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Digital Economics and AI Tutorial Application

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Dear Prof. Goldfarb and Prof. Tucker,

I am writing to apply for the NBER Digital Economics and AI Tutorial at Stanford.

I am a 5th year Ph.D. student in finance at the Swiss Finance Institute and USI Lugano under the supervision of Prof. Laurent Frésard. During my first year of graduate courses at the Swiss Finance Institute, I focused on core finance courses (e.g., corporate finance, asset pricing, financial intermediation, and household finance). After my core field courses, I took advanced courses on "The Theory of Firms" (Prof. David Thesmar) and "Digital Economics and FinTech" (Prof. Lin Willian Cong).

My research focuses on studying the impact of new technologies in finance. In my current works, I am studying how the "data economy" affects the structure of the asset management industry, and firms' behavior. I am actively working on three projects, which I briefly summarize below.

The first project (solo-authored) studies how new technologies (e.g., AI, data-analytics) impact the IO of the asset management industry. I exploit information on the installation of data-analytics technologies on funds' websites (e.g., adoption of Google Analytics, or A/B Testing) to study whether collecting customers' data helps asset managers attract more inflows. Intuitively, fund managers collecting and analyzing web traffic data might reduce search costs frictions between investors (customers) and funds, improving the efficiency of the asset management industry. I find that funds adopting data-analytics technologies on their websites increase their ability to attract capital (+1.5% inflow per year). However, these technologies *increase* search costs frictions. Fund

managers charge higher fees to investors and impair capital allocation efficiency. Moreover, fund-families analyzing customers' data increase the number of products offered, and specialize more. These results are unique to data technologies (i.e., do not hold for other "non-analytics" websites' technologies), are concentrated on retail share classes (as opposed to institutional share classes), and decrease with the degree of competition in collecting customers' data (i.e., decrease as other funds within fund-category analyze similar data). For identification, I exploit the introduction of TensorFlow in November 2015 as plausibly exogenous variation in the marginal value of collecting data. As expected, the benefit from using new technologies to analyze data and learn customers' preferences increase (by 30%) after the release of TensorFlow. Overall, in this project I show that new technologies might increase search costs frictions for investors and negatively impact capital allocation in the asset management industry.

In the second project (co-authored with Giacomo Bezzi, a colleague PhD student in Lugano), we study whether the financial accelerator (Kyotaki, Moore, 1997) is amplified (or mitigated) in a data economy. We propose a general equilibrium model where firms can collect data as a by-product of economic activity (e.g., observing customers' behavior or learning households' demand function using big-data). The model shows how a data economy *mitigates* the financial accelerator problem: negative shocks propagate less severely in the real economy when firms have (and use) more data for business operations. Yet, increasing the availability of firms' data is not always optimal since households have non-zero concerns over their data privacy. In the model, the marginal benefit from data is increasing when firms do not have a lot of data available. However, when firms already hold large customers' datasets, the (social) marginal value of data is negative. Interestingly, this result holds even if firms share a portion of the "benefit from data" with households (through higher wages). We test the model empirically for large US firms (Compustat firms). We construct a measure of data-intensity from SEC 10-K filings and find evidence consistent with the model: firms with higher data-intensity are more resilient to adverse shocks in the economy.

My third project (co-authored with Laurent Frésard) studies how firms improve when using and analyzing customers' data. In this project, we exploit information on firms' adoption of data-analytics technologies on their websites (similar to my first project) to study whether there is a data-feedback loop. Preliminary results show that firms' earnings are significantly higher and less volatile after adoption of data-analytics technologies. However, we don't find (yet) significant evidence of a clear data-feedback loop. Firms analyzing more data do not exponentially grow to become "superstar firms" (as predicted by models with a data-feedback loop). This project is currently ongoing, but preliminary results suggest that a data economy might be less disruptive and anti-competitive than predicted in models for the data economy.

My thesis committee members will include Prof. Laurent Frésard (SFI Lugano), Prof. Alberto Rossi (Georgetown), Prof. Thierry Foucault (HEC Paris), and Prof. Alberto Plazzi (SFI Lugano). The Digital Economics and AI Tutorial would be extremely useful for my future research.

Thank you very much; please do not hesitate to contact me for any other information.

Sincerely,

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