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Dissertation Title: *Three essays in industrial organization*

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Expected Completion Date: August 2022

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PhD, Economics, McGill University, (expected August 2022)
MA, Economics, McGill University, August 2016
BMus, Jazz Performance (Saxophone), McGill University, August 2005

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SSHRC Research Scholarship, 2019,2021
FRQSC Research Scholarship, 2019-2022
Graduate Mobility Award, 2019
McGill University Doctoral Fellowship, 2016-2020

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Teaching:
Economic Statistics – Honours (joint with John W. Galbraith), Winter 2018
Mathematics for Economists (graduate), Summer 2020
Teaching Assistant:
Intro to Econ. Theory – Honours, Fall 2015, Winter 2016, Fall 2016, Winter 2017
Economic Statistics – Honours, Fall 2017
Industrial Organization, Fall 2018
Intro to Econ. Theory – Honours, Winter 2019
Econometrics – Honours, Fall 2019, Fall 2020, Fall 2021
Applied Cross-Sectional Methods (graduate), Winter 2020
Econometrics (graduate), Winter 2020, Fall 2020, Winter 2021

Papers:

"Electric Cars and Network Effects: Are Subsidies the Right Tool for Reducing Emissions?" *mimeo*, 2021 (Job Market Paper)

"Directed search in the Housing Market with Imperfect Market Evaluations," (with Jean-Louis Barnwell-Ménard), *in progress*

"Environmental Regulation in the Car Market with Consumer Heterogeneity: Countering the Rise of the SUV," *mimeo*, *in progress*

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Dissertation Abstract

This thesis explores in the first part the environmental implications of regulating the car market as a mean of achieving lower carbon emissions from the transportation sector. In the second part, I study strategic interactions and directed search in the housing market when imperfect market evaluations are available.

In the first chapter I document several empirical facts about the Quebec car market which relate to environmental outcomes. I observe that, while carbon emission per vehicle declines slightly between 2010 and 2018, changes in the fleet composition leads to increased average and total emissions. This

fleet composition effect is driven mostly by consumers abandoning subcompact and compact cars in favor of less fuel-efficient SUVs. I leverage consumer-level data on all car sales that occurred in Quebec between 2010 and 2018 and estimate a mixed logit model (Train, 2009). I use the structural model to test several potential policies that could reverse the observed trend: a tax on light truck and SUVs, attribute-based taxation and regulation, and stringent emission standards.

In the second chapter, I study the impact of subsidizing electric vehicle purchases on electric vehicle adoptions, charging station deployment and carbon emissions from passenger cars. I rely on structural demand estimation methods (Berry, Levinsohn and Pakes, 1995; Springel, 2019) which allow me to recover electric vehicle sales, prices, and the charging station deployment that would have occurred if no subsidy was available. My studies suggest that the *Roulez Vert* program, which subsidizes new electric vehicle purchases in Quebec, to be responsible for 45.7% of all electric vehicle sales and 27.7% of charging station installations between 2012 and 2018. My method also allows for pricing avoided carbon emissions using these subsidies. I find that reducing carbon emissions by one metric ton to have cost $1,345 and that decreasing sales of full vehicles by one unit to have cost between $39,330. Part of the reason behind these sizeable costs is that 62.1% of new electric vehicle sales associated with the policy came from consumers that would have chosen not to purchase a vehicle if no subsidy was available, suggesting that the policy poorly targeted the right consumers.

The last chapter is devoted to studying strategic interactions and directed search in the housing market. Building on a rich dataset of housing transactions in the Seattle area, we first document several facts about the housing market. In particular, we observe that asking prices alone are not a sufficiently strong signal from sellers to generate the patterns of directed search predicted by theory. We postulate that sellers instead use publicly available market evaluations as an anchor point for strategic interactions. In this context, advertising below the market estimate signals a low reservation value and generates more virtual visits, faster selling times and a higher probability of receiving multiple offers, while advertising above obtains a higher price. We propose an improvement to Albrecht et al. (2016) model which reconcile their theory with facts from our data. In our setup, market evaluations imperfectly measure sellers' reservation values, and sellers use the asking price as an information revelation mechanism to direct buyers to the correct seller. We explore the consequences of being over- versus underestimated for two sellers with the same reservation value and show that being over-evaluated by the market leads to both a faster sale and a higher expected price compared to being under-evaluated.