The Productivity Premium

How to afford great medical care and survive the cost disease

Andreas Albrecht

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Introduction: Our world of jobs, productivity and services is changing rapidly. We are seeing surprising shifts in wages and costs and are experiencing a phenomenon economists call the "Baumol effect" or the "cost disease".[i] The cost disease can lead to alarming increases in cost of important things such as medical care. But our alarm may be misplaced: As our collective productivity grows we can actually afford more than ever before. Thus I prefer to call this phenomenon the "productivity premium". Whatever the name, the phenomenon is somewhat technical and counterintuitive. This essay is an attempt to explain it in simple terms. If the productivity premium were more widely understood, it might change the way we discuss several hot-button issues, such as the cost of medical care and education.

In my "day job" I'm a physics professor[ii], and in my profession we are fond of using "toy models" to communicate important concepts in an easy way. The idea is to paint a greatly oversimplified picture as an illustration, in order to convey the main point. Once the main point is communicated, more layers of realism can be discussed.

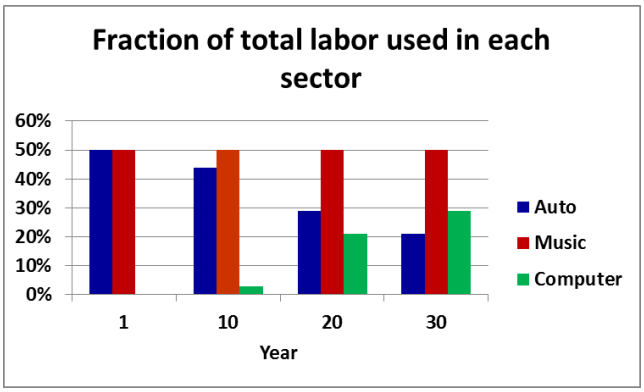

Figure 1 Percent of total workforce employed in each sector, by year. The live music performers are a fixed fraction of the workforce, and the increasingly productive workers in the auto sector are a declining fraction of the total since we assume an unchanging demand for cars. The increasingly productive workers in the expanding computer sector are an increasing percentage of the total workforce (because more and more computers and applications are purchased).

An economic "toy model"[iii]: Here I offer a toy model of the economy in order to illustrate the basic idea of the productivity premium. To start with, imagine a world where there are only two jobs: Auto worker and live jazz musician (you can choose your favorite music… the original economics article on this topic focused on classical chamber music). The productivity of an auto worker has grown steadily over the years, greatly transforming the auto industry. But for an audience who believes jazz is best enjoyed in an intimate live setting, a jazz musician is not any more productive now than at the height of the Jazz Age 100 years ago. (In the spirit of a toy model, we don't worry about who produces the food etc… maybe everyone has gardens.)

So let's model the auto worker's productivity as increasing at a flat rate of 3%/year and the jazz musician's productivity as increasing at 0%/year. In our simplified model the population does not change, and the demand for cars and jazz performances does not change either. Due to increasing productivity, fewer and fewer workers are required in the auto industry. Let's assume the "extra" workers who leave the auto industry find jobs in a brand new industry, say building and writing applications for computers. We'll assume the productivity in the computer industry also increases at 3%/year, but rather than laying off people, the population consumes more and more computers and applications, so that part of the economy actually grows.

Workforce percentages: In this model, the fraction of the workforce in the auto industry will decline: Increasing productivity means fewer workers are needed to produce the same number of cars (and we have assumed no

increase in demand). The fraction of the workforce that are jazz musicians will remain the same (for live jazz, we assume productivity and demand do not change). And the fraction of the workforce in the expanding computer industry will increase. The evolution of the workforce is depicted in Figure 1.

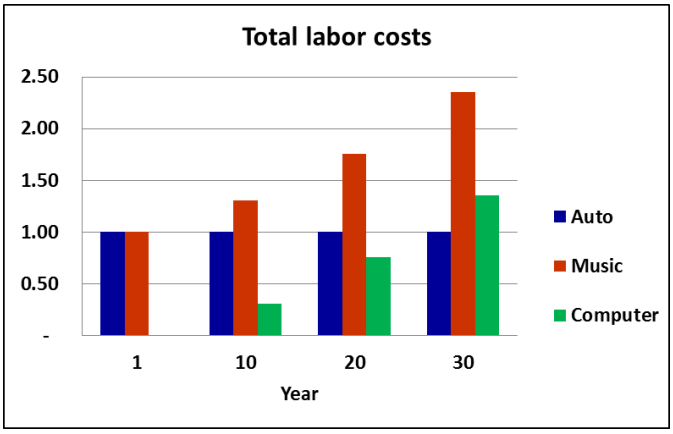

Figure 2 Total labor costs per sector, by year. Labor costs remain constant in the auto sector, as increased productivity translates to higher wages. To compete, the music industry must pay higher wages too, increasing its total labor costs. The growing labor cost in the computer sector reflects the overall growth of that sector, as labor freed up by increasing productivity in the auto sector finds work in the computer sector.

Pay: For simplicity we assume that the price of an automobile does not change, and that all the productivity gains translate into increased wages for the auto workers. We also assume the pay in the computer sector tracks the pay of auto workers. What about the musicians? If like the auto workers their pay is also linked to their productivity, their pay will not change since their productivity does not change. Will people still take on all the training and hard work to become professional musicians, only to see the wages gradually dwarfed by the rising pay of the auto workers? In the simplified world of our toy model they will not: The only way a venue can hire a jazz musician is to pay him just as much as an auto worker or computer programmer. As a consequence, the cost of a live music performance rises as the productivity of the other economic sectors grows. This phenomenon is illustrated in Figure 2.

Product Cost: We assume the total costs track the labor cost of each product. Thus the auto costs are unchanged and the cover charge at the jazz club grows. Our total expenditures on computers and computer applications will also grow as we buy more and more from that sector (even as the unit costs decrease due to increasing productivity in that sector). These phenomena are illustrated in Figure 3.

Affordability: Because the cost of jazz shows is skyrocketing (Figure 3) it would seem that jazz performances are becoming less and less affordable. That is actually not the case, because incomes are also rising. Figure 4 shows that expenditures on live jazz are constant as a percent of total income (assuming number of performances attended does not change). Consumers also have additional buying power (due to decreasing auto costs as a percentage of income) which we assumed in the toy model is used for buying computers. However, consumers might just as well use some of this additional buying power to attend even more jazz performances, which means that really live jazz is getting more affordable than ever.

Reality Check: The toy model is unrealistic in numerous ways. In reality, auto workers have not managed to see their increasing productivity fully rewarded in higher wages (even though their productivity gains mean the economy has the capacity to do so). Music recording and videos have been disruptive to the market for live music, and the process of workers from one industry transitioning to another is hardly a trivial one. Also, as prices change, consumers will make different choices (e.g the less committed members of the jazz audience may find driving around in ever-cheaper cars, or playing computer games an attractive option vs paying ever increasing cover charges at live jazz venues). The real economy is just much more diverse and complicated. Generally in the US, increasing productivity has grown our economy (e.g. our GDP) but has not resulted in corresponding increases

in wages for many workers. Which areas of the economy can be expected to become more productive (such as the auto industry) and which are less likely to change is not always that clear. It seems easy to think that live jazz can't get more productive, but perhaps less so for medical care. Still, the toy model conveys some important points which I believe are robust ones:

Lessons: Just because the price of one type of product might be growing faster than inflation and faster than the overall GDP growth (as is the case for jazz cover charges in the toy model) does not mean that product is becoming less affordable. Increasing productivity is a good thing, and means that overall the economy is more wealthy. Expecting prices for all products to grow at the same rate may seem like good financial discipline but I believe this "discipline" is actually a harmful idea. More than ever before our country can afford to have 30 minute consultations with our doctors, and to teach our children in small classrooms[iv]. The fact that the income of many people has not kept up with overall productivity gains in the economy, causing these things to seem "unaffordable" is due to the particular economic and political path we are following, not due to a lack of resources in the overall economy. Why we are on one economic path rather than another ties in with hotly debated topics such as how best to determine wages, incentives, investments and ultimately our overall priorities. I don't expect consensus on these issues to appear rapidly given where we are today, but I do believe we will be shooting ourselves in the foot if we blindly cling to the idea that costs of all products should change at the same rate.

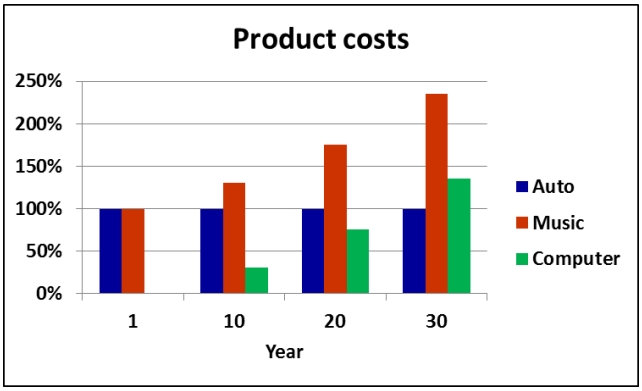

Figure 3 Cover charges in jazz clubs will grow. This is because labor costs will increase due to competition for labor with the auto sector. Computer costs will grow because in the toy model we buy more and more computers.

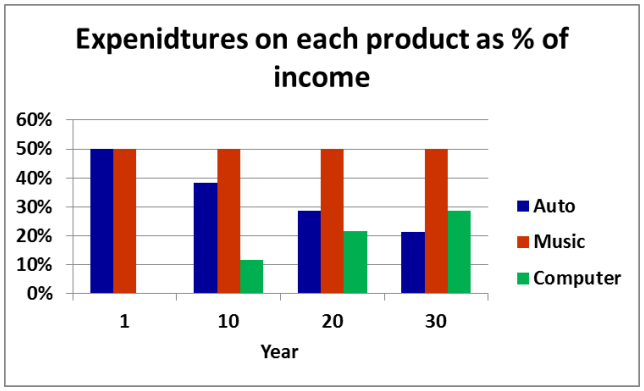

Figure 4 Despite increasing costs, jazz cover changes remain just as affordable over time, since incomes also increase. Autos become more affordable due to increased productivity in that sector, giving consumers more and more buying power for new products such as computers. Of course, nothing is stopping these consumers from using their growing buying power for additional visits to jazz clubs, so really live jazz is becoming more affordable over time, despite the increasing cost.

Thanks: I thank Sonia Albrecht for teaching me about the cost disease, and William Albrecht for teaching me to love jazz.

[i] *The cost disease: why computers get cheaper and health care doesn't* William J. Baumol; with contributions by David de Ferranti ... [et al.].; New Haven, Conn. : Yale University Press, c2012. (See also http://en.wikipedia.org/wiki/Baumol%27s_cost_disease)

[ii] For more info about my day job see: http://albrecht.ucdavis.edu/

[iii] A spreadsheet giving details of the toy model with user-adjustable parameters can be found in here http://albrecht.ucdavis.edu/CD. The spreadsheet also produces the figures shown in this document.

[iv] William Bowen presents a thoughtful account of the cost disease in higher education in his 2012 Tanner lectures at Stanford