

GIANLUCA VAGLIANO

EDUCATION

2012-2018

HIGHER EDUCATION

University of
Bonn

Master (of Science) of Economics · Final grade (after five semesters): 1.3

University of
Mannheim

Bachelor (of Science) of Economics · Final grade (after six semesters): 1.6

2003-2012

SECONDARY EDUCATION

Lessing-
Gymnasium

Abitur · Intensive courses: Maths, English · Final grade: 1.1

Bromsgrove
School

AS Levels · Economics, Maths, Business Studies, History · Final grades: AAAC

Year abroad; Bromsgrove, United Kingdom, September 2009 – July 2010

CURRENT AND PERSONAL PROJECTS

Mar. 2022 - Today

ATMAN - AUTOMATED TENNIS MATCH ANNOTATOR

Currently building the Automated Tennis Match Annotator (ATMAN), a start-to-end framework for the generation of insights from tennis matches. On the basis of uncut match footage, ATMAN automatically recognizes lines, players and ball. A suite of machine learning models and neural networks reconstructs trajectories, and understands how much speed and spin the ball has, and where it bounces. Automatically segmented shot-by-shot data can be easily queried, filtered and aggregated, leveraging ATMAN's built-in dataclass system. ATMAN also includes a 3D engine, which enables the user to create tables, diagrams, graphs, and to animate any number of visualizations, such as heatmaps or scatter distributions, on a virtual tennis court, or overlaid on the broadcast screen.

Mar. 2020 - Jan. 2021

TESTING THE EFFICIENCY OF PARIMUTUAL BETTING MARKETS FOR TROT RACES IN FRANCE

Built empirical models to test whether all publicly available information on a given horse race is priced into the odds offered on betting markets, or whether, conversely, these markets could profitably be beaten. To this end, I collected data on French, Swedish and Italian trot races to obtain full race histories of horses running in France, built a Python library that allows easy training of models that predict each horse's probability distribution across finishing positions via maximum-likelihood methods, and tested the predictive power of these models against the market's assessment of the probability of finishing first, second or third implicit in the final race odds.

WORK EXPERIENCE

Mar. 2019 - Feb. 2022

Research Analyst, EUROPEAN CENTRAL BANK

MACROPRUDENTIAL POLICY AND FINANCIAL STABILITY - STRESS TEST MODELLING

European
Central Bank

Helped develop the BEAST Model, which simulates at great granularity the balance sheets of around 100 banks and the development of macroeconomic indicators in the euro area, thereby attempting to identify sources of potentially harmful feedback loops between the banking system and the real economy. Here, I was in charge of the data infrastructure, written entirely in Python. On the one hand, completely revamped the monolithic codebase that collects the model's input data, achieving reliability and scalability, and, most importantly, transforming a process that had to be run overnight on multiple high-performance remote machines to one that can be executed in fifteen minutes locally, on a single notebook. On the other hand, developed a framework based on the pandas library to read, filter, and visualize model results, with heavy focus on fast access to the data of interest within the huge output files (5-dimensional arrays larger than 100 GB), and the production of tidy and well-indexed dataframes.

In terms of model mechanisms, directly responsible for modelling the price and volume dynamics of wholesale debt markets, the estimation (via regression) of unobserved internal capital targets, and the behavioural rules that guide the distribution of dividends. The BEAST model has been used to inform policy at the highest level of European governance, such as the European Commission, and continues to provide valuable insight to the ECB Board and the European Banking Authority.

CONSULTING

European Central Bank	Aug. 2022 - Feb. 2023	Consultant, EUROPEAN CENTRAL BANK
	MACROPRUDENTIAL POLICY AND FINANCIAL STABILITY - STRESS TEST MODELLING	
	Extended the BEAST model (see above) from a sole focus on solvency to also include liquidity concerns. To this end, I single-handedly implemented the relevant regulatory ratios (LCR and NSFR), modelled the dynamics of encumbrance and its implications on funding costs and maturities, and estimated a liquidity management model which steers these quantities to ensure compliance with regulatory and internal targets.	
GIZ Kenya	Oct. 2018 - Jan. 2019 & Aug. 2022 - Mar. 2023	Consultant, GESELLSCHAFT FÜR INTERN. ZUSAMMENARBEIT
	NUTRITION SENSITIVE POTATO PARTNERSHIP PROJECT, NAIROBI, KENYA	
	Tasked with the estimation of the net economic impact of the Farmer Field & Business Schools (FFBS), a project that teaches agricultural practices to subsistence farmers in Kenya. To this end, data about farmer yields, prices and innovations applied in farming was collected for a control group and an FFBS-member group and analysed to estimate a micro-econometric model of agricultural production, and so deduce an economic value created by the innovations and technologies taught by the FFBS. Owing to the first study's success, a repeat of the study was commissioned in 2022, during which run the approach described was extended to employ heavier statistical machinery, including sampling optimization, propensity score matching, and various auxiliary regressions.	
Moll GmbH	Jan. 2019 - Feb. 2019	Consultant, AKKUMULATORENFABRIK MOLL GMBH
	Developed and estimated a model of car battery failure rates to be able to deduce the number and timing of expected warranty cases over the course of the coming year, and assess the marginal impact of internal battery characteristics and external factors (such as temperature and humidity) on the mean time to failure.	

COMPUTER SKILLS

Expert	PYTHON
	Expert: pandas, numpy
	Advanced: OpenCV, multiprocessing/threading, matplotlib
	Intermediate: scikit-learn, SciPy, BeautifulSoup, requests, PyTorch
	Basic: SimPy
Intermediate	Git, L ^A T _E X, VISUAL BASIC FOR APPLICATIONS, STATA, MS-OFFICE
Basic	R, WOLFRAM MATHEMATICA, MATLAB (esp. DYNARE)

OTHER INFORMATION

Languages	GERMAN · Native language
	ITALIAN · Native language
	ENGLISH · Fluent (C1-C2 GER-Level proficiency)
	FRENCH · Intermediate (B1-B2 GER-Level proficiency)
Interests	Tennis · Baseball · Literature · Film · Classical Guitar

PUBLICATIONS

- [1] G. Vagliano, "Assessing the net economic impact of the farmer field and business schools," *GIZ Internal (available on request)*, 2023.
- [2] G. Vagliano, "The economic impact of the FFBS program in Bungoma and Nyandarua, Kenya," *GIZ Internal (available on request)*, 2019.
- [3] K. Budnik, I. Dimitrov, C. Giglio, J. Groß, M. Lampe, A. Sarychev, M. Tarbé, G. Vagliano, and M. Volk, "The economic impact of the NPL coverage expectations in the euro area," *ECB Occasional Paper Series*, vol. 297, 2022.
- [4] K. Budnik, I. Dimitrov, C. Giglio, J. Groß, M. Lampe, A. Sarychev, M. Tarbé, G. Vagliano, and M. Volk, "The growth-at-risk perspective on the system-wide impact of Basel III finalisation in the euro area," *ECB Occasional Paper Series*, vol. 258, 2021.