THE PAPER TITLE[*]

Your Name[†]
Department of Economics

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ABSTRACT

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa. Download this template at the Github repository.

Keywords: keyword1, keyword2

JEL Codes: J02, R10

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1   Introduction

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2   Model

Equation 1 or eq. (1) or Equation (1). Donec vitae turpis. Suspendisse porttitor. Mauris aliquam purus vitae tellus. Morbi metus diam, tempus ac, cursus ut, ultricies quis, nulla. Praesent nec justo. In lobortis. Donec nec lectus a neque laoreet rhoncus. Quisque in risus nec wisi lacinia ullamcorper. In placerat. Proin facilisis sollicitudin libero. Integer eget neque et pede placerat aliquet. Aliquam purus nulla, pulvinar ut, facilisis quis, sodales sed, magna. Curabitur nulla lectus, rutrum id, bibendum ut, sagittis eget, diam. Sed porta dolor eget est. Integer hendrerit orci. In hac habitasse platea dictumst.

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Theorem 1 (Envelope Theorem). *Only the direct effects of a change in an exogenous variable need be considered, even though the exogenous variable may enter the maximum value function indirectly as part of the solution to the endogenous choice variables. The proof is in Appendix B.*

The competition can be illustrated with the following graph with the implementation is presented in Listing 1 or listing 1:

Figure 1: This is a graph

Note: some notes. The graph should be self-contained. Etiam vel ipsum. Morbi facilisis vestibulum nisl. Praesent cursus laoreet felis. Integer adipiscing pretium orci. Nulla facilisi. Quisque posuere bibendum purus. Nulla quam mauris, cursus eget, convallis ac, molestie non, enim. Aliquam congue. Quisque sagittis nonummy sapien. Proin molestie sem vitae urna. Maecenas lorem. Vivamus viverra consequat enim.

3   Comparative Statics

This is also demonstrated in Figure 1 or fig. 1 and the results are presented in Appendix B.1b. Download this template at the Github repository. Donec metus metus, condimentum eu, accumsan nec, vulputate non, purus. Vestibulum ullamcorper vehicula sapien. Mauris risus odio, hendrerit ac, congue ac, ullamcorper at, odio. Aenean leo justo, commodo vitae, placerat blandit, malesuada vel, sem. Donec sit amet ante eget mauris adipiscing sollicitudin. Curabitur posuere sem et leo. Nulla ultricies mauris. Vestibulum ante ipsum primis in

faucibus orci luctus et ultrices posuere cubilia Curae; Fusce sollicitudin augue vel tellus. Vivamus mauris eros, pharetra vel, lacinia pretium, egestas a, nibh. Morbi a ligula.

Listing 1: Long short-term memory

```
class network_LSTM(nn.Module):
    def __init__(self, input_size=1, hidden_size=256, output_size=1):
        super().__init__()
        self.hidden_size = hidden_size
        self.lstm = nn.LSTM(input_size, hidden_size)

        # fully-connected
        self.linear = nn.Linear(hidden_size, output_size)

        self.hidden = (
            torch.zeros(1, 1, self.hidden_size),
            torch.zeros(1, 1, self.hidden_size)
        )

    def forward(self,vec):
        lstm_output, self.hidden = self.lstm(vec.view(len(vec),1,-1), self.hidden)
        prediction = self.linear(lstm_output.view(len(vec),-1))
        return prediction[-1]
```

4 Empirical Results

We follow the approach from Harding and Lamarche (2019). By using this approach, comparable results can be obtained (Chen, Esteban and Shum, 2013). To calculate the ELBO[3], we start from using the property of the KL-divergence. The data can be summarized by the tables with decimal alignment in Table table B.1a.

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[3]More information about the evidence lower bound (ELBO) can be found on the Wikipedia.

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Table B.1a: First Table

Category	Total	Shares (%)	Female	Male	Asian	Black/AA	His./Latino	White/Cau.	Zeros (%)
child care	19.39	0.08	12.32	20.12	23.14	63.78	20.24	19.00	0.07
eating	30.35	6.12	35.97	6.23	24.61	21.58	38.18	2.02	0.00
education	9.91	0.04	9.94	90.54	9.69	7.99	10.64	10.14	0.90
entertainment (not TV)	26.05	0.10	29.19	26.60	33.36	26.13	4.43	25.15	0.45

Note: This is the first table.

Table B.1b: Second Table

Category	Total	Shares (%)	Female	Male	Asian	Black/AA	His./Latino	White/Cau.	Zeros (%)
child care	19.39	0.08	39.32	40.12	23.14	18.78	20.24	19.00	0.07
personal care	13.92	0.06	24.00	23.14	16.12	1.76	15.15	13.66	0.00
sports/exercise	20.44	0.08	20.38	31.00	24.99	25.48	20.71	20.07	0.53
TV	28.61	0.12	48.47	9.93	2.35	63.70	29.22	80.20	0.46

Note: This is the second table.

5 Algorithm

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Algorithm 1: Euclid's algorithm for finding the greatest common divisor of two nonnegative integers

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function Euclid (a, b);
Input : Two nonnegative integers a and b
Output : $\gcd(a, b)$
if $b = 0$ **then**
  | return a;
else
  | return Euclid$(b, a \mod b)$;
end

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Table 2: Summary Statistics

	Cohort		
	2006	2007	2008
Students registered	1535	1584	1767
Gender (%)			
Male	61.1	64.5	57.7
Female	38.9	35.5	42.3
Race (%)			
White	43.3	43.4	40.6
Black	29.8	33.4	34.8

*Note:* Source: UCT Institutional Planning Department.

Lemma 1 (This is a lemma)**.**

(a) *For any feasible disclosure policy $G \in \mathcal{G}$, $W_G(p)$ is a convex function. Moreover, for all $p \in [0, 1]$,*
$$W_{G_{\underline{\pi}}}(p) \leq W_G(p) \leq W_{G_{\overline{\pi}(p)}}.$$

(b) The converse of the above statement is also true. That is, if $W : [0,1] \to \mathbb{R}$ is a convex function that satisfies $W_{G_{\underline{\pi}}}(p) \leq W(p) \leq W_{G_{\overline{\pi}(p)}}$, then there exists a feasible $G \in \mathcal{G}$ such that $W_G(p) = W(p)$ for all $p \in [0,1]$.

6 Conclusion

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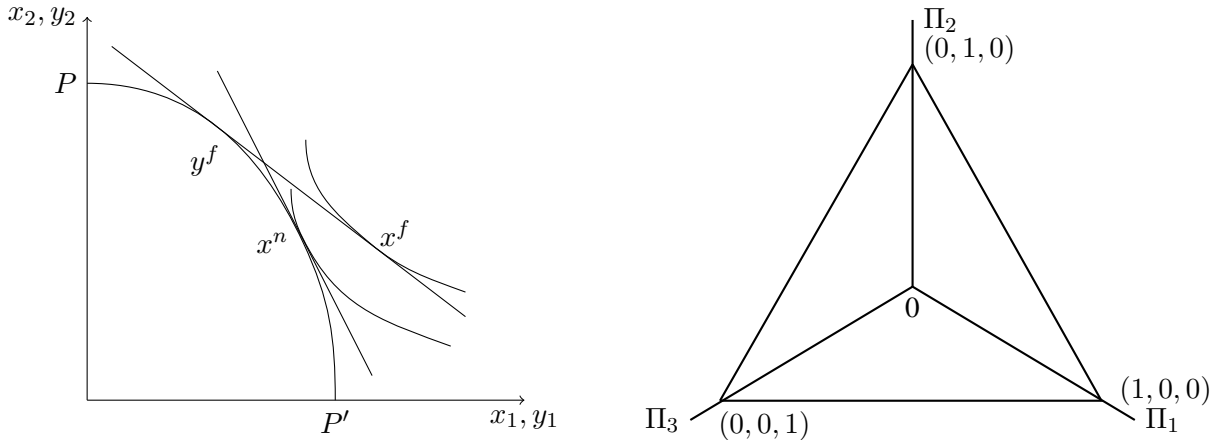
References

Chen, Jiawei, Susanna Esteban, and Matthew Shum. 2013. "When Do Secondary Markets Harm Firms?" *American Economic Review*, 103(7): 2911–2934.

Dong, Yingying, and Shu Shen. 2018. "Testing for Rank Invariance or Similarity in Program Evaluation." *Review of Economics and Statistics*, 100(1): 78–85.

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Lee, Ying-Ying. 2018. "Efficient propensity score regression estimators of multivalued treatment effects for the treated." *Journal of Econometrics*, 204(2): 207–222.

Appendices

A Additional Discussion

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B Proof of Theorem 1

We will proof the following equation:

Proof. Given y, x, Δ, ν, η, $\mathcal{L} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 5 & 6 & 7 \end{pmatrix}$, and $\prod = \begin{vmatrix} A & B & C \\ D & E & F \end{vmatrix}$, if

$$\begin{cases} \text{trade}, & p(\text{trade}) = \dfrac{y}{v} \\ \text{no trade}, & p(\text{no trade}) = 1 - \dfrac{y}{v} \end{cases}$$

$$y = \mathbb{E}_{\pi}\left(\beta x + \epsilon\right) \neq \sum_i \beta_i (\underbrace{\alpha + \xi}_{\text{variables}}) + \epsilon$$

$$\implies \int_0^{10} r\left(\frac{r}{50}\right) dr \xrightarrow{\text{text here}} \left.\frac{r^3}{150}\right|_0^{10}, \forall x \in (a,b) \tag{1}$$

So from $\overset{\frown}{ABCD}$, $\overset{\sim}{ABCD}$, $\widehat{ABCD}$, $\overrightarrow{ABCD}$, and $\overline{ABCD}$, we get the desire <u>result</u>. ∎

Consider $g(x) = f(x) - x$, since $f(x)$ and x are continuous, then $g : [a,b] \to \mathbb{R}$ is continuous. Then

$$g(a) = f(a) - a > 0, \ g(b) = f(b) - b < 0$$

By IVT: $\exists c \in (a,b)$ s.t. $g(c) = 0 \implies \exists c \in (a,b)$ s.t. $f(c) - c = 0 \implies f(c) = c$.
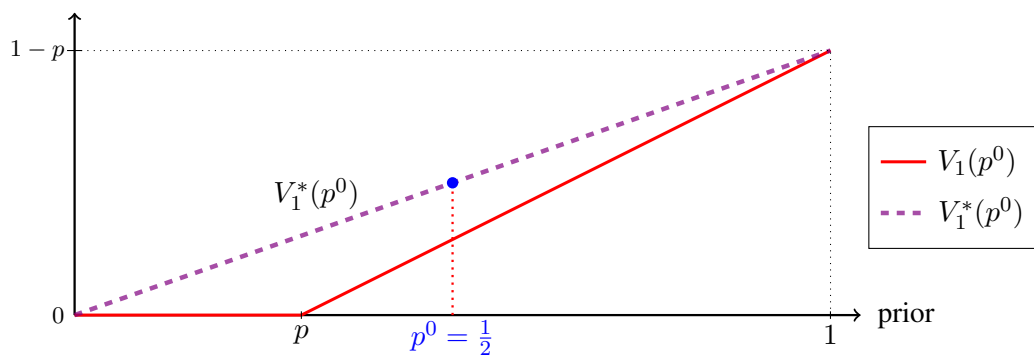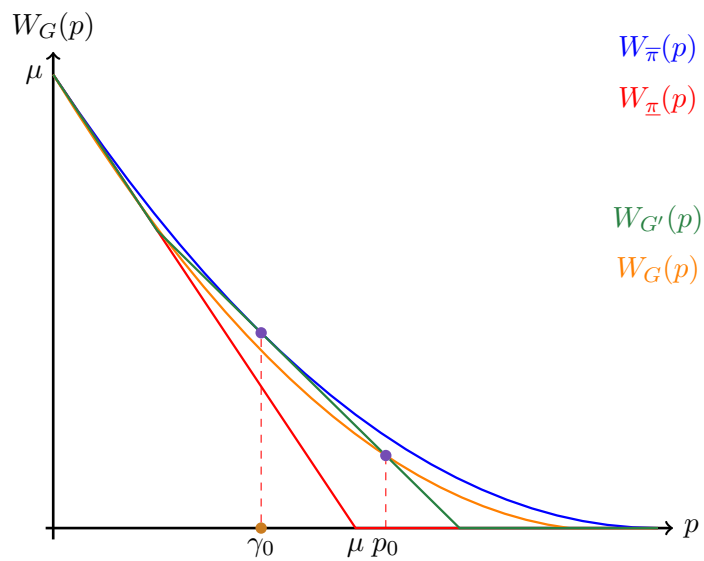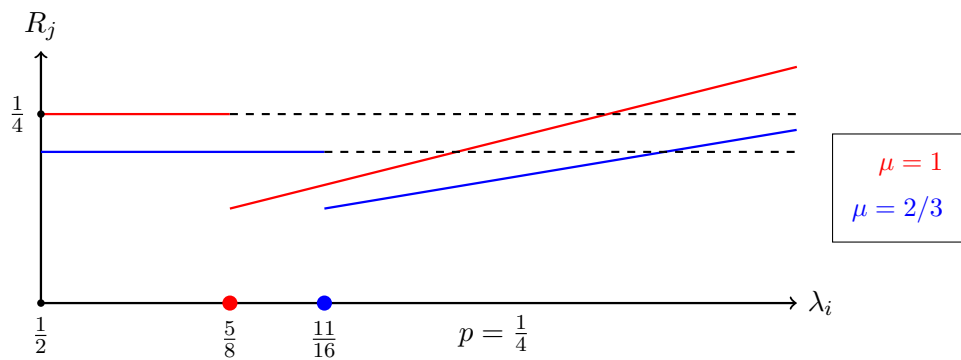

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Figure 2: Caption above figure

Figure 3: Caption below figure

Figure 4: Caption below figure