Alumni News

Department of Economics

Indiana University of Pennsylvania ☙ Indiana, PA 15705–1087

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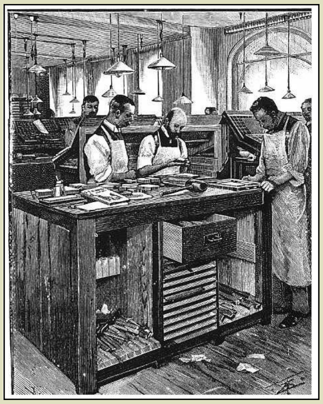

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Editor:

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Economists at the Movies, Part 2: At home (Video Rentals)

By Dr. James J. Jozefowicz, Jason M. Kelley, & Dr. Stephanie M. Jozefowicz

Based on Jozefowicz, James J., Kelley, Jason M, and Brewer, Stephanie M. "New Release: An Empirical Analysis of VHS/DVD Rental Success," *Atlantic Economic Journal*, 2008, 36(2), 139-151. See original paper for bibliography.

Prior to the introduction of the video cassette recorder (VCR) in 1980, movie consumers wishing to view a film had no choice but to attend the theater. Remember those days? Movie showings existed in limited quantities within bounded time periods. Consumers had to decide quickly, and a decision to not see a film could not be later amended. Once a movie was pulled from the screens, it was gone forever in most cases.

According to the Video Software Dealers Association (1996), there was considerable growth in the home video industry during the 1980s, which made it the largest domestic revenue source for movie studios. Specifically, in 1999, the $16 billion home video industry represented 55% of studios' domestic revenues, while box office revenues were 22%, and the remaining 23% came from all other forms of media, including sales of pay-per-view, cable, and broadcast television rights (Video Software Dealers Association, 2000).

In 2001, motion pictures grossed a new all-time domestic box office high of $8.4 billion (MPAA, 2002), an increase of nearly ten percent over the year 2000. While such a figure is impressive, film makers enjoy additional revenues once they release films for rental. In 2001, rental revenues surpassed box office receipts, with VHS rentals totaling $7.02 billion and DVD rentals grossing over $1.4 billion (Dretzka, 2003). During the same year, Americans spent an estimated average of $109.60 and 56 hours on home video entertainment, per person. Given these numbers, it is clear that the demand for home theater is robust and should not be ignored.

A consumer may view a movie in a theater for a relatively low marginal cost and no associated fixed cost; however, while movie rentals may be purchased at an even lower marginal cost, complementary technological player requirements historically have held back the growth of the rental market. Nevertheless, improvements in technology coupled with greater competition in the VCR and, more recently the DVD player markets, have resulted in falling prices of VCRs and DVD players in recent years, making the fixed cost of acquiring this technology much

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Movies: Enjoying at home

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less burdensome to consumers. Data indicates near-total penetration of VCRs into television households was achieved by the end of 2001, since 91.2% of television owners also owned a VCR (MPAA, 2002). Consumers subsequently adopted DVD player technology relatively quickly. Bakalis (2003) points out that by 2003, roughly 50 million Americans had purchased a DVD player since its introduction in 1997; though, it had taken a decade for VCR sales to reach the same level. Furthermore, DVD rentals overtook VHS rentals in June 2003 for the first time.

Despite the obvious popularity of this form of entertainment and the fact that the majority of film studios' domestic revenues are generated by home video viewing, a serious dearth of studies analyzing the success of films in the video rental market exists. Stephanie Brewer Jozefowicz, alumnus Jason Kelley ('03), and I address this gap through the construction of an empirical model analyzing rental revenue for both VHS and DVD media, as measured by gross rental revenue, using a sample of the top 100 domestic grossing films from 2001.

What factors do you think affect the financial performance of a film in the rental market? Many of the variables are the same for both movie rentals and theater showings so you may recall determinants such as MPAA rating (G, PG, PG-13, R), critical reviews, production budget, genre (Drama, Comedy Drama, Horror, Science Fiction, Action-Adventure), the presence of certain stars, and award nominations from my previous article entitled "Economists at the Movies" in the *Alumni News* (Spring 2010). In addition, we include the same explicit measure of word-of-mouth transfer of information between consumers (as measured by CinemaScore reviews) that was a key feature of our box office gross revenue study. Economic variables also matter so we include U.S. personal income and the Consumer Price Index for rentals of videocassettes and discs.

In an effort to gauge whether or not a successful theatrical run is an indicator of financial performance in the movie rental market, we also include the final domestic box office gross revenue for the movies. Films with greater box office gross revenue may have higher rental revenue for several reasons. Strong box office performance may signal higher film quality to renters. A film with a high box office gross likely also has had a relatively lengthy run in theaters during which time the film remains the subject of both media coverage and word-of-mouth discussion. Potential renters may more readily choose a film based on past name recognition.

Drs. James J. Jozefowicz & Stephanie M. Jozefowicz

VHS Revenue Results

Based upon our analysis of the VHS model, some interesting results are obtained. Although theatrical success matters in the rental market, a 1% increase in a film's box office gross will correspond with an average increase of only 0.54% in VHS rental revenue. This result indicates a notable carry-over effect from theaters to video stores, but one characterized by diminishing returns.

Production budget does not meaningfully affect VHS rental revenue. However, the presence of certain stars increases rental revenue. For each additional star featured in a film, rental revenue increases 6% on average.

Dramas and horror films perform better than animated pictures, on average, in the rental market. Specifically, dramas and horror films garner an average of 17-19% higher revenue than animated films. Consistent with the genre findings, both R and PG-13-rated movies perform about 20-23% better, on average, than G-rated films. Thus, an obvious preference for more mature subject matter exists among renters, perhaps due to privacy afforded to them by

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Movies: Video Rentals

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home-viewing.

According to our analysis, critical reviews do not matter appreciably in renters' decision-making. This result suggests that consumers may be more likely to take a chance renting a lower-quality film, perhaps due to its low price. Other researchers have hypothesized that the opinions of professional movie critics do not necessarily mirror those of the layman, and that might explain our finding. In addition, we discover that approbation from the movie industry as indicated by film award nominations has little influence on renters. Similarly, consumers may not use the same word-of-mouth information passed on from theater-goers when making rental decisions. Due to the relatively low financial risk associated with renting, consumers may be less inclined to seek and/or heed the advice of others.

According to our findings for the impact of personal income on VHS rental revenue, renting a videocassette is an inferior leisure activity with an income elasticity of roughly -5.2. This is logical, because viewing technology has advanced beyond VCRs to DVD players. People with higher incomes choose the more advanced technology.

DVD Revenue Results

Turning our attention to the DVD model, the elasticity between DVD rental revenue and box office gross revenue is 0.5. This further validates the link between box office earnings and rental success.

Production budget has an elasticity of 0.2 in this model, which may indicate that special effects, exotic filming locations, and other expensive production elements afforded by films with large production budgets translate better to the high resolution picture of DVDs and/or to the special feature add-ons on DVDs. The presence of certain stars favors DVD rental success.

Of the genres, dramas and comedies are favored by renters. While action-adventure pictures are more likely to have special effects which benefit from the better resolution of DVDs, they do not perform better than in the VHS model. MPAA ratings replicate the results of the VHS model, but with much larger impacts. PG-13 and R-rated movies, on average, earn rental revenues that are approximately 52% larger than G-rated films.

Critical reviews, movie award nominations and word-of-mouth recommendations uniformly lack influence on DVD renters. These findings are consistent with the VHS model.

According to the analysis of the DVD model, there is a positive impact of personal income on DVD rentals. This result suggests that DVD rentals are normal goods. The size of this effect is considerable based on the elasticity of 27.

Summary

Box office gross revenue exerts a positive influence on rental revenue throughout the analysis. The elasticities range from 0.54 to 0.57 and reveal a correlation between financial success in theaters and financial success in video stores.

The different signs on the personal income variable across the VHS and DVD models are among the most interesting results. In particular, the negative sign in the VHS model suggests that renting VHS movies is an inferior good. Given the degree of VCR saturation in 2001 and the competition that VHS faces from the increasing diffusion of the technologically advanced DVD format, it is reasonable that VHS video rentals have become less desirable to those renters in the upper income brackets. Additionally, the positive impact in the DVD model supports the vigorous emergence of DVD movie rentals as a normal good.

The results for the genres are mixed across the models. Only dramas consistently exert a positive impact on rental revenues relative to animated films. Interestingly, horror movies perform much worse in the DVD model than the VHS model. This outcome may be consistent with our findings that VHS rentals are inferior goods and DVD rentals are normal goods if consumers with higher income levels are less likely to find horror films appealing.

Of the MPAA ratings, only the R and PG-13-rated movies perform better than G-rated films. The conventional wisdom in Hollywood is that R and PG-13-rated films yield higher revenues thanks to a mature audience who can afford movie ticket prices. In the case of movie

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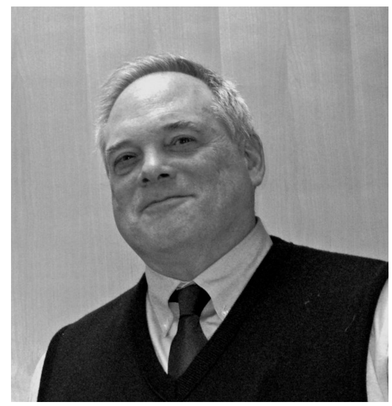
Balancing the Budget While Stimulating the Economy

By Dr. Willard Radell

There is a great amount of hand-wringing in Washington about the impossibility of simultaneously applying fiscal stimulus and making progress towards balancing the budget. Simply cutting taxes collected will stimulate the economy, but by immediately adding to the deficit we would risk a run-up of interest rates that would damp recovery by discouraging investment. Simply increasing government spending carries with it similar consequences. Increasing taxes collected will immediately reduce the deficit as will immediate cuts in government spending, but such contractionary fiscal policy makes recovery from the Great Recession more difficult and slower. So, political constraints aside, what could be done?

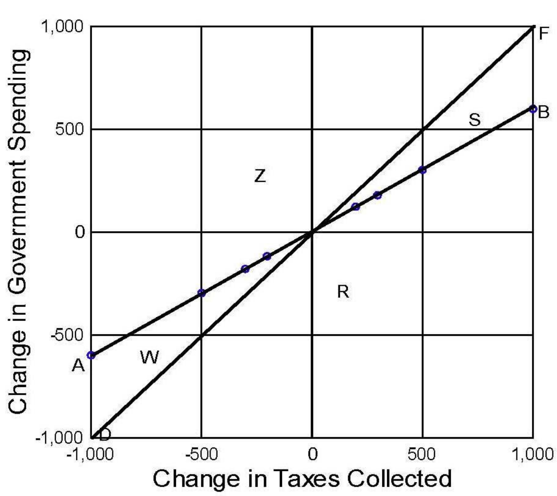


Dr. Willard Radell

Economists are well aware that there is asymmetry between the effects of tax changes and expenditure changes. That asymmetry is best seen in systems of simultaneous equations, but allow me to simplify it for this article. Changes in government spending are direct changes in expenditure that will be fully acted-upon by the expenditure multiplier. Once those checks are cut and cashed the government has lost control over the money as it freely circulates (one person's spending becomes another person's income). Changes in taxes collected only indirectly change expenditure as the marginal propensity to save reduces the amount by which consumer spending changes. Thus, although equal changes in Taxes collected and Government spending are budget neutral in the short run, they do not have a neutral effect on GDP growth.

This can be seen in the diagram that follows. Line DF is the iso-budget line which shows combinations of government spending and tax changes that have no initial impact on the deficit position of the federal budget. Thus, a cut in taxes collected coupled with an equal cut in government spending is on DF and has no initial impact on the federal budget balance. Any fiscal combination to the right of DF indicates budget surplus. Any fiscal combination to the left of DF shows an initial budget deficit.

Line AB is the fiscal neutrality line which shows combinations of government spending and tax changes that neither stimulate nor depress overall economic activity (GDP). Because of the lack of symmetry between tax and spending changes, line AB is offset from the diagonal. Assuming the marginal propensity to consume is 0.6, then the simple tax multiplier is -1.5 and the simple expenditure multiplier is 2.5. Thus, a cut in taxes of $500 (billion), coupled with a cut in government spending of $300 (billion), neither stimulates nor depresses the economy as the fiscal stimulus of the tax cut is exactly offset by the contractionary impact of the spending cut. Any combination to the right of AB represents contractionary fiscal policy combinations and anything to the left of AB indicates expansionary fiscal policy combinations.



Wedge "S", which is to the right of DF and to the left of AB, shows combinations that induce budget surpluses while stimulating the economy. Note that the upper boundary of Wedge "S" maps the effect of the "balanced budget multiplier" by which equal increases in government spending and taxes stimulate GDP, while not contributing to budget deficits. Wedge "W", is to the left

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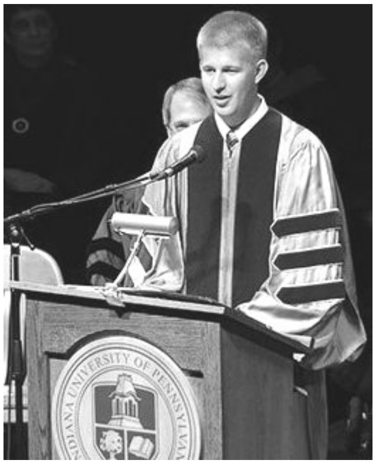
Ray Edwards Helps Open the 2010-2011 year



Economics major and Student Trustee member, **Raymond G. Edwards, Jr.** (pictured left), helped open the new academic year. Ray presented a speech to the faculty at the Opening of the University and incoming students at Freshman Convocation on "How to Get an Ivy League Education at IUP." Ray says, "This fall I told the incoming freshman at convocation that IUP is a place full of opportunities, and that if one takes advantage of these opportunities, he can get an Ivy League quality education here." Ray, having spent part of the summer as a fellow at the American Institute of Economic Research (two weeks in Great Barrington, MA, with economic graduate students, professors, and researchers), cleverly produced as evidence copies of textbooks used for principles of economics and the course sequence in calculus. Both texts are commonly used by faculty at Harvard and IUP. Ray Edwards is a senior and also majors in international business, minors in music, and is a student in Cook Honors College. ◆

Stimulating the Economy, Continued

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of DF and to the right of AB, indicating increases in the budget deficit while contracting the economy. Point "R" to the right of both DF and AB indicates contractionary impact on GDP while moving toward a budget surplus. Point "Z" is to the left of both DF and AB showing fiscal policy combinations that stimulate GDP while increasing the deficit.

Point R represents a fiscal policy combination advocated (but never implemented) by President Reagan that called for tax increases in 1982 of $100 billion (implemented), coupled with government spending cuts of $300 billion (not implemented). It would have been recessionary while reducing the budget deficit.

Point Z represents the approximate situation reported from the second quarter of 2008 to the second quarter of 2009. In that period (according to the Bureau of Economic Analysis), government spending increased by $225 billion and taxes collected dropped by $270 billion (Table 3.1). That increased the budget deficit while stimulating the economy.

The encouraging lesson from this is that with wedge "S" it is possible to pursue a balanced budget, while stimulating GDP. All politicians have to do is raise taxes and increase government spending by the right amounts and then try to win the next election. ◆

Movies: Video Rentals

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rentals, it seems reasonable that consumers will gravitate toward renting films with mature content to view in the privacy of their own homes.

Perhaps what is most noteworthy about movie rentals relative to cinema features is the lack of importance placed on award nominations, the opinions of critics, and word-of-mouth praise in the financial success of rental films. It appears that indications of film quality and approbation from the motion picture industry, as well as from the average moviegoer, have no appreciable impact on rental gross revenue. Perhaps, this is a function of the lower price of movie rental compared to theater admission or evidence that diminishing returns to recommendations have long since set in by the time a film is released on video. What appears to matter more to renters is the appearance of a favorite star in a film. Across both models, each additional star from our list present in a movie leads to a 5-6% average increase in rental revenue.

The size of a film's production budget is a significant determinant of DVD rental success, but not VHS rental success. The coefficient for production budget in the DVD model is 0.2. Such a result indicates decreasing returns in the rental market to a studio's investment in a film, and that DVD rental revenue is inelastic relative to changes in the budget variable. In his 2004 book, *Hollywood Economics: How Extreme Uncertainty Shapes the Film* Industry, A. De Vany points out that larger budgets are not necessarily obvious on the picture screen in terms of better production value and that outcome becomes more likely as budgets grow larger and larger. This observation may be even more pertinent to the display of a film on a small television screen, where the diminishing returns of costly special effects may set in far sooner. ◆

Faculty Notes

Retired faculty member **Mr. Harry G. Holt** stopped by the department in September. He was on campus to distribute Gideon Bibles, which he does on an annual basis. Now a grandfather of three, Mr. Holt says he spends a lot of time traveling. In fact, he and his wife had just returned from visiting their daughter and her family in Kentucky. Mr. Holt, who retired in 1999, says he is still as busy as ever and keeps in shape by being on a daily exercise regime. With his four children scattered all over the U.S., he said a family reunion is planned in the near future.

Dr. James J. Jozefowicz was elected President and **Dr. Stephanie M. Brewer Jozefowicz** was elected Secretary of the Pennsylvania Economic Association (PEA) at the Annual Conference held at Grove City College in June 2010. **Dr. Yaya Sissoko** is a member of the PEA board of directors.

Dr. Todd B. Potts presented a paper co-authored with **Dr. David B. Yerger** titled, “U.S. Financial Stress and the Canadian Economy” at the 70th International Atlantic Economic Society’s conference held October 2010 in Charleston, SC.

A paper by **Dr. Todd Potts** and **Dr. David Yerger** titled “Variations across Canadian Regions in the Sensitivity to U.S. Monetary Policy” was accepted for publication in the *Atlantic Economic Journal*.

Dr. Yaya Sissoko’s paper “Current Account Sustainability in African Communities: Are There Regional Differences?” coauthored with Dr. Niloufer Sohrabji, was accepted for publication in the *China-USA Business Review* for Fall 2010.

“Impact of FDI on Economic Development: A Causality Analysis for Singapore, 1976-2002,” by **Dr. Yaya Sissoko** (coauthored with IUP alumnus **Dr. Mete Feridun**), was accepted for publication in the *International Journal of Economic Sciences and Applied Research*, Volume 4, Issue 1, December 2010 (forthcoming).

Dr. Yaya Sissoko presented two research papers entitled "Role of Monetary Policy in Economic Instability" and “Wagner’s Law Revisited: An Econometric Analysis,” co-authored with IUP alumnus Dr. Mete Feridun, at the 33rd Northeast Association of Business, Economics, and Technology (NABET) Annual Conference held in State College, PA, October 19 and 20, 2010.

Dr. Sarah E. Jackson presented her paper "The Costs of U.S. Drug Prohibition to Law-Abiding Taxpayers" at the 2010 Hawaii International Social Science Conference, hele in Honolulu, HI, June 2-5, 2010.

Dr. Yaya Sissoko presented a research paper entitled "Current Account Sustainability in African Communities: Are there Regional Differences", co-authored with Niloufer Sohrabji, at the 36th Eastern Economic Association (EEA) Annual Conference held in Philadelphia, PA, February 26 – 28, 2010. Dr. Sissoko also served as discussant on three other papers at the EEA meetings.

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Excellence in Prediction

Economists are renown for their forecasting abilities. Typically it is on par with the 10-day forecasting accuracy of meteorologists west of the Alleghenies. It is with great honor and prestige to announce that our own **Dr. Willard W. Radell** is not only a worthy econometrician but a budding and accurate meteorologist as well. In the *2010-2011 Weather World Snowflake Contest*, Dr. Radell accurately predicted that Bradford, PA, would see their first snowfall on November 27, 2010. Dr. Radell joins three others who accurately predicted the first snow of the season. The winning contestants are awarded “a prize!” The Weather World Snowflake Contest is sponsored by The Pennsylvania State Climatologist, a service to the Commonwealth by the College of Earth and Mineral Sciences and Penn State University. Congratulations Dr. Radell! ◆

Student Spotlight

Andrew Coleman is the 2010-2011 recipient of the Donald A. Walker Scholarship in Economics, a scholarship for new or returning majors in economics. The scholarship is named in honor of emeritus professor, Dr. Donald A. Walker. Andrew was asked to share a few comments regarding his studies and interests.

Andrew writes: I graduated from Homer-Center High School in 2007 and attended IUP through dual enrollment my senior year. So many things interest me in economics, the fact that we are dealing with real-life situations and real-world applications makes economics such an intriguing subject for me. In addition to economics I am also very interested attaining a law degree. I think the analysis in economics can translate to legal studies very well. I currently have a big interest in Duquesne, George Mason, and Fordham law schools.

When I'm not studying I'm usually golfing in the summer and playing basketball in the winter. I just hit an 87 at a local Indiana course this summer and I'll take that any day. I am currently interning with the Department of Commerce doing economic research for minority businesses. I am very excited for my internship, I have learned so much from IUP and I'm just looking forward to applying my knowledge to a workplace. I'm sure that I will pick up more knowledge from my time with The Department of Commerce but I feel that IUP has prepared me very well for the next step in my academic career. I feel that I am extremely fortunate to receive the Donald A. Walker scholarship award and would like to thank the committee who picked me from the worthy candidates. ◆

Student Awards and Recognition

The following students were recognized at the May 2010 Commencement Exercises of the Department of Economics:

Dr. Brewer Award--**Aleta Haflett**

Bright Dismal Scientist Award--**Antonio Ayllon**

The Wall Street Journal Student Achievement Award—**Antonio Ayllon**

The following students were inducted into Omicron Delta Epsilon (ΟΔΕ), the national honors society for undergraduates in economics:

John Balint

Robert Davenport

Antonio Ayllon

The faculty of the Department of Economics congratulates these students on their honors and achievements. ◆

NEW! Show Your Pride NEW!

The Economics Club is selling IUP Economics T-shirts! You can show pride in your association with the IUP Department of Economics and support the Economics Club at the same time. Shirts are available in crimson (100% cotton) with white print or in gray (90% cotton, 10% polyester) with crimson print and in sizes small through XXL. Each T-shirt is just $10 plus $2.50 for shipping and handling (for international shipping see contact information below). The proceeds go to support Economics Clubs activities. You can order by mailing the completed order form and payment to the address below. *Please note: T-shirt purchases are not considered charitable donations and are therefore not tax deductible.*

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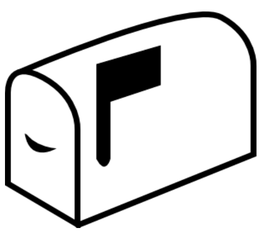

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QUESTIONS? Contact Dr. Jack D. Julian at jjulian@iup.edu

The perfect shirt for that holiday gift money!

Alumni Information

The Department of Economics aims to maintain a current contact list of all of our alumni. Please let us know what you are doing!

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Your News (which we will use in our next newsletter):

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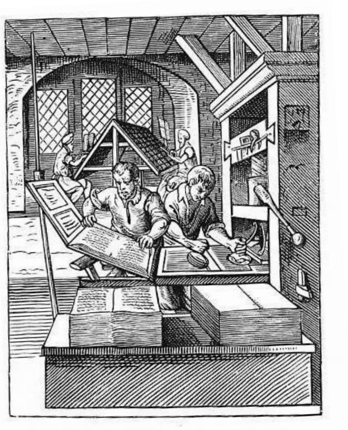

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