

## TSE Student Workshop 2021 : Program

**09:00 – 9:45** **Fernando Stipanich**, Discussant : Matteo Bobba  
The diffusion of knowledge: Evidence from the Jet Age

**09:50– 10:35** **Alae Baha**, Discussant : Daniel Garrett  
Learning and Endogenous Technology Cycles in Games with Monitoring

Virtual Coffee break

**11:00 – 11:45** **Vatsala shreeti**, Discussant : Ana Gazmuri  
Smartphone adoption, technology subsidies and complementary markets

**11:50– 12:35** **Kevin Remmy**, Discussant : Isis Durrmeyer  
Barriers to adoption of real-time electricity pricing: Evidence from New Zealand

Lunch break

**14:00 – 14:45** **Moritz Loewenfeld**, Discussant : Sébastien Pouget  
Does correlation really matter in risk taking? An experimental investigation

**14:50 – 15:35** **Alípio Ferreira**, Discussant : Stephane Straub  
Fines and fires in the Amazon

Virtual Coffee break

**16:00 – 16:45** **Paloma Carrillo**, Discussant : Olivier De Groot  
Total Work Time Disparity Between Spouses and Gender Norms in Mexico

## Abstracts:

### **Fernando Stipanovic:** The diffusion of knowledge: Evidence from the Jet Age

This paper studies the impact of travel time on the diffusion of knowledge. We provide causal evidence by exploiting the beginning of the Jet Age as a quasi-natural experiment. We digitize airlines' historical flight schedules and construct a novel data set of the flight network in the United States. Between 1951 and 1966, travel time between locations more than 2,000km apart decreased on average 41%. We use patent citations as a measure of knowledge diffusion. For research establishments located more than 2,000km apart from each other, the reduction in travel time increased citations by 7.9%, accounting for 38% of the observed increase in citations in this distance interval. Additionally, the reduction in travel time increased the diffusion of knowledge through multi-establishment firms. The probability of a firm having a satellite research establishment increased by 225% as consequence of the reduction in travel time. At the same time, a research establishment of a firm is 13% more likely to cite a patent from a location in which the firm has another research establishment, compared to a location in which it does not.

### **Alae Baha:** Learning and Endogenous Technology Cycles in Games with Monitoring

This paper studies a dynamic monitoring environment in which the ability to detect fraud depends on both the monitor's and the agent's investments. The monitor can acquire this ability through costly investments and loses it whenever the agent adopts novel fraud processes. As these investments are unobservable, the monitor updates her beliefs about the agent's fraud technology through fraud detection.

Absent detection, the monitor becomes more pessimistic about his ability and invests in a novel detection technology. The agent reacts to this investment by adopting a novel fraud technology with a strictly positive probability which creates cyclical patterns in these environments. Both the length of these cycles and the amount of fraud during each cycle depend on the penalties that fraudsters pay when fraud is detected.

Raising penalties intensifies the R&D race between the monitor and the agent, leading to higher frequency of investments which can limit the deterrence effect of such a policy. More

specifically, when fraud decision is binary, it is shown that the optimal penalties never exceed the benefits from fraud.

**Vatsala shreeti:** Smartphone adoption, technology subsidies and complementary markets

A vast majority of mobile phone users in developing countries continue to use low quality devices (feature phones) despite increasing affordability of smartphones, rising per capita income and declining cost of telecom services. Digitization of the economy is one of the main policy goals of many governments and the persistence of feature phones is especially problematic as more public services move online. By using a structural model of consumer demand of mobile handsets in a mixed logit framework, this paper tracks the adoption of smartphones in India between 2007 and 2018. Specifically, this paper evaluates two research questions i) What are the key barriers to smartphone adoption in India? ii) What types of policies can be used to spur adoption? I use the estimated structural parameters of utility to conduct two counterfactual simulations to answer these questions. I find that changes in income distribution accounted for 20% of the smartphone adoption trajectory, market competition accounted for 5% and Chinese entry for 10%. As a preliminary answer to the second research question, I find that in order to have a 10 percentage point increase in smartphone adoption, a subsidy of \$ 16 is required. Crucially, the gains from the same level of subsidy are higher in later periods.

**Kevin Remmy:** Barriers to adoption of real-time electricity pricing: Evidence from New Zealand

We study the introduction of real-time electricity pricing in New Zealand and shed light on why adoption was low. Under this tariff, consumers are exposed to half-hourly varying spot prices, which are uncertain and volatile. We find that, contrary to experienced consumers, prospective and recent adopters are highly sensitive to contemporaneous spot prices. Adoption rates significantly decrease with contemporaneous spot prices. During a crisis on the electricity spot market, the share of consumers discarding real-time pricing plans decreased with experience and, among those who stayed on the tariff, demand response decreased with experience. These results suggest that, over time, consumers focus less on immediate outcomes. Our results can inform the debate regarding ways to foster the adoption of real-time pricing, such as opt-in and opt-out policies, and information provision.

**Moritz Loewenfeld:** Does correlation really matter in risk taking? An experimental investigation

Two prominent alternatives to expected utility theory, regret theory and salience theory, rely on the assumption that not only the marginal distribution of lotteries, but also the correlation of payoffs across states impacts choices. Recent experimental studies on salience theory seem to provide evidence in favor of such correlation effects.

However, these studies fail to control for event-splitting effects (ESE). In the first part of this paper, we seek to disentangle the role of correlation and event-splitting in two settings: 1) the

common consequence Allais paradox as studied by Bruhin et al. (2018), and Frydman and Mormann (2018); 2) choices between Mao pairs as studied by Dertwinkel-Kalt and Köster (2019). In both settings, we find evidence suggesting that recent findings supporting correlation effects are largely driven by ESE. Once controlling for ESE, we find no consistent evidence for correlation effects. In the second part of the paper, we first test for correlation effects in a novel task that allows to detect correlation effects even when they are of second-order importance only.

In this setting, we find a precisely estimated null effect. Finally, we demonstrate that when changing the correlation structure implies a change from statewise domination to mere FOSD, this can lead to an increase in the number of suboptimal choices. The observed choice patterns contradict both salience and regret theory. Taken together, our results shed doubt on the suitability of salience and regret theory as theories of decision making under risk.

### **Alípio Ferreira:** Fines and fires in the Amazon

Deforestation of tropical forest is a major environmental issue because of its implications for climate change and biodiversity loss. In recent years, large fires in the Brazilian Amazonia have attracted attention to the use of fire as a method of deforestation, and sparked debate on how authorities can act to fight the problem. It is well-known that deforestation may happen via logging or fire (or a combination of both), the extent to which fire is chosen as a method of deforestation is poorly understood. This paper proposes a measure of the use of fire for deforestation in the Brazilian Amazonia based on the combination of different satellite datasets. Moreover it uses administrative data from the Brazilian environmental agency to estimate the impact of enforcement on deforestation by fire or logging, with an instrumental variable approach. Increases in the probability of enforcement are shown to reduce substantially deforestation, but no specific deterrence effects are found at the moment of enforcement. The share of use of fire does not change due to enforcement.

### **Paloma Carrillo :** Total Work Time Disparity Between Spouses and Gender Norms in Mexico

Mexican labor force participating wives dedicate on average seventeen hours more of total work (paid and unpaid) per week compared to their husbands. This paper examines to what extent this gender disparity in total work time can be explained by gender norms. To do so, I extend the collective labor supply model with household production proposed by Cherchye, De Rock, and Vermeulen (2012) to include gender norms. Gender norms are proxied by two indices: the labor force participation of the couple's mothers and aggregated gender norm perceptions in the community. I estimate the model using Mexican data. According to the counterfactual analysis, more equal gender norms that increase women's bargaining power reduce the total work time disparity. For example, if wives all had mothers who participated in the labor force, their average bargaining power in the household would increase by 2.5 percent, and the total work time disparity with her husband would be reduced by 5 hours.