, via dei Pensieri 60

Livorno (Leghorn), Italy

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Livorno (Leghorn), Italy

Organized by

Centro Interuniversitario Crescita & Sviluppo Economico (CICSE)

PRIN 2009 “Structural Change and Growth”, MIUR

University of Pisa

Scientific Program Committee

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Raouf Boucekkine (Aix-Marseille School of Economics)
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Neri Salvadori (University of Pisa)

Organizing Committee

Alberto Bucci
Simone D'Alessandro
Luca Gori
A. Mario Lavezzi
Neri Salvadori

PROGRAM

Program Overview

Thursday	10:30 – 14:30	Registration
	14:30 – 15:00	Opening of the Conference
	15:00 – 16:30	Keynote lecture
	16:30 – 17:00	Coffee Break
	17:00 – 19:00	Parallel Session A
	20:30	Dinner
Friday	9:00 – 10:30	Keynote lecture
	10:30 – 11:00	Coffee Break
	11:00 – 13:00	Parallel Session B
	13:00 – 14:30	Lunch
	14:30 – 16:30	Parallel Session C
	16:30 – 17:00	Coffee Break
	17:00 – 19:00	Parallel Session D
	20:30	Dinner
Saturday	9:00 – 10:30	Keynote lecture
	10:30 – 11:00	Coffee Break
	11:00 – 13:00	Parallel Session E
	13:00 – 14:30	Closing Lunch

THURSDAY, September 12, 2013

10:30–14:30 **Registration**

14:30–15:00 **Opening of the Conference** (Auditorium)

15:00–16:30 **Keynote lecture** (Auditorium)

Chair: Neri Salvadori

1. Gender gaps and the rise of the service economy

Rachel Ngai

16:30–17:00 **Coffee Break**

17:00–19:00 **A1 – Theory I** (Auditorium)

Chair: Mauro Caminati

1. From stability to growth in neoclassical multisector models

Presented by: Mario Pomini

Discussant: Rubina Verma

2. Patterns of structural change in a convex endogenous growth model

Presented by: Paulo Brito

Discussant: Nadia Garbellini

3. Optimal Fuel Mix for Power Generation: hedging with renewables

Presented by: Rosella Castellano

Discussant: Jakub Growiec

4. The Role of Mortality Rate in the Transition from Stagnation to Growth

Presented by: Davide Fiaschi

Discussant: Fabrizio Valenti

17:00–19:00 **A2 – Demography and Human Capital** (Room 3) *Chair: Marc Teignier*

1. Population Growth and human capital: a Welfarist Approach

Presented by: Luca Spataro

Discussant: Xavier Raurich

2. When Elders rule: is Gerontocracy harmful for Growth?

Presented by: Lorenzo Carbonari

Discussant: Simone D'Alessandro

3. The role of Education industry in the U.S. income circular flow

Presented by: Lorenzo Toffoli

Discussant: Edgar Sánchez Carrera

4. Global dynamics in an OLG growth model with inherited tastes and endogenous longevity

Presented by: Luca Gori

Discussant: Jaime Alonso-Carrera

17:00–19:00 **A3 – Trade** (Room 4)

Chair: Ceyhun Elgin

1. Relative Product Diversification in the Course of Economic Development: Import-Export Analysis

Presented by: Massimo Tamberi

Discussant: Adrian Gauci

2. Structural Change, the Real Exchange Rate, and the Balance of Payments Constraint in Mexico

Presented by: Carlos Ibarra

Discussant: David Buralassi

3. Buyer-Supplier Relationships, Internazionalization, and Product Innovation

Presented by: Giulia Felice

Discussant: Luigi Balletta

4. Evolving Comparative Advantage, Structural Change, and the Composition of Trade

Presented by: Michael Sposi

Discussant: Fadi Hassan

20:30

Dinner - Restaurant Le Volte Via Calafati, 4 – Livorno

FRIDAY, September 13, 2013

9:00–10:30 **Keynote lecture** (Auditorium)

Chair: Neri Salvadori

1. Property Rights in Growth Theory

Costas Azariadis

10:30–11:00 **Coffee Break**

11:00–13:00 **B1 – Structural change and innovation** (Auditorium)

Chair: Giuseppe Freni

1. Variety, Competition, and Population in Economic Growth

Presented by: Alberto Bucci

Discussant: Lorenzo Carbonari

2. Structural Change, new industries and externalities

Presented by: Davide Gualerzi

Discussant: Mario Pomini

3. Structural Change in Pharmaceuticals: The Growth of Biologics and Emergence of Biosimilars

Presented by: Henry Grabowski

Discussant: Alessia Lo Turco

4. Mechanization, Task Assignment, and Inequality

Presented by: Kazuhiro Yuki

Discussant: Giuseppe Freni

11:00–13:00 **B2 – Growth empirics I** (Room 3)

Chair: Jaime Alonso-Carrera

1. Multi-country Matrix Multipliers and Fiscal Policy Coordination - An application to the Western Balkans

Presented by: Ariel Wirkierman

Discussant: William Addessi

2. Cross-country Sector Productivity Changes: A decomposition and an Empirical Analysis

Presented by: Massimo Del Gatto

Discussant: Michael Sposi

3. The Determinants of Growth Volatility in European Regions

Presented by: Lisa Gianmoena

Discussant: Andrea Mario Lavezzi

4. The Price of Development

Presented by: Fadi Hassan

Discussant: Luca Spataro

11:00–13:00 **B3 – Pioneers of Growth Theory (Room 4)** *Chair: Rodolfo Signorino*

1. Causality and interdependence in Pasinetti's works and in the modern classical approach

Presented by: Enrico Bellino

Discussant: Kwangsu Kim

2. Symmetric Off-Diagonals in the Pasinetti Pure Labour Model

Presented by: Andrew Trigg

Discussant: Timo Boppart

3. A Reconciliation of Kaldor's Stylized facts and the Kuznets Process: A Turnpike Approach

Presented by: Harutaka Takahashi

Discussant: Arrigo Opocher

4. Are Kaldor and Kuznets facts theoretically compatible?

Presented by: Xavier Raurich

Discussant: Andrew Trigg

13:00–14:30 **Lunch**

14:30–16:30 **C1 – Growth Empirics II (Room 3)** *Chair: Alberto Bucci*

1. Spatial structure and environmental sustainability in Italy

Presented by: David Burgalassi

Discussant: Angela Parenti

2. The role of the cost and preference factors in the change of consumption composition

Presented by: William Addessi

Discussant: Giovanni Trovato

3. Real cost reduction in an individual industry. A price-accounting approach in theory and in practice

Presented by: Arrigo Opocher

Discussant: Massimo Tamberi

4. On the Modeling of Size Distributions When Technologies Are Complex

Presented by: Jakub Growiec

Discussant: Marc Teignier

14:30–16:30 **C2 – Regions, Space and Agglomeration** (Room 4)

Chair: Alessandra Pelloni

1. Industrial Regional and Income Structural Change in Russian Federation: Past Tendencies and Proposals for Future

Presented by: Sergey Mitsek

Discussant: Ariel Wirkierman

2. Regional income convergence, skilled migration and productivity response: Explaining relative stagnation in the periphery

Presented by: Hildegunn Stokke

Discussant: Pasquale Commendatore

3. A review of multiregional new economic geography models

Presented by: Pasquale Commendatore

Discussant: Thomas Bassetti

4. Financial development and agglomeration

Presented by: Francesco Purificato

Discussant: Alessandra Pelloni

14:30–16:30 **C3 – Environment** (Room 2)

Chair: Carlos Ibarra

1. Biodiversity Management with R&D-based Growth

Presented by: Tapio Palokangas

Discussant: Rosella Castellano

2. Transition to sustainability: Scenarios towards a low-carbon economy

Presented by: Simone D'Alessandro

Discussant: Ulla Lehmijoki

3. Institutional enforcement, environmental quality and economic development: a panel VAR approach

Presented by: Davide Infante

Discussant: Etelberto Ortiz

4. Natural Resources and Environmental Stochastic Sustainability

Presented by: Roy Cerqueti

Discussant: Tommaso Luzzati

14:30–16:30 **C4 – Theory II** (Room 1)

Chair: Kazuhiro Yuki

1. **Non-linearity in the relationship between human capital and growth**
Presented by: Fabrizio Valenti
Discussant: Mehdi Senouci
2. **Structural change and the existence of optimal strategies in models with several consumption goods**
Presented by: Giuseppe Freni
Discussant: Harutaka Takahashi
3. **Adam Smith on Demand and Structural Change**
Presented by: Kwangsu Kim
Discussant: Rodolfo Signorino

16:30–17:00 **Coffee Break**

17:00–19:00 **D1 – Crime and Informal Economy** (Room 1) *Chair: Henry Grabowski*

1. **Organized Crime and Poverty Traps**
Presented by: Tamara Fioroni
Discussant: Ceyhun Elgin
2. **Informality and Structural Transformation**
Presented by: Ceyhun Elgin
Discussant: Michele Battisti
3. **Extortion, firm's size and the sectoral allocation of capital**
Presented by: Luigi Balletta
Discussant: Roy Cerqueti

17:00–19:00 **D2 – Theory III** (Room 2)

Chair: Andrea Mario Lavezzi

1. **A general characterization of neoclassical production functions and an application to physical capital-based growth models**
Presented by: Mehdi Senouci
Discussant: Luciano Fanti
2. **Consumption composition and macroeconomic dynamics**
Presented by: Jaime Alonso-Carrera
Discussant: Luciano Fanti

3. From stationary state to endogenous growth: International trade in the mathematical formulation of the Ricardian system

Presented by: Rodolfo Signorino

Discussant: Gianfranco Tuset

17:00–19:00 **D3 – Structural Dynamics** (Room 3) *Chair: Pasquale Commendatore*

1. Structural Change and Stagnation in the Mexican Economy

Presented by: Etelberto Ortiz,

Discussant: Giuseppe Berlingieri

2. Outsourcing and the Rise in Services

Presented by: Giuseppe Berlingieri

Discussant: Carlos Ibarra

3. Trade, Reform, and Structural Transformation in South Korea

Presented by: Rubina Verma

Discussant: Fabian Schnell

4. Non-homothetic preferences and industry directed technical change

Presented by: Timo Boppart

Discussant: Alberto Bucci

17:00–19:00 **D4 – Knowledge production and diffusion** (Room 4)

Chair: Xavier Raurich

1. Knowledge proximity and network formation

Presented by: Mauro Caminati,

Discussant: Vincenzo Lombardo

2. Industrial Concentration, Technological Change, and Knowledge Spillovers in the European Union

Presented by: Astrid Krenz

Discussant: Aleksandra Parteka

3. Exploring the role of firm and local capabilities in the spatial evolution of innovation

Presented by: Alessia Lo Turco

Discussant: Giovanni Trovato

4. Horizontal and Vertical Technology Spillover of Foreign Direct Investment: An Evaluation across Indian Manufacturing Industries

Presented by: Smruti Behera

Discussant: Sergey Mitsek

20:30 **Dinner – Restaurant La Barcarola** Viale Carducci, 39 – Livorno

SATURDAY, September 14, 2013

SATURDAY, September 14, 2013

9:00–10:30 **Keynote Lecture** (Auditorium)

Chair: Neri Salvadori

1. **Financial globalization, growth and welfare: An AK theory of international borrowing without commitment**

Raouf Boucekkine

10:30–11:00 **Coffee Break**

11:00–13:00 **E1 – Institutions and long-term development** (Room 1)

Chair: Enrico Bellino

1. **Landowning, Status and Population Growth**

Presented by: Ulla Lehmijoki

Discussant: Mauro Caminati

2. **The uncertain destiny of proprietary capitalism: Family connections and the allocation of entrepreneurial talent**

Presented by: Vincenzo Lombardo

Discussant: Massimo Del Gatto

3. **Central Banks and Democracy**

Presented by: Gianfranco Tuset

Discussant: Francesco Purificato

4. **World Interest Rates, Inequality and Growth: an Empirical Analysis of the Galor - Zeira Model**

Presented by: Andrea Mario Lavezzi

Discussant: Astrid Krenz

11:00–13:00 **E2 – Corruption and Crime** (Room 2)

Chair: Luciano Fanti

1. **The Impact of Corruption on Economic Growth in Algeria**

Presented by: Bounoua Chaib

Discussant: Lorenzo Toffoli

2. **A critical analysis of public administration reform and risk of corruption and crimes**

Presented by: Giuseppina Talamo

Discussant: Davide Infante

3. On the Reasons to claim the Resistance to the Extortion Racket: an Empirical Assessment

Presented by: Michele Battisti

Discussant: Amedeo Argentiero

4. Uncovering unobserved economy: a general equilibrium characterization

Presented by: Amedeo Argentiero

Discussant: Giuseppina Talamo

11:00–13:00 **E3 – Fiscal and Monetary Policy** (Room 3)

Chair: Roy Cerqueti

1. Optimal Income Taxation and Public Provision of Productive Inputs

Presented by: Thomas Bassetti

Discussant: Tapio Palokangas

2. Fiscal Policy Impacts on Growth: an OECD Cross-Country Study with an Emphasis on Capital Rates Accumulation

Presented by: Giovanni Trovato

Discussant: Smruti Behera

3. Factor Income Taxation in a Horizontal Innovation Model

Presented by: Alessandra Pelloni

Discussant: Luca Gori

4. Monetary Policy and Structural Change

Presented by: Fabian Schnell

Discussant: Davide Gualerzi

11:00–13:00 **E4 – Labor Market** (Room 4)

Chair: Luca Spataro

1. Gender gaps in the labor market and aggregate productivity

Presented by: Marc Teignier

Discussant: Tamara Fioroni

2. Graduated without passing? The employment dimension and LDCs prospects under the IPOA

Presented by: Adrian Gauci

Discussant: Hildegunn Stokke

3. Integrated sectors - diversified earnings: the impact of international outsourcing on skill-specific wage convergence in EU27

Presented by: Aleksandra Parteka

Discussant: Kazuhiro Yuki

SATURDAY, September 14, 2013

4. Wage Inequality Effects on Labor Productivity

Presented by: Edgar Sánchez Carrera

Discussant: Lisa Gianmoena

13:00–14:30 **Closing Lunch**

ABSTRACTS

A1 – Theory I

Chair: Mauro Caminati, University of Siena

From stability to growth in neoclassical multisector models

Mario Pomini

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Analysis of the multisector models was an important strand of inquiry within neoclassic growth theory from the early 1960s and at the end of the decade the multisector approach constituted one of the most promising areas of inquiry within growth theory as a whole. Studies in this area dwindled away at the end of the 1970s but the situation abruptly changed with the ad-vent of endogenous growth theory in the second half of the 1980s which with Lucas (1988) and Romer (1990) was from the outset framed in a multi-sectorial perspective. The multisector approach was resumed in the literature on endogenous growth, but with features different from those that had previously characterized it. The aim of this paper is to analyze the evolution of some particular aspects of the neoclassical multisector approach from the first studies of the 1960s until current theorization.

Patterns of structural change in a convex endogenous growth model

Paulo Brito

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Structural change is a stylised fact from the history of economic growth. It has been recently associated to hump-shaped adjustments in the relative weight of activity in industry as compared to agriculture and services. There is a recent literature (Kongsamut, Rebelo and Xie (2001), Ngai and Pissarides (2007), Acemoglu and Guerrieri (2008)) addressing structural change and economic growth by associating it to non-homotheticity of preferences or to the structure of technology. In this paper we follow the second approach. We characterize transitional dynamics in a general benchmark three-sector endogenous growth model without externalities, by presenting a complete taxonomy of the technology structure based upon the algebraic properties of the matrix of factor intensities. Our analysis allows us to relate the algebraic properties of the coefficient matrix with higher-dimensional generalizations of the Stolper-Samuelson and Rybczynski theorems and with transitional dynamics around a balanced growth path. We prove that the local stable manifold can only be of dimension zero or two, and that the first case has a very low probability of occurrence. When the stable manifold is two-dimensional, we completely characterise local dynamics around a balanced growth path, by

using a recent method by Brito and Dixon (2013, JEDC). We find that: (1) the transitional dynamics can be completely characterised by the initial relative endowments of the stocks of capital and the algebraic properties of the matrix of factor intensities; (2) non-monotonic dynamics (hump-shaped or oscillatory) is the most prevalent type of transitional adjustment; (3) and there are three types of adjustments, in which prices, quantities or both are the main driving force for stability, in all of them hump-shaped responses can take place.

Optimal Fuel Mix for Power Generation: hedging with renewables

Rosella Castellano and Roy Cerqueti**

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In this paper we propose a dynamic optimization model with stochastic fuel and carbon emission prices. The model is developed in a portfolio framework and contribute to a better understanding of the optimal energy policies and their risk characteristics. We aim at deriving the optimal fuel mix over short/long-term horizons, by including either fossil and renewable fuels, and exploring the potential for renewable energy to serve as hedging tool against the uncertainty of fuel prices.

The Role of Mortality Rate in the Transition from Stagnation to Growth

Davide Fiaschi and Tamara Fioroni†*

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The purpose of this paper is twofold: i) to discuss how changes in mortality, affecting the accumulation of human (and physical) capital, provides a plausible additional determinant of the long-run growth of countries; and ii) to reconcile the empirical evidence presented in Acemoglu et al. (2001) with the explanation that human capital accumulation, and not the quality of institutions, is the main determinant of long-run growth of countries.

A2 – Demography and Human Capital

Chair: Marc Teignier, Universitat de Barcelona

Population Growth and human capital: a Welfarist Approach

*Luca Spataro** and *Thomas Renstrom*[†]

* University of Pisa and CHILD

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In this paper we aim at enriching the literature on the relationship between endogenous economic growth and fertility. We depart from the existing literature as we put particular emphasis on the fact that, in the presence of endogenous population, welfare evaluations typically imply the comparisons between states of the world in which the size of population is different. Such a fact has two consequences: first, one needs Social Welfare Orderings that are axiomatically founded also in presence of variable population. Second, one also aims at avoiding undesirable outcomes such as the so-called Repugnant Conclusion (RC henceforth; see Parfit 1976, 1984, Blackorby et al. 2002). According to the RC, any state in which each member of the population enjoys a life above neutrality is declared inferior to a state in which each member of a larger population lives a life with lower utility (Blackorby et al. 1995, 2002). In particular, in economic growth frameworks, the RC conclusion takes the form of an upper-corner solution for the population growth rate (society reproduces at its physical maximum rate. In order to cope with the problems, we assume Critical Level Utilitarian preferences à la Blackorby et al. (1995), which are axiomatically founded.

When Elders rule: is Gerontocracy harmful for Growth?

Lorenzo Carbonari

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We study the relationship between gerontocracy and aggregate economic performance in a simple model where growth is driven by human capital accumulation and productive government spending (investments in ICT). We show that gerontocratic *Ž*lites display the tendency to underinvest in public education and productive government services, thus being harmful for growth. In absence of inter-generational altruism, the damage caused by gerontocracy is mainly due to the lack of long-term delayed return on investments, originated by the shorter life horizon of the elder ruling class. An empirical analysis is carried out to test theoretical predictions across different countries and different economic sectors. The econometric results confirm our main hypotheses.

The role of Education industry in the U.S. income circular flow

Maurizio Ciaschini *, *Claudio Socci* * and *Lorenzo Toffoli* †

* University of Macerata

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The aim of this work is to design suitable economic policies for the U.S. public and private education systems. Such policies can only be determined by assessing the importance of public and private education as industrial sectors. This is done by evaluating a multidimensional index of sector-specific centralities in the policy-space. The role of the public and private education industries is evaluated both in terms of their capability of being stimulated and of stimulating the other industries, the primary factors and the institutional sectors; i.e. on their potential for activating the intermediate demand and for contributing to the process of generation and distribution of income. In a policy oriented perspective, education is considered in its dual role of policy objective variable and policy control variable.

Global dynamics in an OLG growth model with inherited tastes and endogenous longevity

*Luciano Fanti**, *Luca Gori*†, *Cristiana Mammana*§ and *Elisabetta Michetti*§

* University of Pisa

† University of Genoa

§ University of Macerata

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The aim of this paper is to study local and global dynamics in a general equilibrium overlapping generations closed economy with inherited tastes (aspirations) and endogenous longevity μ à la Chakraborty (2004). We assume that individual preferences are characterised by a utility function with constant inter-temporal elasticity of substitution. We extend the results of de la Croix (1996) to the global dynamics of a two-dimensional map. In addition, we find that the interaction between the intensity of aspirations in utility and the health tax rate may cause interesting phenomena such as Neimark-Sacker bifurcations and coexisting attractors. Our findings also show that the parameter that governs the elasticity of substitution in utility plays a role in determining both the local and global dynamic events of the model.

A3 – Trade

Chair: Ceyhun Elgin, Bogazici University

Relative product diversification in the course of economic development: import-export analysis

Massimo Tamberi

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This paper contributes to trade diversification literature by comparing changes in relative (i.e. assessed in comparison with world patterns) heterogeneity of import and export structures in the process of economic development. In particular, by focusing on the diversification of imports, we add a missing piece to already analysed export trends. We use highly disaggregated trade statistics (4963 product lines) for 163 countries (1988- 2010) and find that, despite differences in levels (imports being typically more diversified than exports, particularly at lower stages of economic development), they follow a similar path of evolution in the development process. Progressing relative diversification of both import and export structures accompanies economic growth, while respecialisation is plausible only in case of few specific countries (very rich, small ones, abundant in oil/petrol). By comparing the results obtained with the use of alternative estimation methods (non-parametric, semi-parametric and parametric), we demonstrate the robustness of these findings. As income per capita grows, import (and export) structures of countries usually become less specialised with respect to the typical benchmark.

Structural Change, the Real Exchange Rate, and the Balance of Payments Constraint in Mexico

Carlos Ibarra and Robert Blecker†*

* Universidad de las Americas Puebla

† American University

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This paper provides complete estimates of a model of balance-of-payments-constrained growth for Mexico, with disaggregated exports (manufactured and non-manufactured) and imports (final and intermediate goods), in which manufactured exports are treated as endogenous. Alternative estimations with and without real exchange rate effects included are provided, but most of the qualitative results do not depend on this distinction. Obtaining statistically adequate estimates of the import and

export functions required us to take into account a variety of structural breaks, implying a division of our overall sample period (1960–2012) into four subperiods. Generally, our results imply that a tightening of the balance-of-payments constraint cannot account for the slowdown in Mexico’s actual growth during the early phase of trade liberalization and macro stabilization policies (1987–2000), but a tightening of this constraint is consistent with the further slowdown in actual growth in the 2001–12 period.

Buyer-Supplier Relationships, Internazionalization, and Product Innovation

Massimiliano Bratti and Giulia Felice†*

* University of Milan

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Recent empirical studies have reported strong firm-level evidence of “learning by exporting” in product innovation. In this paper we consider a specific channel which might contribute to explain the greater innovativeness of exporters, by focusing on the information exchange between firms establishing buyer-supplier relationships related to production to order. Using new European firm-level data, we provide some descriptive evidence that suppliers carrying out production to order for foreign firms are more innovative than suppliers producing only for domestic firms. We rationalize this evidence in a theoretical framework where firms are heterogeneous in the characteristics of their products and where buyers, searching for a specialized input, have to match either with a domestic or with a foreign supplier in order to produce a final good. Our results are driven by the interplay between the structure of the costs of innovation, the costs of internationalization, and the density of suppliers in the different countries.

Evolving Comparative Advantage, Structural Change, and the Composition of Trade

Michael Sposi

Federal Reserve Bank of Dallas

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In this paper I study the process of structural change across emerging economies and advanced economies. I focus on the allocation of output across the three main sectors: agriculture, manufacturing and services. In emerging economies output grows fastest in the sector with the fastest

productivity growth, i.e., manufacturing. On the other hand, in advanced economies, output grows fastest in the sector with the slowest productivity growth, i.e., services. These facts introduce a puzzle for models of structural change that rely on asymmetric productivity growth as the driver of structural change. To explain this puzzle I examine the role of trade through the composition of exports. In emerging economies, such as Korea, the share of manufactures in exports rose along with manufacture's share in output. I develop a dynamic multi-country model of trade where productivity in each sector and each country grows at different rates. I measure productivity growth, in each sector for each country, using a Solow-type accounting procedure. I feed the productivity growth rates into the model and find that the increase in manufacture's share in both exports and output in emerging economies are explained by a shift in comparative advantage.

B1 – Structural change and innovation

Chair: Giuseppe Freni, University of Naples “Parthenope”

Variety, Competition, and Population in Economic Growth

Alberto Bucci

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We analyze the conditions on the structure of the underlying economy under which it is possible to predict simultaneously (as suggested by the available theoretical and empirical literatures) an ambiguous correlation between population and productivity growth rates, and between PMC and economic growth. When individual human capital investment is possible, the potential tension between specialization-gains and complexity losses arising from an expansion of the number of input-varieties employed in the same production process is crucial in determining not only the sign of the two mentioned correlations, but also the possible complementarity between two key variables of the model in economic growth.

Structural Change, new industries and externalities

Davide Gualerzi

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A remarkable aspect of Pasinetti’s model of growth and structural change is that of setting the stage for the analysis of expanding and declining industries. The general problem of “changing proportions”, an inescapable problem of the growth process, calls attention to the forces that determine uneven growth and to the pattern of change during specific cycles of expansion (or contraction) of the economy. The focus on a changing structure is therefore intertwined with the question of the directions taken by private investment, the industrial dynamics of the expanding industries and the prospects of new markets. In this paper we focus the industries that appear to be the best growth candidates for continuing expansion especially in advanced market economies. The main focus is on the ICT-Internet complex, but also other technology-based industries such as Biotech and alternative energy production, beginning with solar. The main purpose is to highlight constraints and opportunities in the process of structural change and the prospects of these industries to become “carriers of growth”, i.e. main sources for sustained growth in the coming years. Our hypothesis is that would involve to a large extent a new role played by externalities.

Structural Change in Pharmaceuticals: The Growth of Biologics and Emergence of Biosimilars

Henry Grabowski

Duke University

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In this paper we analyze competition in five European countries for Eprex (epoetin alpha) and Neupogen (filgrastim) and their biosimilars. We also consider how the competition from biosimilars is likely to evolve in the United States. In particular, we examine case histories involving the U.S. experiences with two biosimilar-like products in the human growth hormone and low weight molecular heparin product classes. Our analysis suggests that for the foreseeable future biosimilar competition is likely to have fewer entrants than generic competition, given the higher cost of entry. Most biosimilars will also compete as non-interchangeable therapeutic options. Consequently, the rate of biosimilar penetration will depend not only on the price competition, but the ability of manufacturers to convince physicians and providers of high quality standards. The development of next-generation products by innovators and the evaluation of all therapeutic alternatives by public and private payers will also be important for biosimilar acceptance.

Mechanization, Task Assignment, and Inequality

Kazuhiro Yuki

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Mechanization – the replacement by machines of humans engaged in production tasks – is a continuing process since the Industrial Revolution. Accordingly, humans have shifted to tasks machines cannot perform efficiently. The general trend until about the 1960s is the shift from manual tasks to analytical (cognitive) tasks, while, since the 1970s, because of the growth of IT technologies, humans have shifted from routine analytical tasks (such as simple information processing tasks) as well as routine manual tasks toward non-routine analytical tasks and non-routine manual tasks in services. This paper examines interactions among long-run trends of mechanization, task shifts, and earnings levels and inequality roughly summarized as above. Specifically, the paper develops a Ricardian model of task assignment and analyzes how improvements of productivities of machines and an increase in the relative supply of skilled workers affect task assignment (which factors perform which tasks), earnings levels and inequality, and aggregate output. The model succeeds in capturing the great majority of the trends.

B2 – Growth empirics I

Chair: Enrico Bellino, Università Cattolica del Sacro Cuore

Multi-country Matrix Multipliers and Fiscal Policy Coordination - An application to the Western Balkans

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The recent spatial and sectoral shift in trade patterns towards a higher share of trade in intermediates, suggests that national economies are increasingly dependent on their trade partners. As a result, domestic income effects of foreign trade spillovers cannot be overlooked. In fact, these spillovers may make a sizeable difference to assess the relative advantage of coordinated fiscal stimuli with respect to isolated actions. Usually, however, coordination is discouraged by the negative trade balance effects of each domestic expansion. In this regard, the present paper aims at devising a linear program to obtain the relative proportions of domestic injections by which a coordinated stimulus outperforms a series of equivalent isolated actions, both in terms of expenditure requirements and trade deficits. An application to the Western Balkans region is provided for the period 2004-2011.

Cross-country Sector Productivity Changes: A decomposition and an Empirical Analysis

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This paper employs a strategy of nonparametric generalized kernel estimation to decompose the change in labour productivity in a given country-sector into: growth of the capital-labour ratio, growth of "technology" and growth of "TFP". Asymmetric changes are found, both across industries and countries. On average, there is a good degree of convergence in capital per capita stock for many countries, first of all the Asian Tigers, while technology gaps do not vary so much. We then use a set of candidate variables to analyze the determinants of the estimated changes, and compare our results

with traditional growth empirics, where a wide notion of productivity is used. Overall, our analysis points to the existence of strong shortcomings in using homogeneous coefficients in cross-countries and cross-sectors comparisons.

The Determinants of Growth Volatility in European Regions

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In this paper we analyze the determinants of growth volatility of per capita GDP of 257 regions belongs to 25 EU countries in the period 1992-2008. We find that volatility has a downward trend during the whole period with the presence of three peaks. In 1992, as consequences of the crisis of European Monetary System; in 2000 for the introduction of the euro and finally, in 2008 for the world finance crisis started in 2007. The clear downward trend from 2000 to 2007 (i.e. the euro period) support the idea of a stabilizing role of the introduction of a common currency in EU (but we do no consider the recent sovereign debt crisis in the analysis). As determinants of growth volatility, we find robust evidence that, as expected, the size of the regions measured by total regional GDP has a negative and significant effect on output volatility, whereas population density has a positive effect. This implies that small regions are statistically more prone to volatile growth rate than large one. Both the cyclical components, the growth rate of employment and the investment rate have a negative and statistically significant relationship with GRVol. Regional output composition also has explanatory power with a positive and significant impact on growth volatility for all sector except the mining sector. At country level, Government expenditure decrease growth volatility, by contrast, the size of financial sector, measured by the stock of domestic credit to private sector on GDP, has a positive effect on volatility. The positive and significant coefficient for inflation rate is consistent with the literature on the real effect of monetary shocks. Finally, we find evidence of spatial clustering.

The Price of Development

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The positive correlation between cross-country price level and per-capita income is generally regarded as a stylized fact renowned as the Penn-Balassa-Samuelson effect. This paper provides evidence that the price-income relationship is non-linear and that it turns negative in low income

countries. The result is robust along both cross-section and panel dimensions. Additional robustness checks show that biases in PPP estimation and measurement error in low-income countries do not drive the result. The different stage of development between countries can explain this new finding. The paper shows that a model linking the price level to the process of structural transformation captures the non-monotonic pattern of the data.

B3 – Pioneers of growth theory

Chair: Luciano Fanti, University of Pisa

Causality and interdependence in Pasinetti's works and in the modern classical approach

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The formal representation of economic theories normally takes the form of a model, that is, a system of equations which connect the endogenous variables with the values of the parameters which are taken as given. Sometimes, it is possible to identify one or more equations which are able to determine a subset of endogenous variables priorly and independently of the other equations and of the value taken by the remaining variables of the system. The first group of equations and variables are thus said to determine causally the remaining variables. In Pasinetti's works this notion of causality has often been emphasized as a formal property having the burden to convey some deep economic meaning. In this work, we will go through those Pasinetti's works where this notion of causality plays a central role, with the purpose to contextualize it within the econometric debate of the Sixties, to enucleate its economic meaning and to show its connections with other fields of the modern classical approach.

Symmetric Off-Diagonals in the Pasinetti Pure Labour Model

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In Pasinetti's pioneering work on structural economic dynamics, a key contribution is in the modelling of disproportional growth in the composition of industrial sectors. Differential change in productivity and consumption patterns leads to uneven development and structural change in the long term: all captured in a multisectoral framework in which there is a social division of labour and specialization between sectors. In the most abstract pure labour version of this approach (Pasinetti 1993) labour is the only factor of a production, a simplification that allows a clear focus on structural change, together with foundational insights into the structure of savings, consumption, and debt. The purpose of this paper is to introduce a new result concerning the intersectoral flows of commodities between sectors in the Pasinetti framework. It will be shown that the matrix of intersectoral flows is

symmetric. The flow of commodities from sector to is identical to the flow in the opposite direction between and . A structural constraint is hence identified in the Pasinetti system that is specific to the intersectoral relationships between sectors.

A Reconciliation of Kaldor's Stylized facts and the Kuznets Process: A Turnpike Approach

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Kaldor (1961) found that aggregated labor share exhibits constant over time. On the other hand, Kuznets (1965) observed the shift of population from traditional to modern activities. In other words, although the macro-based observation exhibits the balanced evolution of aggregated labor share, the industry-based observation shows the unbalanced evolution of industry labor's share. We have witnessed recent theoretical models attempted to reconcile of these contradictory facts. For example, Echevarria (1997), Kongsamut, Rebelo and Xie (2001), Acemoglu and Guerrieri (2008) and Young (2010) are among others. I will set up a neoclassical two-sector optimal growth model with technical progresses based on the model studied by Uzawa (1964) and Ara (1969). I will apply the turnpike theory developed by Scheinkman and McKenzie instead of Uzawa's analytical method. I will demonstrate that 1) there exists an optimal steady state (OSS) where each sector's output grows at the sector specific technical progress and 2) the optimal path with a sufficient initial stock will converge to the OSS. The first result implies that the OSS exhibits Kaldor's stylized facts, and the second one implies that the optimal path will feature the Kuznets Process through its transition period.

Are Kaldor and Kuznets facts theoretically compatible?

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Growth literature has introduced knife-edge conditions on the value of the parameters to explain the Kaldor and Kuznets facts. In particular, Kongsamut, Rebelo and Xie (2001) show that in a growth model with Stone-Geary preferences these two sets of facts are compatible when the sum of the value of the minimum consumption requirements is equal to zero. In this paper, by introducing a state variable that measures the intensity of consumption requirements, we show that the Kaldor and Kuznets facts can be explained in a growth model with non-homothetic preferences even though

strong knife-edge conditions are not introduced. Using numerical examples, we also show that the fit of the simulations increases when we assume that the sum of the value of the minimum consumptions is positive and large and when we assume that the sectoral labor income shares are different across sectors.

C1 – Growth Empirics II

Chair: Alberto Bucci, University of Milan

The role of the cost and preference factors in the change of consumption composition

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Empirical evidence suggests that consumption composition, as well as valued added composition, has changed significantly in the last decades. The general-equilibrium framework, which generally characterizes macroeconomic models, allows the identifications of at least three forces affecting composition dynamics: relative prices dynamics, income effect induce related to the growth process, and relative preferences dynamics. This paper aims at eliciting and assessing the importance of these three factors. While the first two factors have been largely analyzed in the literature, less relevance has been attributed to the change in tastes. Compared to the most of the empirical literature, which estimates expenditure shares with constant preference weights, I estimate the first order approximation of the optimal conditions that determine the choice between consumption goods in order to introduce dynamics also in preferences.

Real cost reduction in an individual industry. A price-accounting approach in theory and in practice

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The available measures of productivity increase and of wage dispersion stem from different fields of investigation; their mutual consistency can hardly be checked, because industrial TFP and the output-deflated changes in wage rates are calculated on the basis of disjoint data sets concerning, respectively, quantity and price developments. Yet the technological roots of observable distributional changes are widely recognized (e.g. Acemoglu, 1999, Card & DiNardo, 2002, Autor, Katz & Kearney, 2006). Thus an industry-level measure of 'real cost reduction' based on the same data as those used in the analysis of a changing distribution may be useful. In this paper we propose such a price-accounting method. Our method has the additional advantage that the industrial 'real

cost reduction' (positive or negative) due to changes in relative commodity prices or to a change in taxation/subsidies can be distinguished from productivity increase more neatly than using 'growth accounting' measures.

On the Modeling of Size Distributions When Technologies Are Complex

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Most technologies used nowadays are complex in the sense that the production processes (and products themselves) consist of a large number of components which might interact with each other in complementary ways. Based on this insight, the current paper assumes that the total productivity of any given technology is functionally dependent on the individual productivities of its n components as well as the elasticity of substitution between them, σ . Productivities of the components are in turn drawn from certain predefined probability distributions. Based on this set of assumptions, we obtain surprisingly general results regarding the implied cross-sectional distributions of technological productivity. Namely, drawing from the Central Limit Theorem and the Extreme Value Theory, we find that if the number of components of a technology, n , is sufficiently large, these distributions should be well approximated either by: (i) the log-normal distribution – in the case of unitary elasticity of substitution between the components ($\sigma = 1$), (ii) the Weibull distribution – in the case of perfect complementarity between the components (the “weakest link” assumption, $\sigma = 0$), (iii) the Gaussian distribution – in the (empirically very unlikely) case of perfect substitutability between the components ($\sigma \rightarrow \infty$), (iv) a novel “CES/Normal” distribution – in any intermediate CES case, parametrized by the elasticity of substitution between the components ($\sigma > 0, \sigma \neq 1$).

Spatial structure and environmental sustainability in Italy

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This work aims to investigate whether the spatial structure may have a role for the environmental sustainability of regional urban systems. Nowadays spatial structures, polycentricity in particular, have assumed an increasing importance in both in territorial analysis and policy agendas of countries and regions. Structure has also been capturing the interest of spatial economics. In fact, urban systems have been subject to massive changes in the last decades, both from a physical and an economic point of view. Changes in the production processes promoted new forms of urban development, such

as dispersion and polycentricity. Thus, it has been argued that also agglomeration economies, as well as diseconomies, are changing. Those are affecting environmental sustainability of spatial systems. In particular, the literature generally assumes that urban dispersion (sprawl) is harmful for the environmental performances of cities and regions, mainly because it stimulates habits such as the use of private transportation, causing greenhouse emissions and congestion, which turns into collective costs and diseconomies. In particular, we assess the effects of spatial structure on greenhouse car emissions and on energy use. The findings will allow to reflect on the effectiveness of polycentricity and dispersion for the ecological footprint of urban systems and, more in general, on the structural complexity of urban systems.

C2 – Regions, space and agglomeration

Chair: Alessandra Pelloni, University of Rome II

Industrial, regional and income structural change in Russian Federation: past tendencies and proposals for future

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The paper analyzes industrial, regional and income structural changes in Russian Federation. Author calculates the prices' and production factors that underlie changes in industrial structure. These calculations show that some industries (such as government services and healthcare) increased their share in the GDP solely due to prices' factors, some other (financial services) due to rapid production growth. Some trends of structural change in Russian economy are typical to other countries also (decreasing share of manufacturing and agriculture and increasing that of services), some other are Russian specific (lagging of mining in spite of high world prices for raw materials and abnormal increase of government services). By means of regressions estimated on regional cross-section data factors that underlie regional and industrial structural changes are defined more precisely. The regressions results support the previous factor analysis and allow making conclusions that structural changes will slow in future and that their impact on future economic growth is controversial. Regression parameters and rank correlations show that there is strong evidence neither for convergence nor for divergence among Russian regions.

Regional income convergence, skilled migration and productivity response: Explaining relative stagnation in the periphery

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The existence of agglomeration effects has challenged the understanding of income convergence for cities, but the relative stagnation in the periphery has received less attention. The outmigration from the periphery to cities is an important characteristic of the growth process in most countries, but recent research finds that labor mobility has limited effect for income convergence. We expand the two-region neoclassical growth model to account for heterogeneity of labor with respect to productivity and mobility. The formulation is motivated by the influence of human capital for innovation and

technology adoption. Skilled labor outmigration from periphery regions reduces the capacity to generate productivity growth. Calibration of the regional growth model shows that skilled outmigration has quantitative importance for the growth performance of the periphery with realistic parameters. The analysis of the consequences of capital shock reproducing backwardness shows how migration equilibrium can be reestablished only after prolonged relative stagnation.

A review of multiregional new economic geography models

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In this paper, it will be presented and overview of the existing multi-regional New Economic Geography (NEG) models. The NEG approach aims to explain how industrial economic activity tends to spread or agglomerate across space. Originating from Krugman’s Core-Periphery model (1991, JPE), several NEG model variants have been proposed in the literature. The main ingredients are increasing returns and goods differentiation in the manufacturing production; transport costs which determines geographical distance / separation between two regions; and, finally, factor mobility between regions driven by an economic incentive. In the C-P model, the migration decisions of workers depend on real wage differentials. Workers enter in the production process both as a fixed and as a variable factor. In the footloose entrepreneurs (FE) model, proposed by Forslid and Ottaviano (2003, JEG), the mobility hypothesis involves entrepreneurs / human capital. This model is much more suitable to describe the integration processes taking place in Europe. NEG analyses highlight that in the long run several regional distributions of economic activity are possible. Notwithstanding the fruitfulness of the NEG approach, a clear shortcoming is a lack of realism of some of its assumptions (Fujita, Fujita & Thisse, RSUE, 2009). In particular, the analysis is often limited to the two-region case. As stated recently by Fujita and Thisse (2009), the existence of more than two regions may involve effects (i.e. spatial spillover effects, hub effects) that cannot emerge in a two-region context.

Financial development and agglomeration

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The New Economic Geography (NEG) literature has paid little attention to the role of the banking industry in affecting the spatial distribution of the economic activity. The paper aims to fill this gap by analysing how the degree of regional financial development may influence firms’ locational

choices (see Martin, 2010). In a context where the world capital market is becoming increasingly integrated this could seem an irrelevant issue; if a rise in the international capital mobility and legal order homogeneity promote a rise in the uniformity of credit conditions across regions, then the regional financial development will not limit firms' locational choices. However, empirical evidence supports the opposite view: Guiso et al. (2004) show that the likelihood of starting a new business or the ratio between new firms and population are positively affected by the local financial development; where the degree of financial development is measured by firms' accessibility to external funds. We modify the footloose entrepreneur (FE) model by introducing a banking sector, preserving all the other assumptions of the standard FE model.

C3 – Environment

Chair: Carlos Ibarra, Universidad de las Americas Puebla

Biodiversity Management with R&D-based Growth

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This document examines regions which employ labor and land in production, improve their productivity by devoting labor to R&D and promote biodiversity by conserving land from production. There is a self-interested central planner that is prone to lobbying and (i) dictates the regions to increase their area of conserved land in uniform proportion or (ii) sets a non-distorting uniform subsidy to conserved land. Comparing (i) and (ii) yields following results. Regulation (i) promotes biodiversity and welfare. The replacement of regulation (i) by the subsidy (ii) decreases welfare. Applied to NATURA 2000 in the EU, this suggests that regulation is the appropriate authority for the Commission.

Transition to sustainability: Scenarios towards a low-carbon economy

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Some recent publications of European Union (see, for instance, European Climate Foundation, 2010) recognize as a priority goal for Europe, the development of an efficient energy system. “A Roadmap for moving to a competitive low carbon economy in 2050” (European Commission, 2011) prescribes a reduction of CO₂ emissions by 80% in 2050 with respect to the level of 1990. This goal can be achieved through large investments in three different strategies: the development of a renewable energy sector, improvements in energy efficiency, direct abatements of GHG emissions. This paper aims to understand the dynamics that the investment strategies for achieving such emission standards may generate on the economic system, by investigating their effects on several macroeconomic indicators (for instance, rate of growth, unemployment, wages, etc.). A second important goal of the paper is to evaluate whether some policies, better than others, can deal with the strong uncertainty characterizing the future evolution of the economy. We build a macroeconomic model where energy is an essential input and strategies for a low carbon economy shape in many ways the path of the economy. In this respect, we contribute to the growing body of literature in the field of ecological macroeconomics (Victor and Rosenbluth, 2007; Jackson 2009; D’Alessandro et al. 2010; Jackson

and Victor, 2011; Rezai et al. 2013).

Institutional enforcement, environmental quality and economic development: a panel VAR approach

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The links between pollution, institutions and income may be not so univocal as argued in literature, as the variables may influence and reinforce each other. Since the understanding of this relationship is important for identifying environmental policies, we investigate the long-run relationship between carbon dioxide emissions, rule of law and income. A panel-VAR is estimated for the period 1996–2008 for 33 high-income countries that include advanced, emerging and former transition economies. Results demonstrate a positive reverse causality relationship between rule of law and income, indicating that higher income implies stronger rule of law and vice-versa. The rule of law has a negative relationship with pollution, so that enforcement of rules is a condition to control emissions. Interestingly, no causality relationship is found for pollution and income. We affirm that the rule of law matters both for economic growth and for environment, working as a go between.

Natural Resources and Environmental Stochastic Sustainability

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This paper explores environmental processes and their connection with human activities, with a specific focus on benefits and costs in using natural resources. It is assumed that sustainability is included in the driving criteria of economic decisions, i.e.: the optimal choices are grounded also on the well-being of future generations. Indeed the time scale of environmental processes is longer than that usually taken for economic decisions and involves several generations. The policymaker maximizes an aggregated intergenerational expected utility under the dilemma of present consumption/conservation of the natural resources for the future. To face this problem, a stochastic optimization model is developed. In accord with standard environmental economic theory, we assume a jump-diffusion dynamics for the stock of natural resources and infinite time horizon. Extensive numerical experiments provide a validation of the theoretical results.

C4 – Theory II

Chair: Kazuhiro Yuki, Kyoto University

Non-linearity in the relationship between human capital and growth

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In the paper we propose a simple theoretical model from which non linearities in the relationship between growth and human capital accumulation emerge and offer empirical evidence for the presence of such nonlinearities. We imagine an economy characterized by three types of capital: physical capital, productive human capital and unproductive human capital. The level of unproductive human capital depends on its past value and on an externality to investment in its productive counterpart. This externality is more sizable the lower the quality of institutions in the country. On its turn this quality depends on the ratio between productive and unproductive human capital. In this simple framework multiple equilibria arise, the choice between them depending on the initial level of human capital. We empirically validate our analysis, by adopting the threshold regression model introduced by Hansen (2000). In all our regressions, the variable of interest is the average growth of GDP per capita, while we use human capital as the threshold variable. The procedure is divided in two steps: the first consists in testing for the presence of a threshold in human capital. If the null of no such presence is rejected the next step consists in estimating the threshold regression parameters. In our empirical analysis we employ two similar datasets.

Structural change and the existence of optimal strategies in models with several consumption goods

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This paper is concerned with the existence of optimal or equilibrium solutions in continuous time multisector growth models in which the rates of growth differ across sectors. Typical examples of these models are those used in the recent literature on structural change (Ngai & Pissarides, 2007; Acemoglu & Guerrieri, 2008). Under mild conditions, we derive a formula for the “critical discount

rate” (i.e., the supremum of the discount rates for which discounted utility is bounded) which is a natural generalization of the formulae that have been established for the aggregate Ramsey-Koopmans-Cass model (Koopmans, 1967; Brock & Gale, 1969) and for models with a Von Neumann irreducible technology (Magill, 1981). In the formula, the rate of growth on which the “critical discount rate” depends is an average of the rates of growths of the different final sectors, with the weights that in turn depend only on infratemporal preferences. We provide various applications of the formula to the analysis of structural change models.

Adam Smith on Demand and Structural Change

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Previous studies suggest that demand forces (as well as widely accepted supply-side factors) work in Smith’s ‘historical’ account of economic development. Expanding on this line of inquiry and yet giving corrections of misinterpretations, this paper claims that ‘endogenous’ demand is at play in Smith’s theory of natural progress, providing a historical case study of early modern England for an illustration of the demand-based model of natural progress. Smith drew attention to the dynamics of growth with respect to the role of demand and the changing sectoral structure of economies in the model of natural progress as well as in that of historical progress. In this vein, Smith’s approach to economic development differs from Hume’s historical account of it. First of all, it is significant that Smith drew attention to a change in income distribution and expenditure pattern brought about by economic growth. With the general expansion of income, changes in patterns of income distribution and consumption (i.e., a larger share of wages and profits in national income at later stages of development) that favor manufactured items boost economic growth and lead an agrarian economy to move toward manufacturing and commercial economies. Second, it is now worth noticing that along with the progress of wealth an endogenous demand grounded on a part played by socio-psychological power as distinct from material motives furnishes a taste for manufactured goods more than for agricultural goods.

D1 – Crime and informal economy

Chair: Henry Grabowski, Duke University

Organized Crime and Poverty Traps

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The aim of this paper is to study the relationship between poverty, the allocations of public funds and the presence of organized crime. Our basic idea is that the presence of a strong extortionary Mafia, which dominates the government's economic policies, may lock the society into a persistent poverty. The starting point of this work is that organized crime has preference for those economic activities which are easier to extort, as traditional and low productivity sectors, or a direct preference for a large public sector (see Schelling, 1984 and Lavezzi, 2008). Hence, organized crime tries to distort the structure of public spending by corrupting or threatening public officials who supervise the allocation of public funds. As highlighted by the recent work of Barone and Narciso (2012), investigative reports indicate four main ways through which mafia may distort the allocation of public funds: first, creation of fictitious firms with the sole scope of applying for public funding; second, by corrupting or threatening public officials who supervise the allocation of public funding; third, by colluding with the local public sector; fourth by exploiting its connections with the local banks who engaged in the payment of public funds (see Barone and Narciso, 2011). In this paper we develop a theoretical model which focuses principally on the second and third channel. Our study is related to the literature on corruption, public spending and economic growth.

Informality and Structural Transformation

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In this paper, we investigate the evolution of the informal sector through the course of structural transformation. To this end, we develop both a three-sector and a five-sector dynamic general equilibrium (DGE) model, which can simultaneously account for structural transformation between agriculture, industry and services, and between the informal and formal sectors. First, we incorporate the informal sector into an otherwise two-sector (agriculture and non agriculture) DGE model. Then, we augment this model and build a five-sector DGE model extending the non-agricultural sector into

industry and services, to separately account for the evolution of informality in these two sectors. The calibrated model performs remarkably well in accounting for the evolution of the sectoral employment shares and the size of the informal sector. Finally, we use panel data econometric tools to investigate the empirical relationship between structural transformation and the informal sector and find a strong negative relationship between the size of non-agricultural sector and informality.

Extortion, firm's size and the sectoral allocation of capital

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In this paper we provide a theoretical and empirical analysis of extortion, which represents a typical activity of organized crime. In particular, we study extortion in the framework of a principal-agent model, where the criminal organization cannot perfectly observe firms' productivity. The theoretical predictions of the model are tested against a unique database on extorted firms in Sicily, which contains informations about amounts of extortion and individual firms' characteristics.

D2 – Theory III

Chair: Andrea Mario Lavezzi, University of Palermo

A general characterization of neoclassical production functions and an application to physical capital-based growth models

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We show how the space of neoclassical production functions maps into the space of elasticity of substitution functions. The method allows to derive every neoclassical production function of class C2. We also present a simple, sufficient condition for a production function to satisfy Inada conditions. As an application, we prove that the Solow model with steady capital-augmenting (or investment-specific) technical change is asymptotically balanced if and only if the capital share converges to a non-trivial limit when the capital-labor ratio tends to infinity; this result complements the famous steady-state growth theorem due to Hirofumi Uzawa and Joan Robinson. Finally, we discuss how these findings permit to interpret major swings in US growth since 1947.

Consumption composition and macroeconomic dynamics

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We analyze the transitional dynamics of a model with heterogeneous consumption goods where convergence is driven by two different forces: the typical diminishing returns to capital and the sectoral change inducing the variation in relative prices. We show that this second force affects the growth rate if the two consumption goods are not Edgeworth independent and if these two goods are produced with technologies exhibiting different capital intensities. Because the aforementioned dynamic sectoral change arises only under heterogeneous consumption goods, the transitional dynamics of this model exhibits striking differences with the growth model with a single consumption good. We also show that these differences in the transitional dynamics can give rise to large discrepancies in the welfare cost of shocks between the economy with a unique consumption good and the economy with multiple consumption goods.

From stationary state to endogenous growth: International trade in the mathematical formulation of the Ricardian system

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In the *Essay on Profits* and in his private correspondence with Malthus of the late 1814-mid 1815 Ricardo considered free importation of wage-goods as the most effective growth-enhancing policy. In order to catch this aspect into the mathematical formulation of the Ricardian system first introduced by Pasinetti (1960) we produce a variation of that model where the economy is not a closed one, but a small open one. We show that this economy is characterized by endogenous growth since the growth rate is bounded from below.

D3 – Structural dynamics

Chair: Pasquale Commendatore, University of Naples “Federico II”

Structural Change and Stagnation in the Mexican Economy

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A fundamental way of inquiry about growth, theory and practice, has been the notion that growth is essentially associated to processes of structural change. In an entirely different branch of the discipline, something like development theory, we find a rather influential branch of theory associated to the practice of “structural change policies”, on the most associated to macroeconomic performance and a number of views associated to globalization and trade. In this last branch of theory, it would be very difficult to find a trace of the line of thought that arise out of the theory of structural change, as in Pasinetti (1993) and many others like Baranzini and Scazzieri (1990) and Landezman & Goodwin (1992). Nevertheless many countries, particularly countries like Mexico, have been subject to structural change policies for over thirty years. Nevertheless that is story of deception. The push for 2 “new structural change policies” is again in place through strong policy pressure urging for more “structural reforms”. My own assessment is that even if those policies have failed to bring jobs, wealth, growth and stability to the country, nowadays we have to face the fact that the country changed. Not as it has been prized by the World Bank, for example in Balassa (1985), but giving a new configuration of structure of production, productivity performance, employment, unemployment, bad quality of employment (so called informal), and a sort of structural stagnation condition, that has extended for nearly 30 years. (Ortiz (2007)).

Outsourcing and the Rise in Services

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This paper investigates the impact of outsourcing on sectoral reallocation in the U.S. over the period 1947-2007, and on the rise in services in particular. Roughly 40% of the growth of the service sector comes from professional and business services. This is an unusual industry as more than 90% of its output is an intermediate input to other firms, and it is where most of the service outsourcing activity is concentrated. These facts are essential to understanding the structure of the economy: professional and business services have experienced an almost fourfold increase in their forward linkage, the

largest change in input-output linkages over the past 60 years. Using a simple gross output accounting framework, I calculate the contribution of the change in the composition of intermediates and their sourcing mode to the reallocation of employment across sectors. I find that the evolution of the input-output structure accounts for up to 33% of the increase in service employment, and professional and business services outsourcing alone contributes almost half of that amount.

Trade, Reform, and Structural Transformation in South Korea

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We develop a quantitative framework to measure the impact of trade and trade reform for industrialization. Our hybrid two-country, three sector model of structural change features trade in agricultural and industrial products, and a pattern of comparative advantage determined by international differences in sector specific labor productivities, tariffs and subsidies. We calibrate the model to data from South Korea and the OECD, inputting time-series of sector-specific labor productivities, tariffs and export subsidies, and simulate its predicted employment shares for the three major sectors of economic activity in Korea from 1963 through 2000. The model successfully generates substantial reallocations of labor from agriculture into industry, and into services. The correlations of predicted with actual employment shares in agriculture, industry, and services are 0.963, 0.757, and 0.937. The model over-predicts the decline in agriculture's employment share by 3 percentage points, and underpredicts the growth in industry's share by 7 percentage points. Nonetheless, the model's match to the magnitude of industrialization and Korea's overall structural transformation deteriorates substantially in three counterfactual experiments; eliminating a) international trade, b) international labor productivity differentials, and c) Korean tariff reform increase the model's sum of squared prediction errors by 91 percent, over 100 percent, and 27 percent respectively.

Non-homothetic preferences and industry directed technical change

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Sectoral data features (i) changing relative expenditures of different sectors, (ii) non-constancy in relative prices and (iii) long-run trends in relative TFP growth rates across sectors. We provide a

tractable theory of industry directed technical change, which is able to reconcile these findings. In doing so, this paper emphasizes the importance of directed technical change, nonhomotheticity of preferences and structural change as a long-run phenomenon. Using the input-output tables of the U.S., our theory helps us to reconstruct how structural change in terms of final consumption affects the market size of industry value-added. Arguing that the structural change across broad categories of final consumption is exogenous from the perspective of an individual firm, this gives us an instrument for the industrial market size (at the value added level). We then empirically test for the market size effect of induced innovation. Our findings suggest that a 1 percent increase in an industry's market size (relative to GDP) leads to an increase in the TFP growth rate of about 0.3 percentage points over five years.

D4 – Knowledge production and diffusion

Chair: Xavier Raurich, Universitat de Barcelona

Knowledge proximity and network formation

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This paper suggests a unified, knowledge-based explanation of inter-organizational R&D collaboration, and its network properties, which are revealed by a growing body of evidence especially in fields of activity where the pace of technological progress is faster (Hagedoorn 2002, Powell et al. 2005, Hagedoorn and Roijackers 2006). Our explanation of collaboration incentives, bears a close relation with, but is not equivalent to, Nooteboom's notion of a optimal cognitive distance of one R&D organization relative to another (Nooteboom 1992, 2000); it is a generalization of Cowan and Jonard (2009), in that collaboration incentives depend not only on the pair-wise matchings, but also on the mis-matchings, between the knowledge repertoires of the organization concerned. It is argued that knowledge overlap and novelty are complementary inputs of any R&D alliance, and that the complementarity ratio depends on the incremental or radical nature of the research activity. The relation between the specialization of knowledge endowments, the nature of R&D, and the structural properties of the resulting coalition networks are investigated.

Industrial Concentration, Technological Change, and Knowledge Spillovers in the European Union

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The present study focuses on the influential factors for industrial sectors' concentration patterns in the European Union both from an angle of technological and institutional change. The analysis is of empirical nature, employing data from the European Commission's EU KLEMS Database for the years from 1970-2005, running diverse regression analyses (panel regression, quantile estimation, co-integration analysis) and statistical tests (structural break tests) to figure out to which extent technology driven progress and externalities arising from knowledge spillovers influenced industrial concentration in the European Union. The past literature provides evidence for factors of scale economies, input-output-linkages and to a certain degree also resource availability explaining concentration patterns. We add insight to the literature by controlling for the influence of techno-

logical progress and knowledge spillovers in explaining concentration patterns of European industry. A more detailed sectoral analysis and differentiation between the period before and after the European Single Market Enactment yields distinct results. Knowledge spillovers appear to be important for concentration patterns of all industry groups, though to a higher extent for the high-technology sectors. These sectors are also most influenced by technological similarity prior to the European Single Market Enactment while showing an impact of technological differences after the Enactment. An explanation for this tendency might be seen in the protectionism mechanisms of EU industrial policy over the past time which prevented industries to take part in the technological processes and adjustments to international competition. In a work in progress, further results will be gained from quantile regressions, allowing for different strengths of relationships along the distribution of industrial concentration. The results of this study provide politicians with an idea about the impacts of a more flexible industry and technology policy for the development of economic structures across the European Union.

Exploring the role of firm and local capabilities in the spatial evolution of innovation

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This paper aims at exploring the evolution of the firms' and provinces' product space in Turkey during the period 2005-2009, its determinants and the existence and relevance of path dependencies. We test whether the path of new products' introduction is related to the current firm and/or province product structure that reflects the existing productive abilities. A new strand of literature, called the "Capabilities Theory", highlights indeed the importance of the concept of capabilities, i.e. non-tradable inputs, as drivers of the changes in the country's product network. This theory, whose the works of Hausmann and Hidalgo (2009, 2011) are important contributions, relies on two relevant assumptions. First, the production of each good requires a number of specific capabilities and products vary in their skill and knowledge requests. Second, countries have at their disposal different varieties and mixes of capabilities that are conveyed in their production. It follows that the developments and changes in the productive structure of an economic system are not random and accidental but are deeply path dependent and rooted in the existing productive abilities (Hidalgo et al., 2007). We contribute to the literature by extending these insights from the country level to both the province and firm level. For the first time, at our knowledge, we exploit firm level product data in order to detect the new products introduction by firms and provinces and disclose its linkages with the latter's current product space. We then focus on the break represented by the initiation of a new production, that may be more or less radical. Our work delivers important hints about the structural change process. From one side, the local and pre-existing product space proves to be an important predictor of

the future innovation and production perspectives at both micro and micro level.

Horizontal and Vertical Technology Spillover of Foreign Direct Investment: An Evaluation across Indian Manufacturing Industries

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This paper explores the horizontal and vertical technology spillover effect of foreign direct investment (FDI) across Indian manufacturing industries. On the basis of Pedroni cointegration tests, we find that technology spillovers can be transmitted via all kinds of intermediate factors. We find that the horizontal foreign presence and vertical foreign presence have exclusive penetration effect to spur labor productivity and technology spillover across Indian industries. Furthermore, intermediate factors like technology import intensity, inter-industry technology import intensity, R&D intensity and inter-industry R&D intensity raise technology spillover and labor productivity across Indian manufacturing industries.

E1 – Institutions and long-term development

Chair: Enrico Bellino, Università Cattolica del Sacro Cuore

Landowning, Status and Population Growth

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This paper considers the effects the landowning and land reforms on economic and demographic growth by a family-optimization model with endogenous fertility and status-seeking. A land reform provides the peasants with strong incentives to limit their family size and to improve the productivity of land. Even though the income effect due to the land reform tends to rise fertility, a strong enough status-effect outweighs it, thus generating a decrease in population growth. The European demographic history provides supporting anecdotal evidence for this theoretical result.

The uncertain destiny of proprietary capitalism: Family connections and the allocation of entrepreneurial talent

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Two general conclusions can be drawn from the historical and empirical economic research on family firms: (1) the impossibility to identify a sole and certain destiny for proprietary capitalism in the process of economic development regardless of the cultural and institutional in which family firms operate; (2) the coexistence in the same or in similar economic environments of well-performing and underperforming family firms. In this paper, we present an overlapping generations macroeconomic model which accommodates both the polarization of family firms into two groups with different levels of profitability and the uncertain destiny of proprietary capitalism between crony capitalism and entrepreneurial capitalism depending on the economy's institutional framework and technological dynamism.

Central Banks and Democracy

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In an analysis of modern central banks, at least three areas of study can be identified: their governance, their function as supervisor agencies, and their function as the parties responsible for monetary policy. These three areas are interconnected, but they can be investigated separately. This paper seeks to provide an in-depth review of the first, the central banks' governance, aiming to single out all those features that shape "democracy" as a crucial issue of central banking. We are interested not in a formal concept of democracy, which would bring us to examine the national central bank in relation to its parliament or political power, but in the substantive concept of democracy emerging from the fact that central banks are progressively concerned about their relationship with the general public. Today, central banks react directly to public opinion. Consequently, we will explore a many-sided concept of democracy by examining those aspects of central banks' governance touching the democratic sphere, i.e., independence, accountability, transparency, and credibility. Although these are typically themes of governance, they are also interesting to economists in that all these issues have a strong economic meaning that makes governance a full economic component of the central banks' activity. In our discussion of these topics, we aim to keep theory and discourse together. We intend to explore the theoretical issues explaining and guiding central bank's policies even as we investigate central banks' positions as they have been concretely presented by the bankers themselves. To this end, we chose to examine the speeches of central bankers from 1997 to 2013, attempting to grasp how the position of central banks has been changing with regard to the above issues of governance and democracy.

World Interest Rates, Inequality and Growth: an Empirical Analysis of the Galor - Zeira Model

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In this paper we study an aspect of the growth model of Galor and Zeira (1993) model so far not analyzed in the literature: the consequences of a decrease in the world interest rate. First of all, we show that in the theoretical model a decrease in the world interest rate can generate multiple equilibria, a fact that has a differential impact on within-country income inequality depending on

the initial conditions of the country (poor/rich with high/low inequality), and that can increase world income polarization. We show that these empirical facts, i. e. a decrease in world interest rates and an increase in the world income polarization, characterize the period 1985-2005. In the same period we show that, in accordance with the predictions of the model, inequality decreases in initially poor countries, while it increases in initially rich countries. However, the estimated relationships between inequality and human capital accumulation (the variable linking inequality to growth in the Galor-Zeira framework) differ between poor and rich countries, being significantly negative only in the latter group. Overall, we provide empirical support to the presence of a two-regime dynamics of inequality, human capital accumulation and growth, and highlight a factor so far not considered among the determinants of world income polarization, the world interest rate.

E2 – Corruption and crime

Chair: Luciano Fanti, University of Pisa

The Impact of Corruption on Economic Growth in Algeria

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The impact of corruption on economic growth has been a subject of intense debate over the past two decades; numerous studies have produced conflicting results: some of them suggest that corruption is highly and negatively correlated with economic growth, these studies are as follow: Moe Farida and Fredoun Z. Ahmadi-Esfahani(2008) studied the effect of corruption on economic growth in Lebanon between 1985-2005 by using the ordinary least squares (OLS) estimates , the main results indicated that corruption influences adversely the economic growth through decreasing productivity, also indirectly by restricting investment. Similarly, Bali moune-Lutz, Mina and Ndikumana, Léonce (2008) employed the GMM estimation technique in a panel framework for testing the impact of corruption on economic growth through public and private investment channels in a sample of 33 African countries from 1982 to 2001. Findings suggested that corruption hampers economic growth directly through affecting the public investment, especially when bureaucrats want to exploit the public spending for their interest. As well as, A.Cooper Drury, Jonathan Kriekhaus and Michael Luszti g (2006) investigated the impact of corruption on accelerating economic growth for more than 100 countries over the period 1982 -1997 by using the panel data analysis. Their analysis revealed that corruption has an insignificant and negative effect on economic growth. Furthermore, Alfredo Del Monte and Erasmo Papagni (2001) explored the impact of corruption on economic growth through public expenditures channel by implementing a dynamic panel data approach for 20 regions in Italy during the period 1963-1991.

A critical analysis of public administration reform and risk of corruption and crimes

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When there is inadequate transparency, accountability, and probity in the use of public resources, the state fails to generate credibility and authority. As a consequence, systemic corruption undermines the credibility of democratic institutions and counteracts good governance. In the light of this ap-

proach, several policies, at national and international level, have been established in promoting public sector reforms. The mid 1990's was characterized by a renewed appreciation of the role of the state. One of the main issues of the reform of the public sector was decentralization. Decentralizing responsibilities and resources by giving more autonomy to local governments, manage resources more efficiently, increasing the opportunities for state-society interactions. Decentralization, also, creates more opportunities for local autonomy and responsiveness at local level; but it also gives subnational governments more room to fail if specific steps are not taken to build local technical and managerial capacity. Although, the decentralization is key issue in promoting an effective service delivery, several studies have found a correlation between decentralization and corruption. According to the main literature, even in a decentralized democratic political systems there is a danger of penetration of state institutions by organized crime, a phenomenon that is described as state capture. The way in which organized crime usually "captures" the state is by coopting public institutions leads to a bias in the design and implementation of public policies. In the light of this debate, the aim of this paper is to critically analyze the role of reforms promoted by local governments and its implications in Italy. The relationship between state capture and organized crime are also examined in the present study. Many contradictions emerge: more deregulation, autonomy and decentralization often are not associated to less, but more, corruption and/ or other criminal phenomena.

On the Reasons to claim the Resistance to the Extortion Racket: an Empirical Assessment

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This work aim to assess the determinants of the decision about joining an anti-racket association on a sample of firms of Sicily, mainly in the city of Palermo where hystorical presence of organized crime is one of the most relevant in Italy and abroad. By an economic point of view it means sending a signal to the market in order to elicit critical consumption behaviours. Some potential negative effects could lie in the reaction of racket chiefs and in market relationship with firms not joining the same association. We use a unique database collected from several sources: antiracket list, budget data, census and toponymic characteristics. With this self selected case group, by using sampling techniques, we obtain a random control group from the rest of population and assess the determinants to be a case, through discrete choice models.

Uncovering unobserved economy: a general equilibrium characterization

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This paper gives a theoretical contribution to model and dynamically analyze the two major components of unobserved economy: underground and criminal economy. Both underground and criminal firms evade taxes, but criminal firm also produces an illegal good. We build a DSGE model with two goods, the legal and the criminal good. The former can be produced either by the sunlight and the underground firm. The sunlight firm is subject to distortionary taxation, whereas the underground firm and evades taxation. The criminal good is produced only by the criminal firm, that evades any form of taxation in addition to violating the criminal law. All sectors are subject to stochastic uncorrelated technology shocks on total factor productivity. The demand side of the economy is populated by an infinite number of households with preferences defined over legal good consumption, criminal good consumption, public expenditure and labor services on a period-by-period basis. The first order conditions together with an appropriate parametrization are able to characterize underground and criminal economy as a function of regular economy, whose data are known. Hence, the first result of the model is the construction of a high frequency estimated time series for underground and criminal economy. We perform this analysis for Italy on quarterly data, over the sample 2000:01-2010:04. We find that in Italy unobserved economy have an average weight on regular GDP between 1/4 and 1/3, whereas money laundering is between 10% and 12%. The dynamic behaviour of the model shows that: 1) underground production has a greater relative volatility than regular production; 2) criminal production has a greater relative volatility than underground production and regular production. Moreover, both underground and criminal production appear to be negatively correlated with GDP, showing that they conserve as a sort of buffer for the economy, whenever the business cycle is in downturn phases.

E3 – Fiscal and monetary policy

Chair: Roy Cerqueti, University of Macerata

Optimal Income Taxation and Public Provision of Productive Inputs

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We characterize optimal non-linear income tax and optimal public provision of a productive input when gross earnings are unobservable and determined by exogenous productive capability and endogenous input investment. In the benchmark two-classes case, the public provision is welfare improving with respect to pure non-linear taxation only if the poor opt for the public program for lower levels of publicly provided input than the rich. Otherwise, pure non-linear taxation is the only relevant redistribution tool. The optimal public provision scheme is pure opting-out unless self-selection constraints require too low publicly provided input. The optimal public provision program does not affect the shape of optimal non-linear income taxation, unless self-selection constraints limit the scope for public provision. In the multi-classes extension, the scope for public provision shrinks. We numerically assess the impact of public provision on optimal marginal tax rates.

Fiscal Policy Impacts on Growth: an OECD Cross-Country Study with an Emphasis on Capital Rates Accumulation

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A growing body of literature tests the effects of different tax structures on long-run economic growth. We argue that these tests do not properly account for endogeneity between supposedly independent variables. We apply finite mixture model framework to test if education choice behaviors are affected by different tax mixes. The results obtained show that tax rates alone does not explain dynamic for human capital rate.

Factor Income Taxation in a Horizontal Innovation Model

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We consider the optimal factor income taxation in a standard R&D model with technical change represented by an increase in the variety of intermediate goods. We show that the model has no transitional dynamics. Redistributing the tax burden from labor to capital will in most cases increase the employment rate in equilibrium. This has opposite effects on two distortions in the model, one due to monopoly power, the second to the incomplete appropriability of the benefits of inventions. Their relative momentum determines the sign of the welfare effect of the redistribution. We show that, for parameter values consistent with available estimates, the optimal tax rate on capital will be sizable.

Monetary Policy and Structural Change

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This paper examines the medium-run effects of monetary policy. It analyses the consequences of distorted (in the sense of exogenously influenced) real interest rates we can currently observe in many industrialized countries. In our model, too low real interest rates can prevent economic recovery in the presented model because they allow relatively unproductive firms to stay in the market. Monetary policy should increase interest rates after a negative macroeconomic shock forcing a reallocation of production factors to more productive firms. We show the existence of a trade-off between the short-run and medium-run preferences of the central bank as a consequence. From a welfare perspective, the impact of monetary policy depends on the long-run interest rate relative to the welfare maximizing interest rate because of the love for variety within the model.

E4 – Labor Market

Chair: Luca Spataro, University of Pisa (Italy) and CHILD

Gender gaps in the labor market and aggregate productivity

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This paper examines the quantitative effects of gender gaps in entrepreneurship and labor force participation on aggregate income and productivity. We calibrate and simulate an occupational choice model with heterogeneous agents in entrepreneurial ability and show that gender gaps in entrepreneurship affect aggregate productivity negatively, while gender gaps in labor force participation reduce income per capita. If all women are excluded from entrepreneurship, average output per worker drops by almost 12% because the average talent of employers drops, while if all women are excluded from the labor force, on the other hand, income per capita falls by almost 40%. In the cross-country analysis, we find that gender gaps and their implied income losses are quite similar across income groups but differ importantly across geographical regions, with a total income loss of 27% in Middle East and North Africa and a 14% loss in Europe and Central Asia.

Graduated without passing? The employment dimension and LDCs prospects under the IPOA

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Africa's recent economic performance has sparked renewed optimism about the continent's development prospects, although the positive trend in growth figures has not been commensurate with social development outcomes and employment creation. Against this background, whilst the Istanbul Programme of Action for the LDCs (IPOA) implicitly acknowledges the link between structural transformation, employment creation, and inclusive growth, in practical terms its formulation is such that policy-makers' attention is often captured by GDP growth figures and graduation prospects (i.e. its two main quantified targets). Combining secondary labour force data across age classes, with different growth scenarios based on historical employment elasticities of growth, the paper tests whether achieving the IPOA target of 7% growth rate until 2020 would be adequate for African Least Developed Countries (LDCs) to generate sufficient employment. The preliminary results show that, even if the IPOA target were achieved, several African LDCs may not be in a position to productively employ all the new entrants in the labour market, unless their pattern of growth shifts towards more

diversified employment-intensive sectors. In other words, the pattern of growth is as critical as its quantitative level. This conclusion highlights the need to put the employment dimension at the centre of LDC development prospects, over and beyond GDP growth targets and graduation scenarios.

Integrated sectors - diversified earnings: the impact of international outsourcing on skill-specific wage convergence in EU27

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This paper assesses the impact of international outsourcing/offshoring practices on the process of wage equalization across manufacturing sectors in a sample of EU27 economies (1995-2009). We discriminate between heterogeneous wage effects on different skill categories of workers (low, medium and high skill). The main focus is on the labour market outcomes of vertical integration, so we augment a model of conditional wage convergence through the inclusion of sector-specific broad and narrow outsourcing/offshoring indices based on input-output data (World Input Output Database, April 2012 release). Two-way relations between trade and wages are addressed through the use of a gravity-based sector-level instrument. We find no evidence supporting unconditional skill-specific wage convergence in EU sectors. In a conditional setting, (slow) wage convergence takes place, but international outsourcing plays no role in wage equalization. Even though regression results indicate that offshoring reduces the wage growth of domestic medium- and low-skilled workers, we show that this negative effect is economically insignificant.

Wage Inequality Effects on Labor Productivity

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Can be wage inequality harmful for productivity growth? We present a simple theoretical model according to which workers' concern on wage inequality affects their labor productivity. So labor productivity decreases if wage differentials among workers is increasing. Then, after to test for Panel Granger Causality we estimate a dynamic panel data estimator (Arellano-Bond), and we find that wage inequality reduces country's labor productivity. Moreover, the variables given by GDP per capita, annual hours worked per worker and total population employed over total population are of significant effect over labor productivity. This in a sample of 34 OECD countries from 1995 to 2007.

INDEX OF PARTICIPANTS

Index of Participants

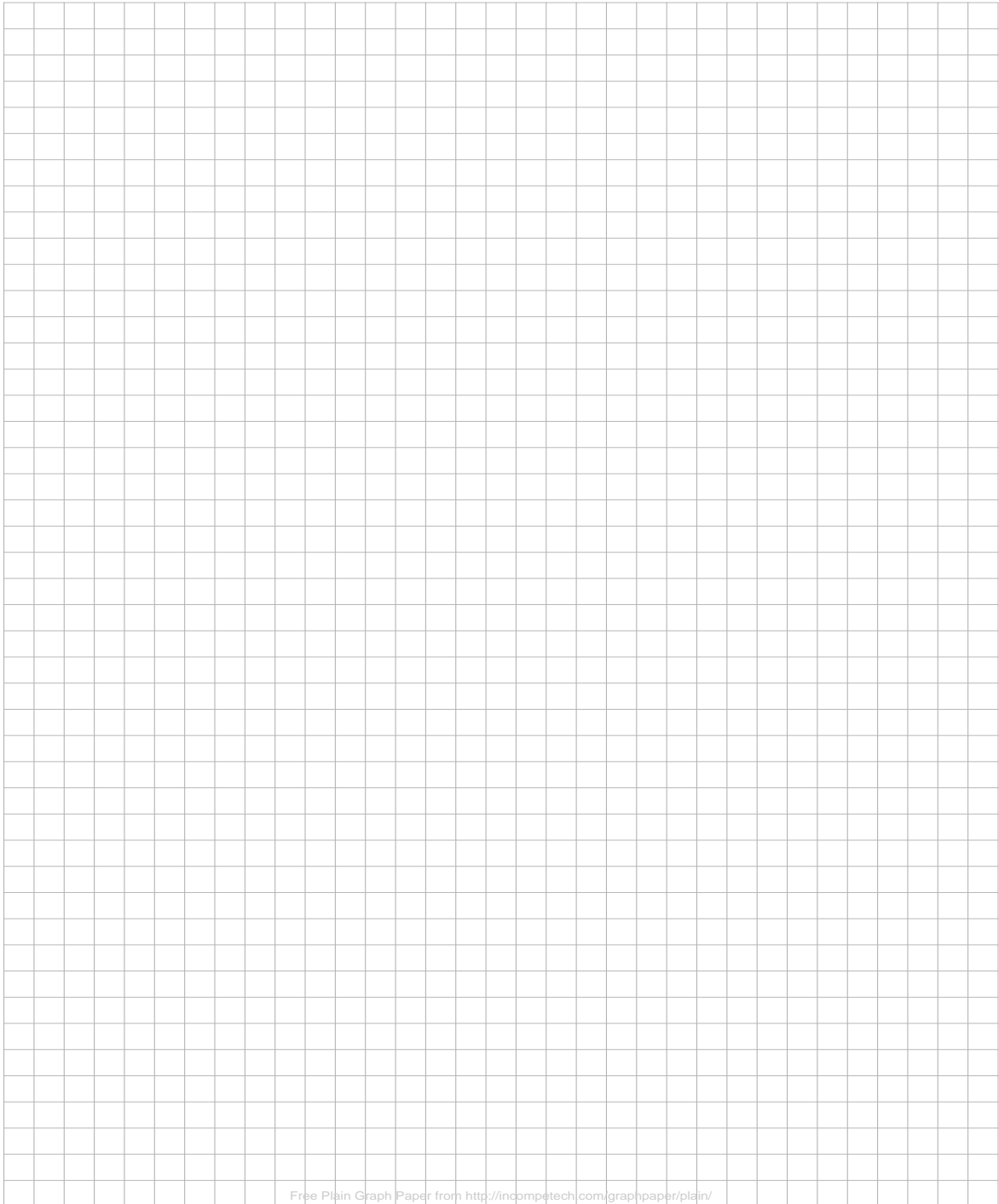
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Addessi, William	C1	B2	
Alonso-Carrera, Jaime	D2	A2	B2
Argentiero, Amedeo	E2	E2	
Balletta, Luigi	D1	A3	
Bassetti, Thomas	E3	C2	
Battisti, Michele	E2	D1	
Behera, Smruti	D4	E3	
Bellino, Enrico	B3		E1
Berlingieri, Giuseppe	D3	D3	
Boppart, Timo	D3	B3	
Brito, Paulo	A1	D1	
Bucci, Alberto	B1	D3	C1
Burgalassi, David	C1	A3	
Caminati, Mauro	D4	E1	A1
Carbonari, Lorenzo	A2	B1	
Castellano, Rosella	A1	C3	
Cerqueti, Roy	C3	D1	E3
Chaib, Bounoua	E2		
Commendatore, Pasquale	C2	C2	D3
D'Alessandro, Simone	C3	A2	
Del Gatto, Massimo	B2	E1	
Elgin, Ceyhun	D1	D1	A3
Fanti, Luciano	D2 - D2		E2
Felice, Giulia	A3		
Fiaschi, Davide	A1		
Fioroni, Tamara	D1	E4	
Freni, Giuseppe	C4	B1	B1
Garbellini, Nadia		A1	
Gauci, Adrian	E4	A3	

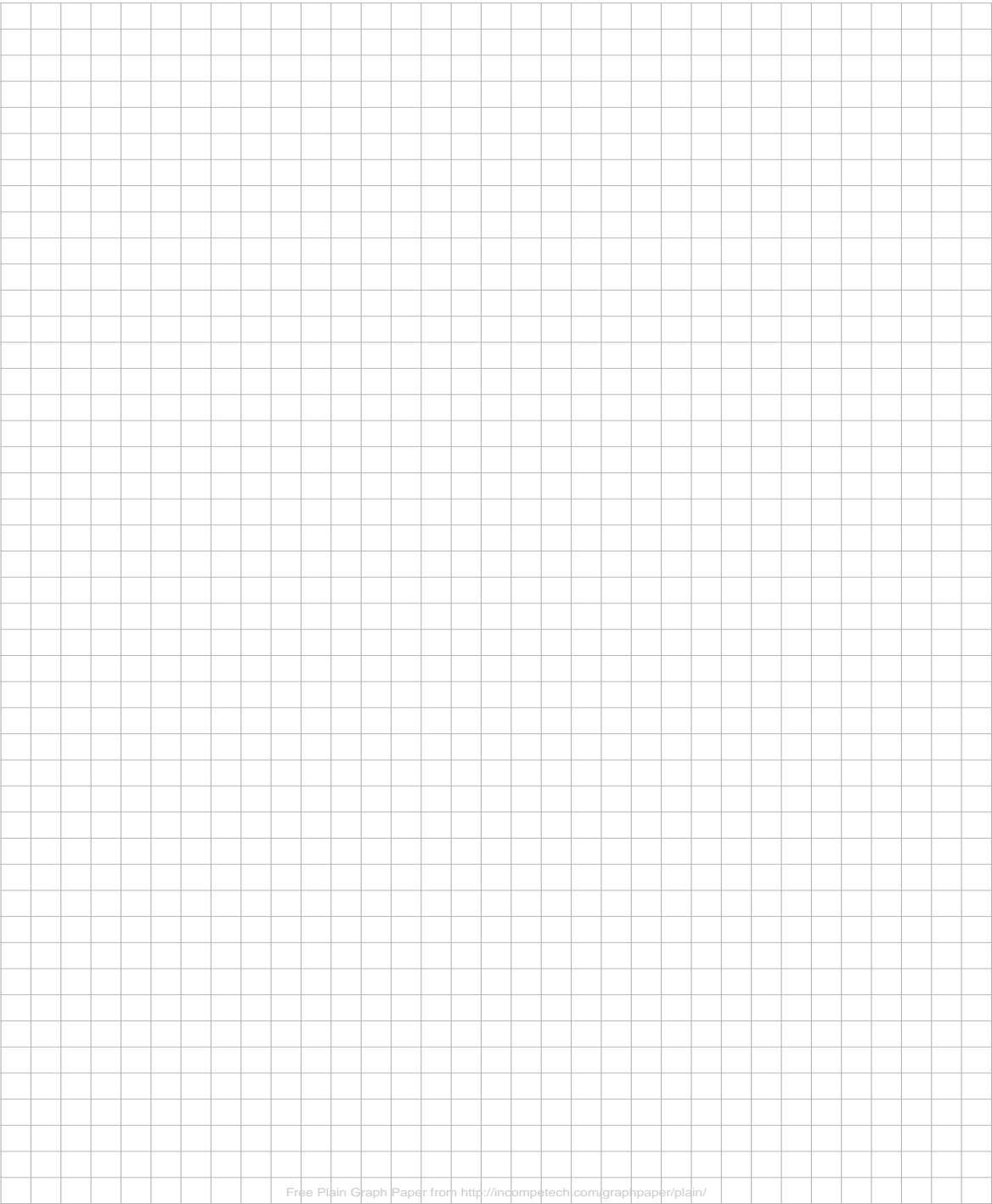
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Gianmoena, Lisa	B2	E4	
Gori, Luca	A2	E3	
Grabowski, Henry	B1		D1
Growiec, Jakub	C1	A1	
Gualerzi, Davide	B1	E3	
Hassan, Fadi	B2	A3	
Ibarra, Carlos	A3	D3	C3
Infante, Davide	C3	E2	
Kim, Kwangsu	C4	B3	
Krenz, Astrid	D4	E1	
Lavezzi, Andrea Mario	E1	B2	D2
Lehmijoki, Ulla	E1	C3	
Lo Turco, Alessia	D4	B1	
Lombardo, Vincenzo	E1	D4	
Luzzati, Tommaso		C3	
Mitsek, Sergey	C2	D4	
Opocher, Arrigo	C1	B3	
Ortiz, Etelberto	D3	C3	
Palokangas, Tapio	C3	E3	
Parenti, Angela		C1	
Parteka, Aleksandra	E4	D4	
Pelloni, Alessandra	E3	C2	C2
Pomini, Mario	A1	B1	
Purificato, Francesco	C2	E1	
Raurich, Xavier	B3	A2	D4
Sánchez Carrera, Edgar	E4	A2	
Schnell, Fabian	E3	D3	
Senouci, Mehdi	D2	C4	
Signorino, Rodolfo	D2	C4	B3

Index of Participants

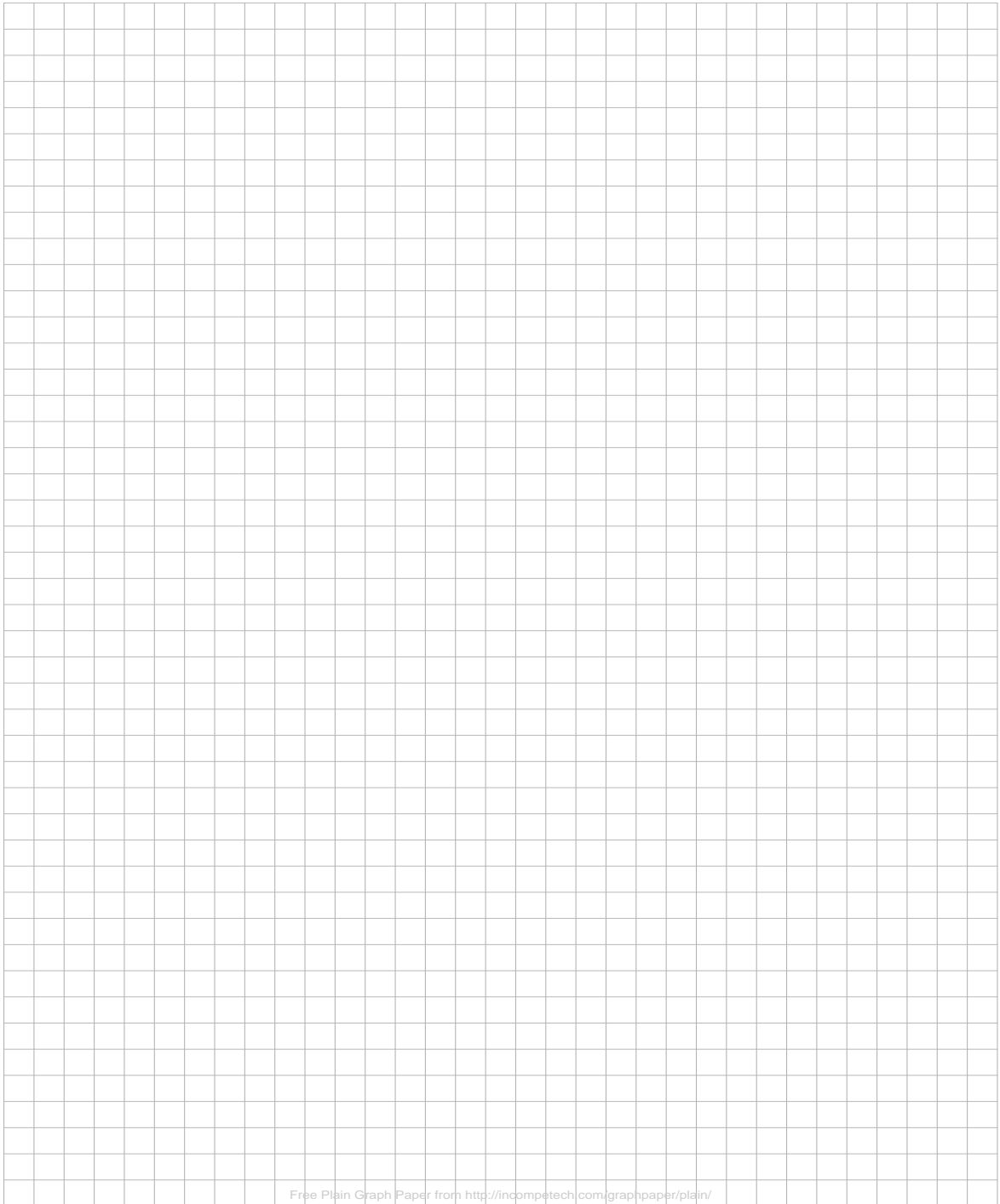
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Spataro, Luca	A2	B2	E4
Sposi, Michael	A3	B2	
Stokke, Hildegunn	C2	E4	
Takahashi, Harutaka	B3	C4	
Talamo, Giuseppina	E2	E2	
Tamberi, Massimo	A3	C1	
Teignier, Marc	E4	C1	A2
Toffoli, Lorenzo	A2	E2	
Trigg, Andrew	B3	B3	
Trovato, Giovanni	E3	C1 - D4	
Tusset, Gianfranco	E1	D2	
Valenti, Fabrizio	C4	A1	
Verma, Rubina	D3	A1	
Wirkierman, Ariel	B2	C2	
Yuki, Kazuhiro	B1	E4	C4

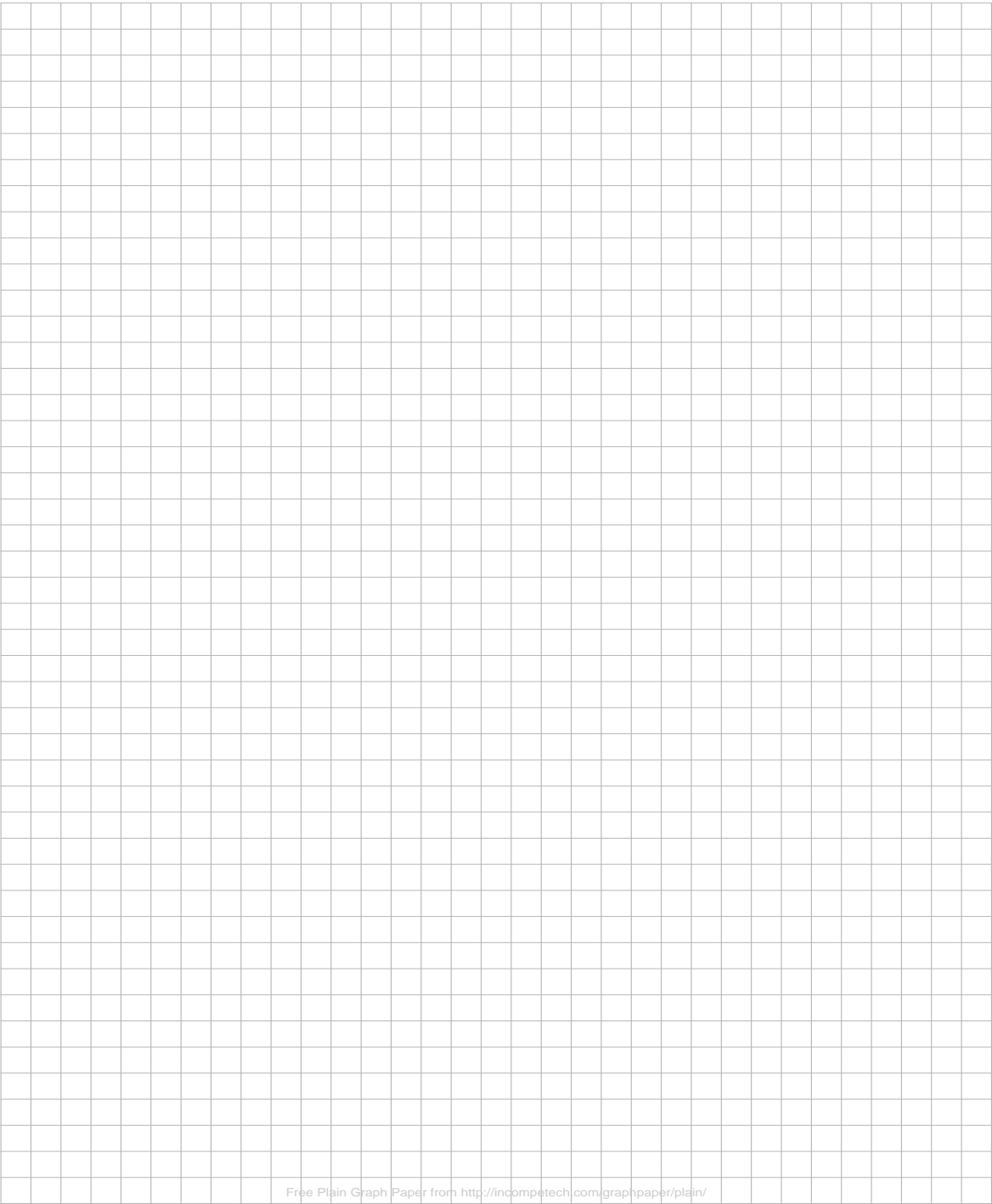
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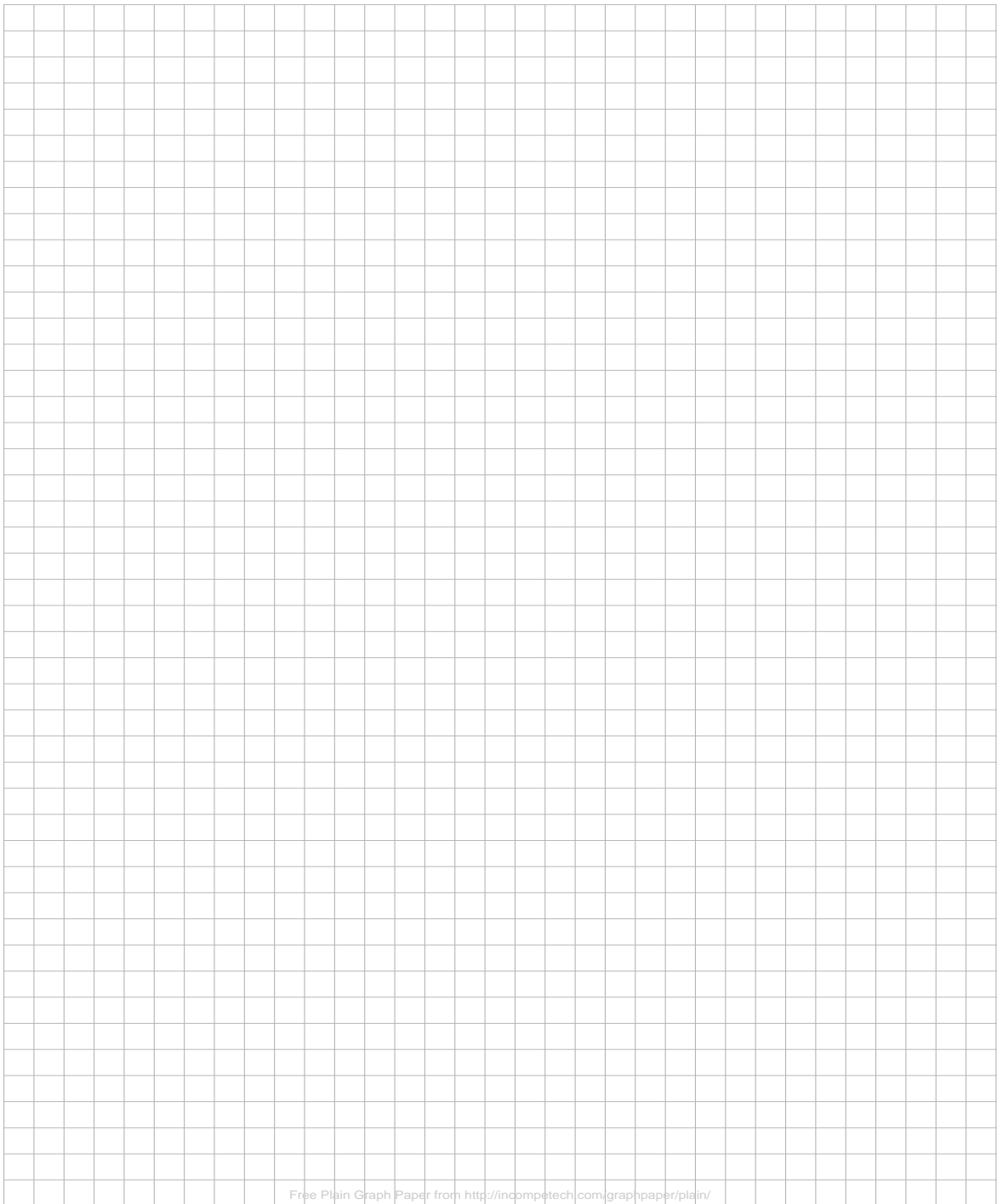


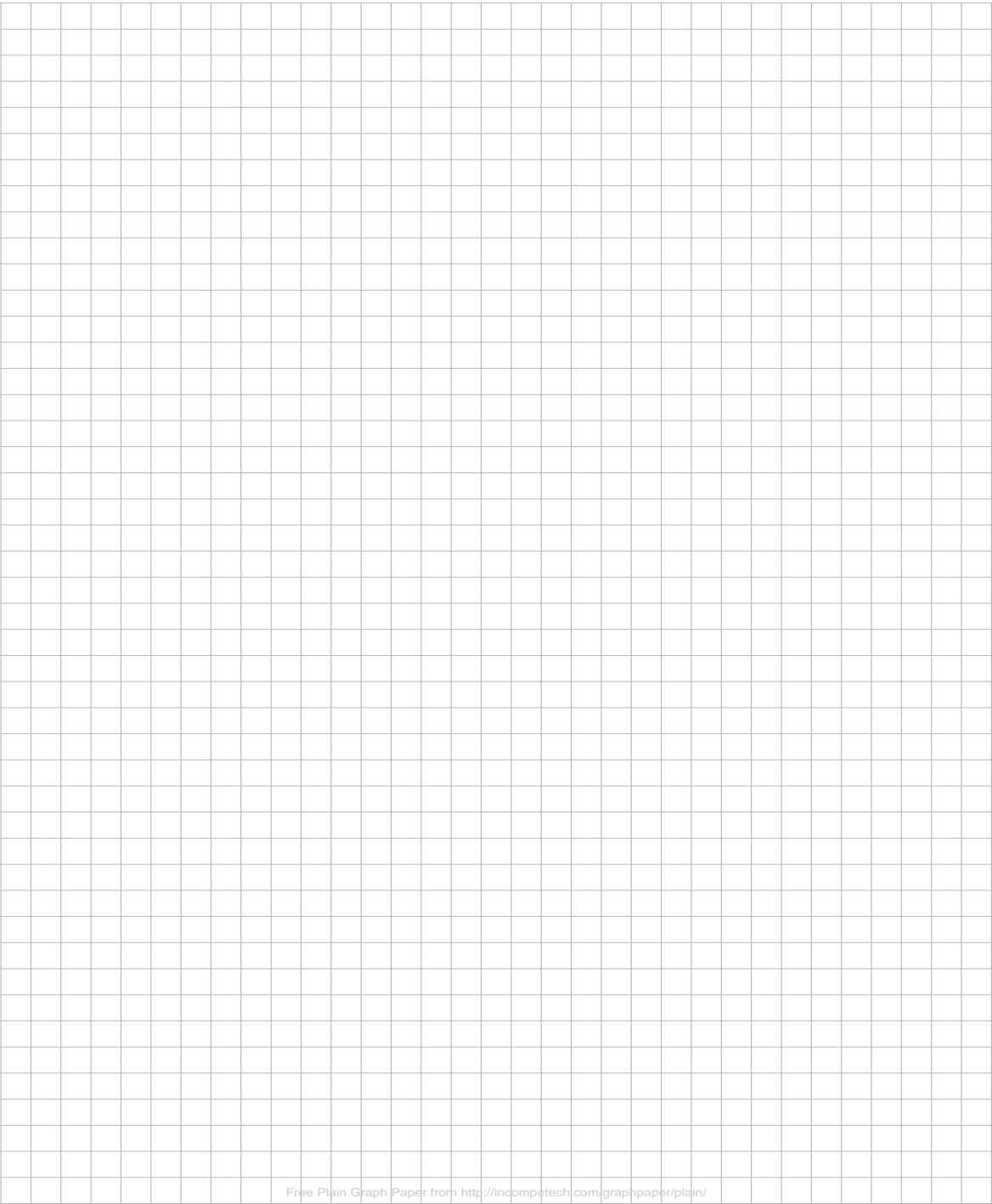
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