

# Leisure-Enhancing Technological Change

## Applied Macroeconomics: Micro Data for Macro Models

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October 8, 2022

- ▶ Leisure Enhancing Technologies (LET) have become increasingly relevant, and they differ from traditional products in the sense that Trends
  1. Are non-rival,
  2. Can be indirectly monetized.

# Motivation

- ▶ Leisure Enhancing Technologies (LET) have become increasingly relevant, and they differ from traditional products in the sense that Trends
  - 1. Are non-rival,
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- ▶ There is no clear distinction in the growth theory from traditional consumption
  - 1. How do we distinguish between LET and “traditional” product technology?
  - 2. What are the effects of LET on macroeconomic variables?

- ▶ Leisure Enhancing Technologies (LET) have become increasingly relevant, and they differ from traditional products in the sense that Trends
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- ▶ There is no clear distinction in the growth theory from traditional consumption
  - 1. How do we distinguish between LET and “traditional” product technology?
  - 2. What are the effects of LET on macroeconomic variables?
- ▶ This paper reconciles two macroeconomic facts
  - 1. Endogenous growth models: Constant hours of work along the BGP.
  - 2. Steady long-run decline in hours worked: Exogenous growth.

# This Paper

- ▶ Build a (semi) endogenous growth model
  1. Consumption products + Leisure products
  2. Leisure products are non-rival.
  3. Consumption goods can shift the demand by branding.
  4. Leisure products can be monetized through branding.

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  4. Leisure products can be monetized through branding.
- ▶ Compare the BGP and transition of the model to long-run trends.
  1. Declining TFP
  2. Steady decrease in hours worked.
- ▶ Characterize the preference that can hold a BGP with LET.

# Outline

## The Model

- Dynamic Model

- Static Model

## Results

## Conclusions

# Model Overview

- ▶ Representative household preferences over consumption and leisure
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- ▶ LET platforms
  1. Provide LET to consumers for free - Copycat firm.
  2. Use branding units to cover expenses.

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# Exogenous Growth

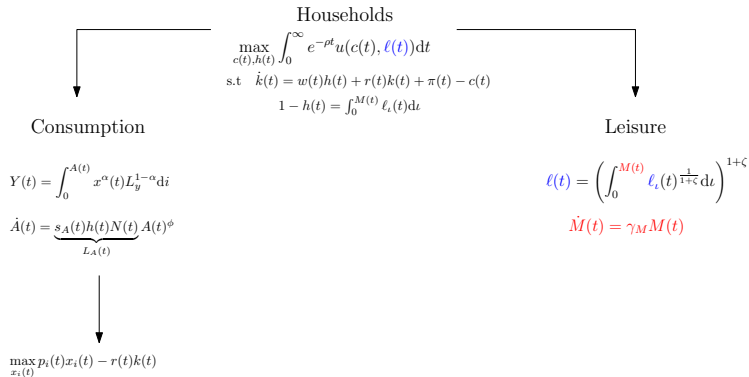


Figure: Model Overview

# Taking Stock

- ▶ On a BGP the growth rates are

| Object | Growth                           | Type       |
|--------|----------------------------------|------------|
| $N(t)$ | $n$                              | Exogenous  |
| $M(t)$ | $\gamma_M$                       | Exogenous  |
| $h(t)$ | $-\zeta\gamma_M$                 | Endogenous |
| $A(t)$ | $\frac{n-\zeta\gamma_M}{1-\phi}$ | Endogenous |
| $c(t)$ | $\frac{n-\zeta\gamma_M}{1-\phi}$ | Endogenous |

Table: Growth Rates

- ▶ Welfare? Ambiguous. Utility from leisure vs. consumption.

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# Endogenous Leisure Technology

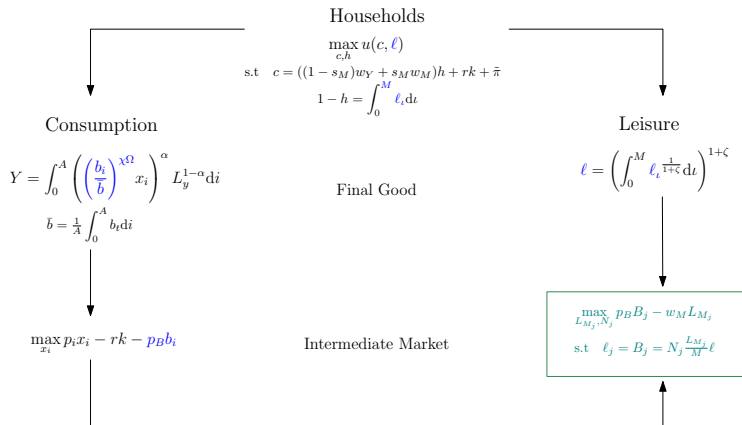


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# Outline

The Model

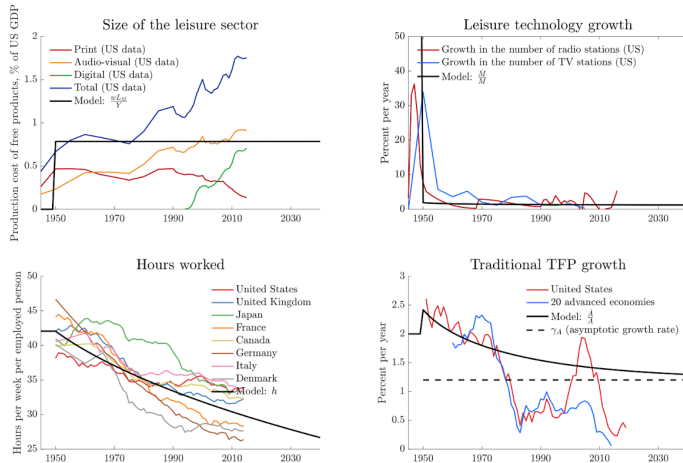
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# Taking the Model to the Data



**Figure 3**  
The Model's Growth Path versus the Trends Observed in the Data

# Outline

## The Model

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- ▶ The way consumers interact with leisure products brings together macroeconomic trends that were studied separately.

# Conclusions

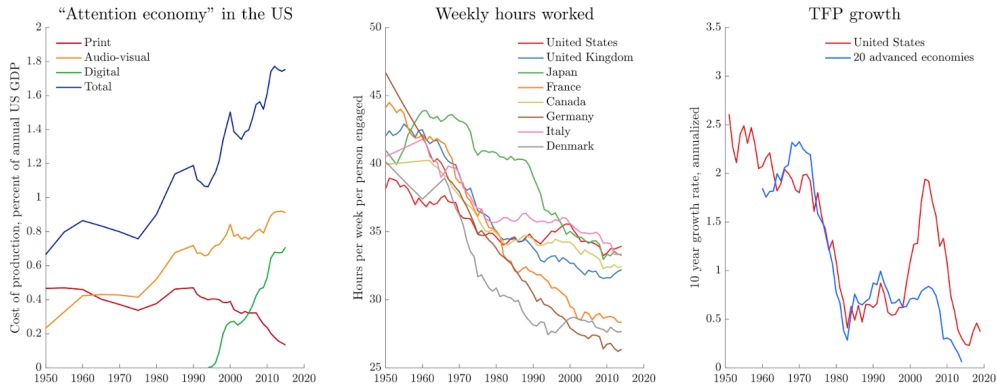
- ▶ The big achievement of this paper is that distinguish between traditional products and leisure-directed products.
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Some of my takes...

- ▶ It's a milestone to start differentiating consumption products and leisure products.
- ▶ There is a big gap between the model and the data.
- ▶ All the results are mechanical
  1. Still work to do on the law of motion of  $M(t)$ . The economics behind are still raw.
  2. What about creative destruction?

# Thank You

# Motivational Trends



**Figure 1**

Motivating Trends: Free Products in the United States, and Cross-Country Trends in Hours Worked and Total Factor Productivity