

# Ali Darudi



## Personal Information:

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**Address** Flughafentrasse 72, 2502 Biel/Bienne, Switzerland  
**Birth** 08.12.1988  
**Nationality** Iranian (CH: B-Permit since 2015)  
**Website** [AliDarudi.ch](http://AliDarudi.ch)

## Research Interests

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Energy economics, Market design, System adequacy, Electric mobility

## Education and Qualifications

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Jan 2021 - Present Postdoctoral researcher at the University of Basel, Switzerland  
Main topics: Market design for a decarbonized energy sector

Oct 2015–2020 *University of Basel, Switzerland* -Faculty of Business and Economics  
PhD candidate in **Energy Economics**  
Supervisor: **Prof. Dr. Hannes Weigt**  
Title: Renewable Energy Support Policies and Strategic Behavior

Jan 2016–Jan 2017 Swiss program for beginning doctoral students at the Study Center Gerzensee, a foundation of the Swiss National Bank:  
- 13 weeks of US-style PhD program with international lecturers  
- Econometrics (statistical methods) and Micro/Macroeconomics

Sep 2011–Sep 2014 *Ferdowsi University of Mashhad*  
**M.Sc. in Electrical engineering – Power engineering**  
Thesis: *Short-term supply functions forecasting using machine learning*  
GPA: 18.12/20 (top 10%)  
Selected courses:  
- Power system planning/operation  
- Numerical modeling of electricity market

Sep 2007–Sep 2011: *Ferdowsi University of Mashhad*  
**B.Sc. in Electrical Engineering – Power engineering**  
GPA: 16.98/20 (top 10%)

## Selected Publications

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**Darudi, A.** and Weigt, H "Incumbent's Bane or Gain? Renewable Support and Strategic Behavior in Electricity Markets." *The Energy Journal* 41. Special Issue (2020).

**Darudi, A.**, Bashari, M., Javidi, M.H. "Electricity price forecasting using a new data fusion" IET Generation, Transmission & Distribution, Vol:9, Issue: 12, pp:1382-1390, 2015.

**Darudi, A.**, Weigt, H., "Renewable support, intermittency and market power: An equilibrium investment approach". WWZ Working Papers, 2019 (06). Basel.

### Technical reports:

- Weigt, H., Demiray, T., Schlecht, I., Beccuti, G., Schilinger, M., Darudi, A. "Modellierung der Erzeugungs- und Systemkapazität (System Adequacy) in der Schweiz im Bereich Strom 2019" Bundesamt für Energie, Schweiz, 2020.

### Work in progress:

- **Darudi, A** "Auctions for Renewables: Does the Choice of the Remuneration Scheme Matter?", Resubmitted to *The Energy Journal*
- **Darudi, A** and Weigt, H "Review of Assessments of Decarbonized Future Electricity Markets"

- Darudi, A., Schlecht, I., “Winning to delay? Incumbents incentives in German auctions for offshore wind”

### **Selected conference papers:**

- **Darudi, A.**, Mendes Tavares, C., Weigt, H. “Electric mobility in Switzerland: how many Teslas can the system deal with?” 12<sup>th</sup> Workshop of Student initiative of the Swiss Association for Energy Economics (SAEE), Zurich, Switzerland, 2019.
- **Darudi, A.**, “Auctions for renewables: does the choice of payment scheme matter?” 25<sup>th</sup> Annual Conference of the European Association of Environmental and Resource Economists, Berlin, 2020.
- **Darudi A.**, Zomorodi A, Javidi M.H., “Effects of bidding data disclosure on unilateral exercise of market power,” The International Conference on Control, Electronics, Communication and Smart Grids (ICCECSG), Mashhad, Iran, 2014.
- **Darudi A.**, Yektay N, Zarif M, Javidi M.H., “Analyzing bidding behavior of generating companies in Iran’s electricity market,” International power system conference (PSC 2012), Tehran, Iran, 2012 (**Best paper award**)
- **Darudi, A.**, Rezaifar, S., Javidi, M.H., “Partial mutual information based algorithm for input variable selection for time series forecasting,” 13<sup>th</sup> International Conference on Environment and Electrical Engineering (EEEIC13), Wroclaw, Poland, 2013.
- Bashari, M., **Darudi, A.**, Raeyatdoost, N., "Kalman fusion algorithm in electricity price forecasting." 14<sup>th</sup> International Conference on Environment and Electrical Engineering. IEEE, 2014.

### **Research Experience**

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| 2016 – present | <p>Research assistant at Energy Economics Chair, University of Basel:</p> <ul style="list-style-type: none"> <li>- <b>Electric mobility:</b> Analyzing effects of electric vehicles on the grid and achieving goals of Energy Strategy 2050 in Switzerland (in progress)<br/><u>Responsibilities:</u> <ul style="list-style-type: none"> <li>o Designing a chain tool between several energy and mobility modeling tools (STEM from PSI, MATSim from ETHZ, and Beddem from HES-SO)</li> <li>o Defining future mobility scenarios in Switzerland</li> <li>o Extending Swissmod (model of electricity network of Switzerland and neighboring countries) to analyze the effects of mobility driving pattern and charging behavior on the Swiss grid (in python and GAMS)</li> </ul> </li> <li>- <b>System adequacy:</b> Analyzing security of electricity supply in Switzerland up to 2040 considering future European electricity market developments.<br/><u>Results:</u> no supply shortages observed within the expected political developments<br/><u>Responsibilities:</u> <ul style="list-style-type: none"> <li>o EU level data availability analysis and transmission grid modeling</li> <li>o Expanding Swissmod to include neighbors of Swiss neighbors</li> <li>o Developing scenarios for future of Swiss electricity sector</li> </ul> </li> <li>- <b>Renewable support policy design:</b> Game-theoretical analysis of the long-term effects of various renewable support policies on investments.<br/><u>Results:</u> while a feed-in premium policy leads to lower CO2 emissions, a feed-in tariff policy ensures a lower market price. In auctions, while a payment based on a fixed rate achieves true cost bidding and allocative efficiency, premium-based payment leads to higher social welfare if market prices are too low relative to the social cost of carbon for the marginal conventional technology.</li> </ul> |
| 2014 – 2015    | <p>R&amp;D research assistant in <u>Toos Fuse Company</u></p> <ul style="list-style-type: none"> <li>- Smart metering and Advanced metering infrastructure (AMI) solutions</li> <li>- Designing test equipment (micro-controllers programming and software design in MATLAB)</li> </ul>   |

- 2012            Research assistant at NAPCO:
- Consultancy on designing financial derivatives markets for energy (critically analyzing experiences in several Asian markets)
- Summer        Research assistant at Khorasan Regional Electricity Company (regional TSO)
- 2010            - Medium-term transmission line planning (internship), Mashhad, Iran.

## Teaching/Academic Experience

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- Mentor in MOOC course: "Exploring Possible Futures, Modeling in Environmental and Energy Economics," by Frank Krysiak and Hannes Weigt, *University of Basel*, 2017-2019
- Assistance in supervising final projects of bachelor students in engineering (4 students)
- Teaching assistant for Power system analysis I and II, Engineering economics, Electrical machinery, and Logic circuit design
- Ad hoc reviewer of Energy Economics and IEEE Transactions on Power Systems

## Skills

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### Programming:

- Proficient in MATLAB, Python, and GAMS, cloud computing (Amazon Web Services, AWS)
- Familiar with Stata, Mathematica, and Office Excel

### Methods:

- Classical regression analysis (parametric and non-parametric)
- Clustering: K- means and C-means
- Machine learning: Artificial neural networks and adaptive neuro-fuzzy inference system
- Feature selection: Mutual information and principal component analysis (PCA)
- Soft computing: Genetic algorithm and particle swarm optimization

## Honors and Awards

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- Scholarship for "PhD program in Applied Economics" from University of Basel – 2015
- Scholarship for the master program - Ranked in top 10% among bachelore students of Power Engineering - 2011
- Scholarship for the bachelore program - Ranked in the top 1% of nation-wide college entrance exam in mathematics & physics group - 2007

## Languages

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English: Full professional proficiency, German: Upper intermediate, French: Beginner, Persian: Native, Arabic: Basic

## Interests

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Football, Reading, Volleyball, Stand up paddling, and Skiing

## References

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 University of Basel, Switzerland  
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