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Université Libre de Bruxelles and Luiss

March, 2023

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References
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1 Cover letter

I am a macroeconomist working on growth, cycles, international macroeconomics and their interaction with heterogeneity (of different forms). I am contributing to this literature with several works. In "Inequality and the Medium-Term Business Cycle", D'Amico (2022), I build a heterogeneous-agents (HA) endogenous-growth (EG) model (HAEG) to study the implications of households heterogeneity for the medium-term business cycle. I

find that real HAEG model economies display less deep recessions and more contained booms than their representative agent counterparts, over the medium-term business cycle. The smoothing in GDP standard deviation is quantitatively relevant and estimates range between 7% to 21%. This difference increases with (i) the elasticity of varieties to R&D and the introduction of (ii) illiquid assets, (iii) countercyclical unemployment risk, (iv) endogenous labor supply and (v) nominal rigidities. Monetary policy shocks instead are amplified by households heterogeneity, but not at the medium-frequency.

Instead, in "Ruling Out Stagnation Traps", D'Amico and Nisticò (2021), I (joint with S. Nisticò) build on a well-known fact in the entrepreneurship literature: of the fastest-growing firms in the U.S. as of 2009 listed in *Fortune 500*, over 50% were established during a major recession or a bear market (Strangler, 2009). Motivated by this fact, we show empirical evidence of a non-monotonic relationship between employment and productivity growth. This evidence supports earlier theoretical contributions such as King and Robson (1989), DeLong (1990) Aghion and Saint-Paul (1991), Hall (1991), Gali and Hammour (1992), Caballero and Hammour (1994), Saint-Paul (1997) and Aghion and Saint-Paul (1998), whom build models in which recessions have positive, cleansing effects, mainly through an intertemporal substitution effect (or opportunity cost). These are various facets of the theory on the "recuperative powers of capitalism" (Schumpeter, 1934) that dates back at least to Schumpeter (1939; 1942). However, these previous works lacked empirical evidence: we fill this lacuna.

We then build a New Keynesian endogenous growth model which embeds heterogeneous innovations (i.e. both horizontal and vertical) consistent with our empirical evidence. We show that heterogeneity in entrepreneurial ability is key in giving rise to multiplicity of equilibria; in particular, our model features a low-growth and high-unemployment equilibrium (as in Benigno and Fornaro, 2018) and a high-growth and high-unemployment equilibrium (i.e. a job-less growth recovery equilibrium as in Schmitt-Grohe and Uribe, 2017). Our framework suggests that policies targeted at preventing these equilibria should ease the transition into entrepreneurship.

In my work "World Trade Stagnation", D'Amico (2021), I study the link between the stagnation in world trade growth that followed the Great Trade Collapse of the 2009, trade balance reversals in the 1997-2019 period and my novel evidence of emerging economies (EMEs) catching up with advanced ones (AEs) in terms of total factor productivity. In order to shed light on the joint productivity/trade dynamics I build a two-country model with firms heterogeneous in productivities à la Melitz (2003), endogenous growth and international R&D spillovers that accounts for these facts. I find that innovation and trade

dynamics are closely tied and trade balance reversals are consequences of asymmetric needs of funding stemming from innovation efforts. Trade stagnates after the 2008 because of stagnant proximity to the technological frontier of EMEs (with respect to AEs).

I am currently working on a fourth paper, titled "Inequality, Growth and Monetary Policy[1]". In this work I show, using Current Population Survey and Consumer Expenditure Survey data, that income and consumption inequality in the U.S. have strong countercyclical medium-frequency fluctuations. I link this evidence to the countercyclical behavior of human capital accumulation, which, using CPS data, I show to be heterogeneous across the income distribution. In particular, low-income households decrease investment in human capital when a recession hits while high-income households increase it. Being human capital a slow-moving variable, this heterogeneous behavior could explain the medium-frequency fluctuations observed in income inequality. Also, since human capital is hard to insure, those medium frequency fluctuations in income inequality may transmit also to consumption inequality. I subsequently build a heterogeneous agents model with investment in human capital that rationalizes this cyclical behavior. I then study implications for monetary policy as a stabilization tool.

[1]I thank Pierpaolo Benigno, Robert Kollmann, Claudio Michelacci and Joseph Zeira for useful discussions on this project.

2 CV

March 2023

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Academic Positions

Luiss University, Postdoctoral Fellow in Economics, 2022-present
University of Bern, Visiting Postdoctoral Fellow, Spring 2023 (scheduled)

Doctoral Studies

Université Libre de Bruxelles and Luiss University
Ph.D., Economics, Spring/Summer 2023 (expected)
Advisors: P. Benigno and R. Kollmann

University of Bern
Visiting Ph.D. Fellow, 2022

Einaudi Institute for Economics and Finance (Bank of Italy)
Doctoral training, 2020

London School of Economics
Tools for Macroeconomists, "The Essentials" and "Advanced Tools", 2019

Pre-Doctoral Studies

Université Libre de Bruxelles
M.A., *avec grande distinction*, Economics, 2018
Advisors: P. Weil and R. Kollmann

Luiss University
M.A., Economics, 2017
Advisors: S. Nisticò and P. Reichlin
B.A., *summa cum laude*, Economics and Management, 2015

Teaching Experience

LUISS UNIVERSITY

2021-present	Teaching Assistant: Macroeconomic Analysis (Prof. P. Reichlin), graduate, English
2021-present	Teaching Assistant: Macroeconomics (Prof. S. Nisticò), undergraduate, Italian
2020	Tutor for professional athletes: Macroeconomics, BA and MA, English and Italian

Research Experience and Other Employment

BANK OF ENGLAND

Summer 2023 (scheduled) Ph.D. Intern

LUISS UNIVERSITY

2021 Research Assistant for Prof. Pietro Reichlin

DEPARTMENT OF ECONOMICS AND FINANCE, LUISS GUIDO CARLI

2018-2021 Tutor

CASSA DEPOSITI E PRESTITI AND LUISS BUSINESS SCHOOL

2019 Junior Researcher

Scholarships and Awards

2022	Mobility grant, PRIN 2019 (P.I. Pierpaolo Benigno)
2019	ESRC, Scholarship (Tools for Macroeconomists, LSE)
2018-2022	Luiss University, Doctoral Scholarship
2017	MIUR, (Italian Ministry of Education, Universities and Research) International Mobility Scholarship (MA double degree programme)
2017	European Union, International Mobility Scholarship (MA double degree programme)
2012-2018	Regione Lazio, Scholarship (full tuition waiver and living allowance, BA and MA)
2012-2018	Villa Nazareth College, Scholarship (BA and MA)

Languages

English (C1), Italian (native)

IT Skills

MATLAB, Dynare, Python, Stata, R, Julia, LaTeX, Microsoft Office

Working Papers

"Inequality and the Medium-Term Business Cycle", 2022, (Link)

Abstract: I show that heterogeneous agents endogenous growth (HAEG) model economies display less deep recessions and more contained booms than their representative agent counterparts over the medium term business cycle. The smoothing in GDP standard deviation (over the medium term business cycle) ranges around estimates of 7% and 21%. This difference increases with (i) the elasticity of varieties to R&D and the introduction of (ii) illiquid assets, (iii) countercyclical unemployment risk, (iv) endogenous labor supply and (v) nominal rigidities. Nonetheless, at the business cycle frequency, HAEG economies behave as in Krusell and Smith (1998): output time series are as if

generated by a representative household.

"Ruling Out Stagnation Traps", with S. Nisticò, 2021 (first draft, May 2019), (Link)

Abstract: This paper presents empirical evidence in support of a non-monotonic relationship between employment and productivity growth. It studies the implications of such non-monotonicity in a model where growth occurs endogenously through both vertical innovation and reallocation into entrepreneurship, with nominal rigidities and monetary policy. It characterises the conditions for the existence of multiple steady-state equilibria featuring low growth and unemployment, and the role of economic policy to bring the economy towards the full-employment steady state. It shows that economic policies targeted at easing business creation activities can both prevent the occurrence of unemployment steady states and help the economy to get out of them.

"World Trade Stagnation", 2021, (Link)

Abstract: Emerging economies (EMEs) account for most of the world GDP and global growth nowadays, their trade flows with advanced economies (AEs) doubled during the mid- 80s till the 2012 and their investment in R&D increased by 26.4 % per year between 1997-2008, almost catching-up with AEs productivity around the 2009 and displaying the same AEs TFP growth rate thereafter. These developments were accompanied by trade balance reversals and by a rapid increase in world trade (the so called ?hyper-globalization?) which culminated in the Great Trade Collapse of the 2009 and a subsequent stagnation up to nowadays. I present a two-country model with firms heterogeneous in productivities a' la Melitz (2003), endogenous growth and international R&D spillovers that accounts for these facts. It is found that innovation and trade dynamics are closely tied and trade balance reversals are consequences of asymmetric needs of funding stemming from innovation efforts. Trade stagnates after the 2008 because of stagnant proximity to the technological frontier of EMEs (with respect to AEs).

Work in progress

"Inequality, Growth and Monetary Policy", 2022

Further Education

2021 UNIVERSITAT POMPEU FABRA AND EABCN
Formulating and Estimating DSGE Models, Martin Eichenbaum (Northwestern University) and Mathias Trabandt (Goethe University Frankfurt)

2021 LUISS UNIVERSITY
Empirical Macroeconomics, Giorgio Primiceri (Northwestern University)

2021 NATIONAL BANK OF BELGIUM
Non-linear methods for the solution and estimation of Dynamic General Equilibrium models, Fabio Canova (Norwegian Business School), Junior Maih (Norges Bank), Wouter J. den Haan (LSE)

2020 BANK OF ITALY
International Macroeconomics and Finance, Matteo Maggiori (Stanford University)

2020 EINAUDI INSTITUTE FOR ECONOMICS AND FINANCE
Continuous Time Macroeconomics II, Galo Nuño (Bank of Spain)

2019 EINAUDI INSTITUTE FOR ECONOMICS AND FINANCE
Continuous Time Macroeconomics I, Paolo Porchia (Luiss)
Advances in Macroeconomics, Gauti Eggertsson (Brown University)

2018 BANK OF ITALY
Distributional Macroeconomics, Benjamin Moll (Princeton)

Personal

Born on October 11, 1993.
Italian citizen.
Married to Silvia, father of Tommaso Maria (born on May 2021).

References

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Robert Kollmann
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Completed Ph.D. courses in macro

Course	Instructor
Advanced Macroeconomics I	Pierpaolo Benigno
Advanced Macroeconomics II	Facundo Piguillem
Monetary Economics	Francesco Lippi
Dynamic Macroeconomics	Luigi Paciello
Firm Dynamics	Salomé Baslandze
History of Macroeconomics	Michel De Vroey
Advances in Macroeconomics	Gauti Eggertsson
Continuous Time Macro I	Paolo Porchia
Continuous Time Macro II	Galo Nuño
Empirical Macroeconomics	Giorgio Primiceri
International Macro and Finance	Matteo Maggiori
Tools for Macroeconomists	Wouter den Haan, Pontus Rendahl and Petr Sedlacek
Furmulating and Estimating DSGE models	Martin Eichenbaum and Mathias Trabandt
Non-linear methods for the solution and estimation of DSGE models	Fabio Canova, Junior Maih, Wouter den Haan
Distributional Macroeconomics	Benjamin Moll

3 Motivation

I am applying to attend this workshop because it would provide me with the tools and deep understanding of methods to formulate, solve and estimate efficiently heterogeneous agents models, which are at the hearth of my current research. In my paper "Inequality, Growth and Monetary Policy" I build a heterogeneous agents model with investment in human capital, so that income inequality is partly exogenous (idiosyncratic productivity states) and partly endogenous (through hours worked and human capital investment). The model is then used to understand how the presence of households heterogeneity and human capital accumulation shapes the transmission of macro shocks and how shocks themselves feed back into inequality. The first empirical regularity that the model will be tested against is in reproducing the observed US medium frequency countercyclical fluctuations in income inequality. Subsequently, it is assessed how the baseline insurance mechanisms built within the model allow the transmission of medium frequency fluctuations in income inequality to consumption inequality. The model is then extended to encompass mechanisms that proved essential to match the US business cycle and is estimated. With the estimated model in hands, it is investigated how historical shocks contributed to the development of income and consumption inequality at both the business cycle and medium frequency. The analysis then turns to the study of implications of the interaction between inequality and human capital accumulation for the conduct of monetary policy.

Another instance in which I will study general equilibrium heterogeneous agents models is in the project I will carry out as part of the Ph.D. internship at the Bank of England, in the coming summer. In that research I will use both administrative and survey data on UK mortgagors to model an income process that is able to generate the observed time-varying higher order moments of the data. The objective is then to simulate, through the SSJ package adapted to that purpose, the model under the estimated income process and study the implications for the UK business cycles and financial risk.

In both cases, in order to produce impulse responses to aggregate shocks, simulate the model and estimate it, I will use the Sequence Space Jacobian approach and codes, which are the object of this course. Attending the latter would thus be an exceptional opportunity to deepen my understanding of the methodology and philosophy behind the SSJ, with positive spillovers for my current and future research. It would also give me the possibility to interact with other researchers in this fascinating field, extending my network and collaborations.

Sincerely,

Marco D'Amico

March 16, 2023

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