

The rollout of television to virtually every household in the United States in the mid-twentieth century created a potentially huge audience for people working in the entertainment industry. As **Felix Koenig** explains, this experience illustrates how new technologies can have a disruptive impact on labour markets: a handful of superstars were richly rewarded, but the majority of entertainers ended up worse off.



TV superstars:

how a new
technology
disrupted the
entertainment
industry

Many economists link rising inequality to technological change. A classic theory in economics suggests that ‘superstar effects’ may arise when technologies enable workers to reach larger markets. These effects amplify minor differences in talent into large income differences and move the labour market towards a ‘winner-takes-all’ outcome. My study looks at an iconic experience with scale-related technical change in the entertainment industry – the launch of television in the United States in the mid-twentieth century – and tests the impact on inequality in this field.

The rollout of TV multiplied the audiences of entertainers many times over. While a few hundred individuals watched live performances before the launch of TV, the same performance could be watched by millions a few years later. From TV’s earliest days, people flocked away from traditional amusement in theatres, bars, bowling alleys, vaudeville palaces or sports events and became glued to their TV sets.

During this period, inequality in the entertainment industry increased markedly. Figure 1 shows the earning distribution in entertainment before and after the launch of TV and reveals the spreading out of the income distribution during this period. A rising share of actors earned extreme incomes, while the share in mid-paid jobs declined. Simultaneously, a growing share of workers ended up in low-paid jobs at the bottom of the income distribution.

In the wider US economy, inequality was relatively stable during this period, so the sharp rise in inequality in entertainment suggests that the industry was going through unusual times.

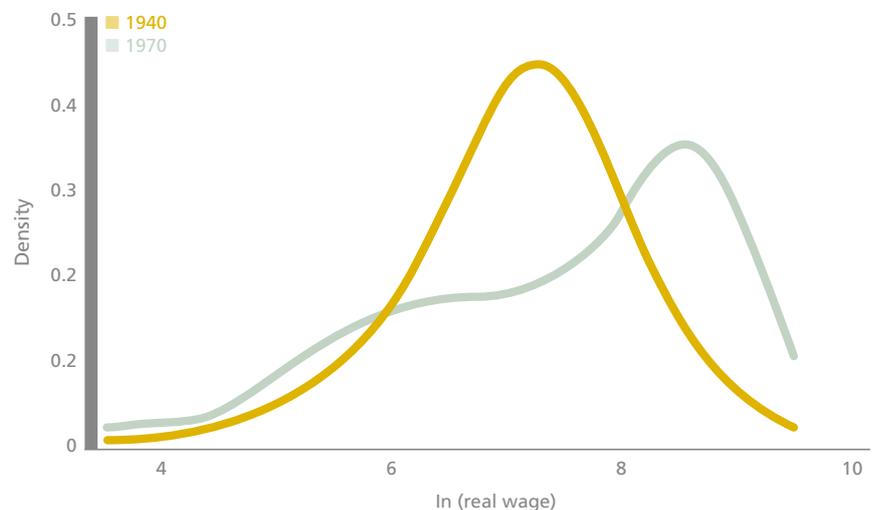
Analysing the effects of technical change on inequality

Besides the launch of TV, other factors, including trends in regulation and pay-setting norms, affected inequality too. Distinguishing the effect of technology from such trends is one of the key challenges that have hampered credible statements about the impact of technology on inequality.

The rollout of TV provides a rare opportunity to isolate the impact of a technical disruption on the labour market. A scientific approach would randomise access to technology across labour markets.

New technologies may generate ‘superstar effects’ and move labour markets towards a ‘winner-takes-all’ outcome

Figure 1:
Change in the wage distribution for US entertainers, 1940-1970



Notes: The figure shows the entertainment log real wage distribution in 1950 US dollars in 1940 and 1970 from the lower 48 states.

Sources: US Census 1940, 1970.

While this is not feasible, institutional details in the TV rollout process lead to variation in TV access that is as good as random.

TV filming initially started city-by-city, and different places thus experienced this technical change at different times. By comparing local changes in inequality across local labour markets, we can distinguish the effect of TV from the industry-wide trends in inequality, including deregulation and pay-setting norms.

A further appeal of this setting is that local economic conditions were not the driver of the launch of TV stations. Instead, the Federal Communications Commission deployed TV according to their priority system. The system ranked places according

Inequality in the US entertainment industry increased markedly as a result of the rollout of TV

to technical location features that paid no attention to the local economy. This setting thus addresses another common problem in studies of technical change: the emergence of new technologies in otherwise booming labour markets.

What's more, signal interference among neighbouring TV stations interrupted the rollout plan. Due to this intervention, several local labour markets narrowly missed out on TV launches. This gives rise to another source of variation in TV access that is as good as random, and offers an opportunity to verify that the rollout process is unrelated to local labour market shocks.

Superstar effects

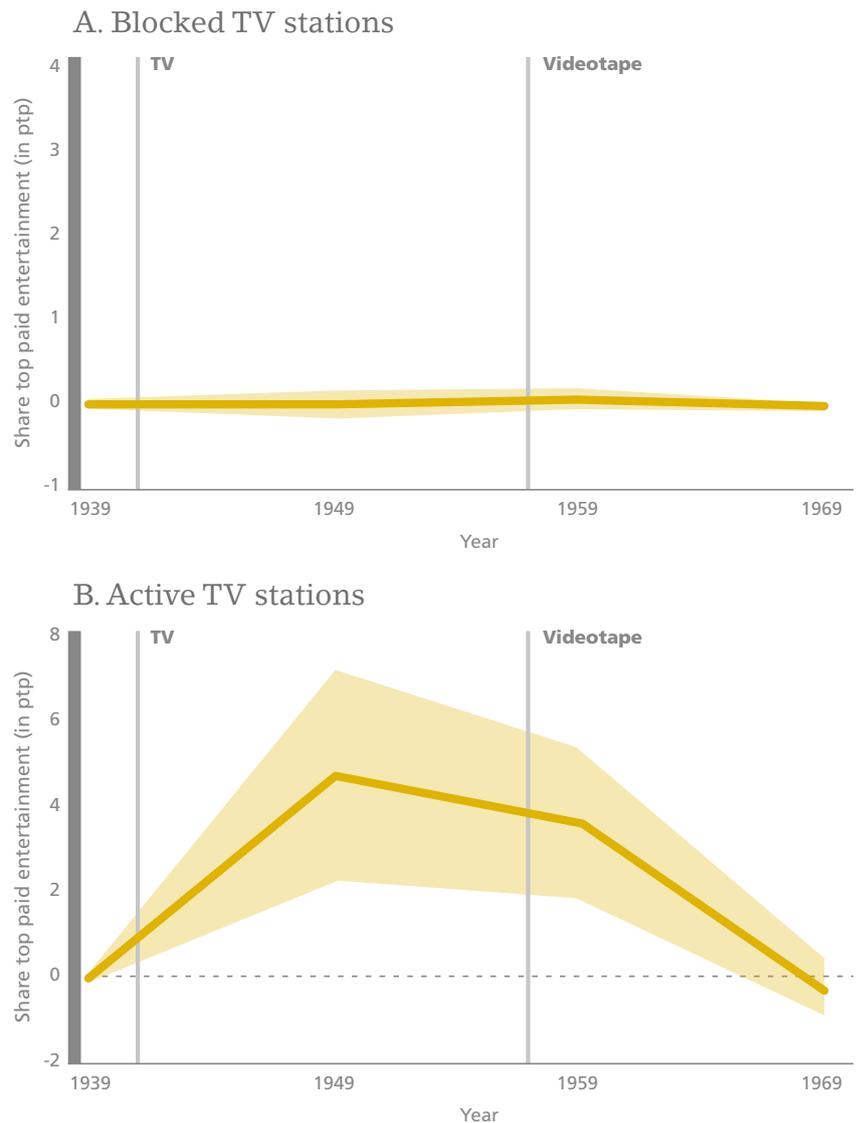
The results reveal that TV had substantial effects on inequality in entertainment. Places where TV was deployed experienced sharp income gains for star entertainers. Having a local TV station boosts pay at the 99th percentile by around 17%. This gain for star entertainers is large relative to the wider US economy. This can be seen since the share of local entertainers in the top 1% of the US wage distribution nearly doubled compared with the number before the launch of TV.

Figure 2 shows that this occurs when a local TV station is launched and disappears again when centralised network filming displaces local filming. Locations that narrowly miss out on the launch of a TV station see no growth in top entertainer pay. This lack of effects confirms that the rollout process was unrelated to other local trends, and increases the confidence that we are isolating the effect of TV in the baseline results.

Economists have argued that superstar effects magnify the rewards to being the best but offer limited gains outside of a small group of top stars. These characteristic patterns are strongly supported in the data. Income growth escalates as we move up towards the top of the wage distribution and the share of income going to the top 1% nearly doubles. All the gains accrue to a few entertainers at the top and marginally less talented workers do not benefit from TV.

Looking beyond the stars, the rollout of TV has substantial negative effects on a large part of the entertainer workforce. The share of entertainment jobs in the middle of the wage distribution contracts sharply and places where TV is

Figure 2:
The effects of TV on top earners



Notes: Panel A shows the effect of blocked TV stations (comparison groups are untreated areas); Panel B shows the effect of TV stations. Top-paid entertainers are in the top 1% of the US income distribution. Vertical lines mark the beginning of local TV ('TV') and the end of local TV ('Videotape'). The area shaded in light yellow marks the 95% confidence interval.



Places where TV was deployed experienced sharp income gains for star entertainers



launched experience a near 50% decline in such jobs.

TV also affects places beyond the city limits where the show filming took place. Historic TV stations transmitted shows via airwaves and could reach audiences far beyond the local labour market where the station was based.

I use the propagation of the TV signal to compute which local entertainers had to compete with shows broadcast over the airwaves. In the initial rollout period, many parts of the country did not have access to a TV signal. But as soon as the TV signal became available, interest in local entertainment declined substantially.

Comparing demand for local entertainment across areas with and without a signal throughout the rollout reveals the devastating impact of TV. Spending at local county fairs declined by 5% and employment in the local entertainment industry dropped by about 13%.

The data show that a key driver of these superstar effects is competition for talent. Little top income growth occurs in labour markets where only a single TV station operates. It is the launch of a competitor station that introduces the striking rise in top incomes.

This highlights that market concentration on a few stars does not necessarily indicate malfunctioning of markets: rather, the superstar effects arise because of intense competition for talent.

Addressing imperfect competition in labour markets may thus do little to reduce rising top income concentration.

Does this rise in inequality reflect unequal gains in productivity? In the entertainment industry, productivity can be uniquely well measured, which allows me to quantify how unequal productivity gains are distributed. The data show that revenues of stars' shows grew strongly with the launch of a local TV station, while ordinary shows suffered a sharp drop in revenues.

To quantify these effects, I collect archival data on audiences of entertainers and prices, and track how these changed during the TV rollout. Audiences of star entertainers quadrupled, and simultaneously revenues grew in line with the audience size.

At the same time, attendance and spending at traditional live entertainment

This article summarises 'Technical Change and Superstar Effects: Evidence from the Roll-out of Television' by Felix Koenig, CEP Discussion Paper No. 1663 (<http://cep.lse.ac.uk/pubs/download/dp1663.pdf>).

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outlets dropped significantly. This effect was particularly pronounced for live performances that were in direct competition with TV. Entertainment outlets that were more immersive and distinct from TV were shielded to some degree from the disruption.

Conclusion

Technologies may generate superstar effects and move labour markets towards a 'winner-takes-all' outcome. The results of one of the most iconic cases of a scale-related technical change reveal the seismic impact such changes can have on income inequality. TV generated sharp income concentration on a handful of stars, while it hurt the majority of workers.

But to evaluate the overall merits of such technical change, it is also important to contrast the rising inequality in labour markets with the gains for consumers. TV was embraced enthusiastically by Americans. As with many technical changes, TV is a double-edged sword, which generates consumer benefits at the cost of rising inequality.

Beyond the entertainment industry, many current technologies are making it feasible to reach vast scale markets. While there are parallels, superstar effects arise only when workers have unique and irreplaceable talents. In labour markets where skills are learnable and workers are closer substitutes, superstar effects ought to be smaller.

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