Discussion of: ". . .How Motion Pictures Industrialized Entertainment"

Robert J. Gordon
Northwestern University and NBER
Cornucopia Quantified Conference,
Barcelona, May 21, 2010

This Paper is of Particular Interest

- Point of departure: my two favorite examples of why I "believe in Field": the 1930s as the most productive decade.
- Autos, the difference between a 1928-vintage Model A ford and a 1941 streamlined Oldsmobile with automatic transmission
- Second example, the movies

The Movies in 1928 and 1939

- The first talkie, the "Jazz Singer," 1928
  - Flickery black and white
  - Tinny sound
  - Amateurish high-school-level production values
- And then, the two revolutions of 1939 as seen by audiences
  - It wasn't just what they saw from our perspective, but what they saw from their perspective
  - Happiness is reality in relation to expectations

The Two Moments

- After Dorothy's house swirls up in a black and white tornado, it crashes on the Wicked Witch of the East. Dorothy, carrying Toto, exits the black and white house interior and suddenly . . .
- Second story: four men set out for San Fernando Valley with a big can of film.
  - The audience had no idea what the sneak preview would be. The doors were locked for four hours, and . . .

Further Evidence on 1939-42 as the Apogee of Quality in American Movies

- Look at the ratings of the top 100 movies of the 20th century
- Aljean Harmetz wrote three books on the behind-the-scenes making of particular movies (which? Why books in our house)
- Then there's Citizen Kane
- 1939 1939 1941 1942

Three points

- Why is 1938 rather than 1939 used as the base point of the analysis?
  - After all, the economy was extremely depressed in 1938 vs. 1937 or 1939.
- % LN output gap: [explain data source]
  - 1937:Q1 -16.1%
  - 1938:Q2 -24.9%
  - 1939:Q4 -18.9%

Second Point

- There was massive quality change in motion pictures during the 1930s.
- No treatment of quality change except for Diagram 1 (p. 15) "Examples of comparative quality dimensions"
- Too much on movies as close substitutes to live entertainment, too little on movies as becoming increasingly *better* than local entertainment, esp. outside of a few big cities
- Disc. Quality change pp. 14-15 qualitative, no attempt to quantify

Third Point

- Why compare just 1900 and 1938?
- Why not compare by decades?
  - What was the rate of increase of total welfare by decade, including beyond 1938 into the 1950s and 1960s
  - Can the TFP conclusions be further developed from one number for 1900-38 to a set of decadal growth rates?

The main findings

- Motion pictures changed entertainment from a rivalrous service into a non-rivalrous commodity
  - (so did the phonograph at the same time)
  - (Baumol's disease obsolete before it was pronounced)
- Film close substitute to live entertainment
- Inverted U – initially distant substitute, then close, then distant as live entertainment differentiated
- Relation to Rosen on economics of superstars

Quantities

- Entertainment output up 28X 1900-1938
  - AAGR 9.2 [actually 8.8]
  - Per capita AAGR 5.9 [actually 7.4]
- Accounted for 2% of GDP growth and 3% of TFP growth 1900-38
- Motion picture contribution to growth "only slightly lower than GPTs such as steam, RR, and electricity"
- To produce 1938 output with 1900 technology would have required 1/3 of 1938 GDP! (visions of live shows on every small-town street)

More Quantities

- Price = sum of ticket price and opp cost
- 1900-38, ticket price declined 80 percent but opportunity cost increased 300 percent
  - These numbers must be nominal. Real wages didn't increase 1900-38 by 300 percent
  - Confusion Table 12. Wage 27 to 78 is nominal $ (AAGR +2.8) but "growth of real hourly wage rate" is 2.80!
  - $6.2B full cost 1938 = 8% of GDP, but GDP doesn't include other opp costs

Full "Social Savings"

- 1938 7 billion spectator hours
- Multiplied by price difference live and movie entertainment (implicitly $2/7)
- Social saving equals 2/7 * 7 billion = $2B
- Why is this a rectangle? Why not a Hausman-type triangle with ½ * expenditure share / demand elasticity?

Comments

- Approve of general framework
  - New and old forms of entertainment are substitutes
  - Use of spectator-hour as the unit of output
    - Most of paper's results derive from this one assumption
    - Comparable to the distinction between computer speed and memory vs. number of computer boxes
    - Computers are a single sold good whereas movie quantities refer to the industry as a whole

Becker Framework

- Watching movies (or TV) requires spectator time
- Where did the time for all those 1938 spectator hours come from? Total hours are fixed in quantity.
- Becker: substitution from labor to leisure
  - My tables show 1900-1940 was the big era of declining hours per week

Further Agreement

- It is correct to take account of time use and time saving when valuing new inventions
- Bakker's examples (p. 10)
  - Time saving: highways, RR
  - Nordhaus on welfare of life expectancy gains
- Increase in price and quantity together implies quality improvement (cite M. Bils)
- Agree that data imprecision is not a big deal because the orders of magnitude are so large (esp. because starting from zero in 1900!)

Too Much Selling of How Important Are the Results

- Comparing one industry based on utility-based output measurement with other industries using conventional measures is not fair
  - Seems wildly implausible that US motion pictures contributed more to growth than invention of the RR in the UK, much less in the US
  - Not to mention electricity, of which movies were one of many subsidiary inventions
- Pushing the importance of its results, paper is also repetitive without enough qualification that all the comparisons are being made vs. flawed Lebergott and NIPA numbers.

Let's Do Similar Analyses of Other Great Inventions

- Any conclusion of the importance of growth in a single better-measured industry is invalid until all industries have been subject to same treatment
- Phonograph, telephone, electric light, consumer appliances, radio, auto, truck, bus, tractor, just to mention a few that mattered in 1900-38
- Related to puzzle of slow Lebergott real cons p.c. 1900-1929.

Problems with TFP Calculations

- Standard problem. Fuzzy distinction between TFP growth and capital quality growth is not even discussed
  - Jorgenson obfuscation
  - 1900-38 improved quality of cameras, projectors, film, lights, not to mention to aesthetic experience of the 1920s movie palaces

Questions about Dual Interpretation

- These calculations do not use the discipline of labor's implied share
- Data are used on Y, L, W, and P
- Share = WL/PY
- Surprised that live entertainment prices fell by 1.3% annually in the face of wage increases. How in light of Baumol?
- Is this a mix effect?

General Problem with Opportunity Cost

- Valuing leisure time at the real wage
  - Ignores the fact that this is true only at the marginal hour between work and leisure
  - Diminishing marginal utility suggests that most leisure has opp cost substantially less than real wage
  - There's another elasticity to estimate, just like the price elasticity of the demand curve
- Consumers do not behave as if marginal leisure hours were valued at the real wage

Minor, p. 8 on 1929-50

- Big news long neglected, in 1999 BEA revised up 1929-50 real GDP growth from 2.6 to 3.5 percent per annum
- Paper correctly states this occurred because of "annual chain index"
- And incorrectly states because of "hedonic indices to adjust for quality changes"

- Separately, where did Lebergott get his (p. 25) apparent 13.7 AAGR of price for all recreation services? Table 8 has 3.13%. Which is it?

Conclusions

- This paper is the tip of the iceberg. Can do the same thing for
  - Phonograph
  - Radio
  - TV
  - Internet
- The paper should give more space to qualifying its own results and less (if any) space to comparing the resulting growth rates to flawed economy-wide measures
- Should express some self-doubt when suggesting that the invention of movies mattered as much as the invention of the railroad