

Economic Analysis of Rural Health in the USA: Suggested Solutions for the Market

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The present article endeavors to conduct an in-depth analysis of the healthcare economy in rural communities and compare it to the urban communities within the United States. Our examination will encompass an evaluation of available resources, incentives, and market powers. In light of our findings, we will propose recommendations aimed at enhancing the efficiency and sustainability of the existing healthcare model within rural communities.

INTRODUCTION

Rural healthcare services show tremendous disparities when compared to the Urban communities [1]. The availability of hospitals, primary care clinics, and other healthcare services displays substantial disparities between urban and rural communities. Such discrepancies stem from a complex interplay of geographical, economic, political, and demographical factors, giving rise to a distinctive healthcare framework in rural areas. This presents a formidable challenge to both policymakers and healthcare providers to devise interventions that are both pragmatic and economically viable.

The economy of healthcare may vary from the conventional economy. First, healthcare is vigorously regulated by the government to protect consumers. This will hinder the free allocation of resources and prevent the formation of Monopolies or oligopolies. Second, part of healthcare – the relationship between health providers and consumers- is not a direct seller/buyer relationship. There are three main players; insurance companies who make payments to providers, Providers who give access to consumers, and consumers who finance their health care costs to insurance [2].

Rural areas are defined as territories that have low population density. It composes 97% of the land in the USA and contributes to 20% of the US population[3]. Rural areas tend to have less rounded infrastructure and sustainable jobs for their population [4].

Primary care is a service provided by health personnel, and facilities. This service -as the name indicates- is among the first point of non-critical care a patient (a consumer) gets once checked in to get health services. Primary care is connected to the remaining parts of the healthcare system including higher acuity facilities (such as hospitals, nursing homes, and specialized medicine). Primary care is the point of access to healthcare in non-critical situations and it

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is designed to prevent morbidity and mortality in the long run. One study showed that adding 10 primary care physicians to a 100K population will improve life expectancy by 50 days for each individual [5].

ECONOMY OF RURAL HEALTHCARE SYSTEM (SCARCITY OF RESOURCES) - The scarcity of essential resources for healthcare (such as physicians, health facilities, and payment models) is a main economical challenge to rural areas. Other factors such as government oversight and insurance's role, create different incentives – and sometimes conflicting incentives- for employers, physicians, and patients. This makes the market inefficient as will show later on.

To better understand this challenge, we will analyze the main players of the rural health system (Physicians, Patients, Facilities, Government, and Insurance).

PHYSICIANS: DECREASE IN SUPPLY

Physicians are the primary providers of health services -among other health personnel. Although physician shortage is a phenomenon in all communities. It's more noticeable in rural communities. One study showed that rural physicians are only 9% of the total US physicians [1]. Physicians go through long training and recent trends showed that the majority of US medical students avoid going into primary care. This will reduce the supply of primary care physicians in rural areas.

There is a relationship between the number of patients and the supply of physicians, the supply of physicians decreases with smaller populations, this was evident by the fact of low physician retention in areas with less than 2500 or no hospitals [7]. This will reduce the supply of primary care physicians in rural areas.

The compensation package for physicians in rural areas is generally comparable to that of their urban counterparts. Nevertheless, despite the high demand for their services, physicians in rural regions are hampered by restrictions on payment options, such as reimbursement and fixed fees imposed by insurance providers or government agencies. This invariably results in a reduction in the supply of primary care physicians in rural communities. (Figure 1)

In a free market, a decrease in supply will shift the supply curve to the left, which will result in an increase in the price/salaries of physicians. This in return, will cause an influx of physicians

into underserved areas. However, this is not the case -as we mentioned before-due to fixed payments/ salaries to physicians. This means that the number of services they can provide with the current prices/salaries will be less. (Figure 2)

PATIENTS: INCREASE IN DEMAND

Rural USA contributes to 20% of the total US population. These communities have unequal distribution of patients/consumers. Health services are focused on a higher percentage of older populations who have more health problems when compared to their urban peers [8]. As well, rural communities have more low-income and unemployed populations. This results in a surge of demand for health services that are covered by governmental insurance.

The demand for health services by patients in rural areas increases, shifting the demand curve to the right, thus in a free market Prices will increase, attracting more Physicians to Rural communities. However, like the case with the supply curve, governmental regulation on prices prevent this. Providing the current fixed payment system, physicians' incentive is to have more patients with fewer medical problems. We see how regulations created an incentive that will contribute to a low retention rate of physicians as they lack proper incentives to stay (Figure 3).

If we compare the market equilibrium in a free market vs the current regulated one, we will start to understand the formation of the non-ending vicious loop of increasing demand and decreasing supply (figure 4).

INSURANCE AND GOVERNMENTAL EFFECT

Due to the higher percentage of older patients. Insurance is usually single-payer (Medicare). Therefore, payments are guided by governmental regulations and are fixed regardless of demand, supply, or variation in population size or competition. Payments are more diverse in urban areas and have more secondary insurance coverage.

Fee for service model of payment: providers are paid per service despite the outcome. This change incentive for providers to attain more visits even if outcomes of primary care are not delivered. Which represents a moral hazard dilemma.

MARKET STRUCTURE

Health providers' main resource is time. The current payment system is not differentiated to address different patterns/types of consultations; fixed payment despite complexity and time spent with patients leads to higher costs [9]. This leads to less marginal revenue and more marginal costs. In the contrary, patients in urban areas will have similar if not less marginal costs but higher marginal revenue. Providers in rural areas, in an attempt to Bridge this gap, tend to see more patients while addressing less of their health problems at each visit. Try to reduce marginal costs by reducing the time needed and try to keep $MC \leq Price$.

Health facilities in rural areas have fixed overhead costs that are similar to urban areas, which when added to higher marginal costs and less marginal revenue, creates financial pressure on small and medium facilities. Many of these health clinics and small hospitals used to depend on governmental funds and donations to bridge the gap. However, from 1983 to 1997; Many hospitals got closed due to cuts in governmental funds and regulations [10].

In a free unregulated market, the presence of few or even sole health providers in a highly demanded field would result in the creation of a Monopoly or a tight oligopoly market. In such a scenario, the health facility can price its services in a way that creates sufficient revenue and exceeds its costs. But as mentioned before, the Health care field is highly regulated by the government and by insurance companies that have a fixed or an inflexible compensation range. This results in the such market being treated as if it was a perfectly competitive market.

The structuring of the Rural health market as a perfectly competitive market instead of a Natural Monopoly has many effects: First, it results in a dead weight of decreased Provider surplus. Because the competitive pricing $<$ monopoly price, meanwhile, the outcome of the competitive market $>$ that of the monopoly market. In simple words, Rural health facilities have to give a higher outcome with less revenue (Figure 5).

Second, as a perfectly competitive market, Rural health facilities are considered "price takers". The cost-revenue structure for each individual facility shows that in the short -run, facilities can only be profitable as long as their $MC \leq Market Price$. on the other hand, in the long run, they can stay in business by keeping their average total cost (ATC) below the market price (Figure 6).

In the long run, rural health facility providers -especially those with lower populations- have the challenge to spread costs and fail to create economies of scale when compared to urban providers (Figure 7).

Third, considering the "indifference Principle", physicians employee are considered a Mobile asset that can move freely to more favorable, more profitable working conditions. This accentuates the low supply-high demand problem mentioned earlier.

SUGGESTIONS AND POSSIBLE SOLUTIONS

Since the primary healthcare market is heavily regulated, we will direct recommendations to the government and insurance companies as they drive the process.

GOVERNMENT - Government incentives for physicians (increase supply):

- Fewer taxes on physicians practicing in rural areas. (Figure 8)
- Reduce regulations for new health businesses in rural areas. Therefore, reduces overhead and average total costs (Figure 9).
- Incentivize foreign physicians to relocate to rural areas by providing fewer restrictions on the ability to start businesses or relocate between businesses (Figure 10).

GOVERNMENT INCENTIVES FOR PATIENT

- Reduce taxes for patients who keep regular follow up with their physician. This will increase access at earlier stages and therefore decrease the demand for chronic illnesses (Figure 11).

GOVERNMENT INCENTIVES FOR HEALTH FACILITIES-

- Weigh opportunity costs to fund rural facilities. Closure of one facility in rural areas may cause extra costs in urban areas that may exceed the original funding.

INSURANCE- Insurance incentives for physicians:

- Change payment model with payment increase with longer time and fewer problems patients may have (Figure 12).

INSURANCE INCENTIVES FOR PHYSICIANS

- Similar payment for virtual vs actual visits
- Insurance incentives for patients
 - Fewer premiums if patients have a solid record of visiting physicians on yearly basis
- For health providers
 - Leveraging technology: through the use of telehealth to cover the demand of certain segments of patients and reduces costs for patients (Figure 13).

LIMITATIONS OF THIS ANALYSIS

It is essential to acknowledge that this analysis was conducted prior to the onset of the COVID-19 pandemic, and therefore, its applicability to the current healthcare landscape may be subject to some limitations. Additionally, due to the unique nature of healthcare coverage in rural communities, the effects of insurance may be more closely linked to government policies.

FIGURES AND GRAPHS

Figure 1. Supply curve influenced by number of providers and patient population.

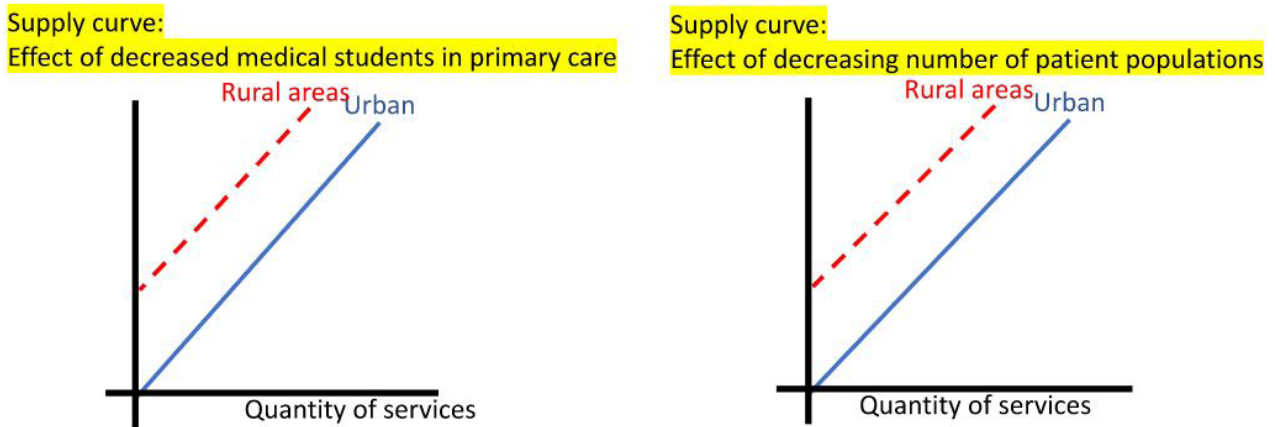


Figure 2. Supply curve influenced by fixed pay vs free market.

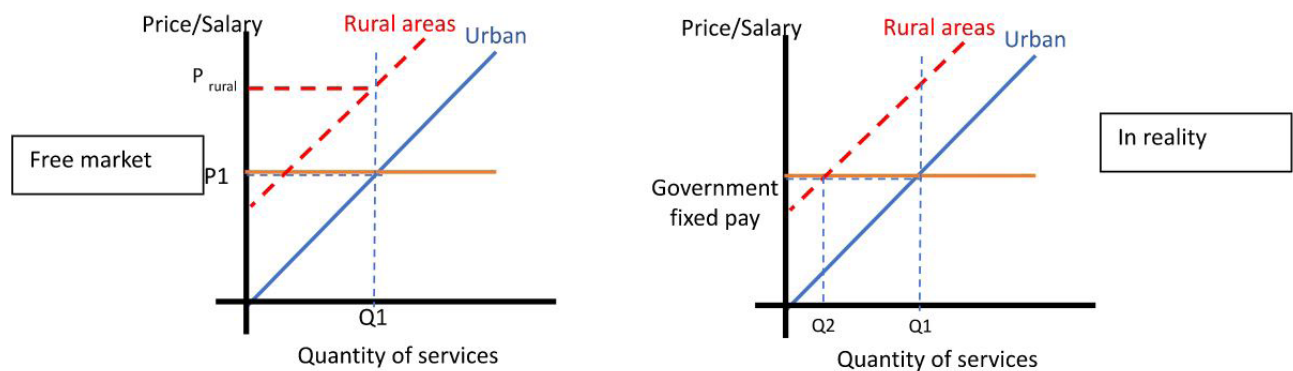


Figure 3. Demand curve influenced by fix pay vs free market

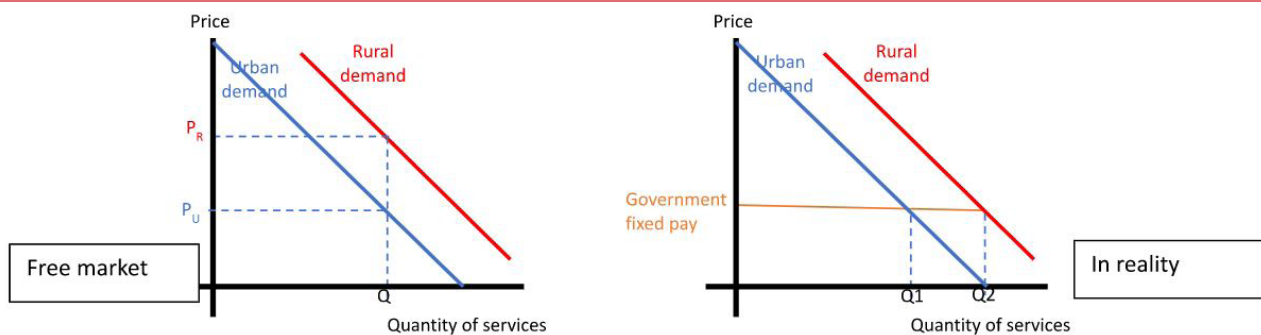


Figure 4. Market equilibrium in a proposed free market vs existing market

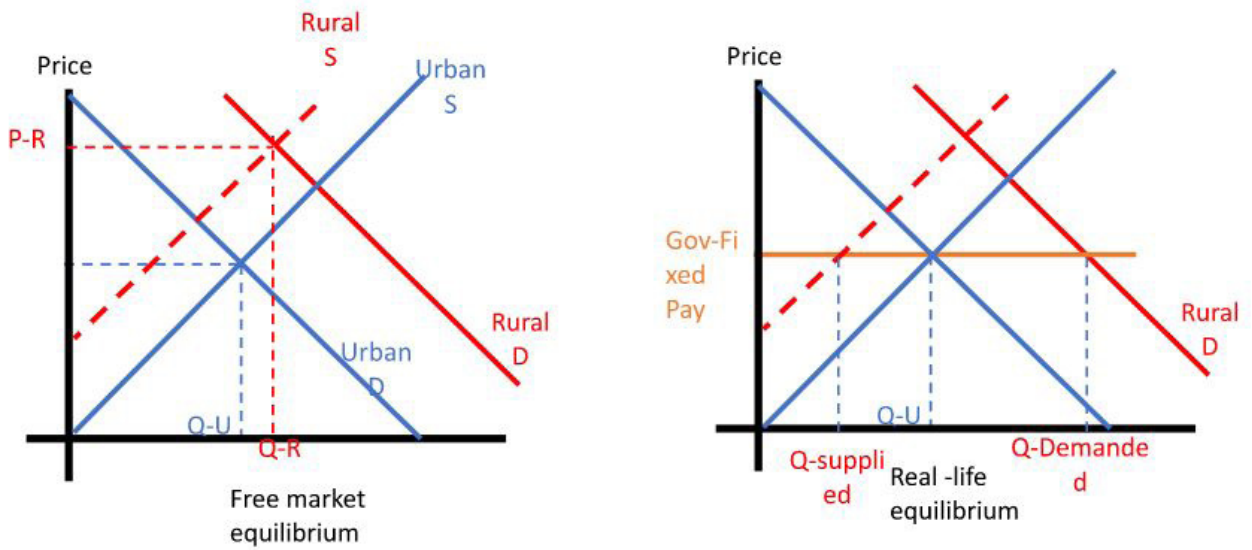


Figure 5. Deadweight loss in a monopoly vs competitive market

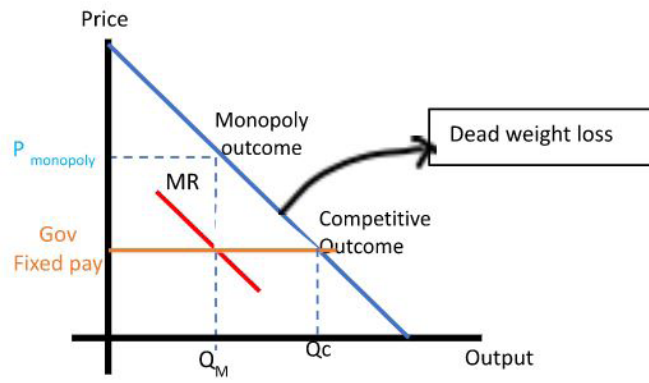


Figure 6. ATC rural vs urban

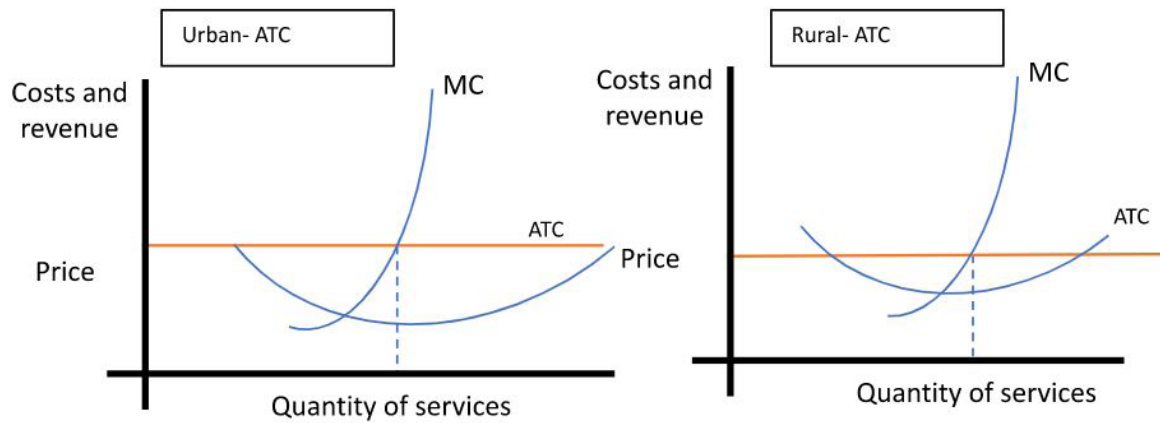


Figure 7. Economy of scale urban vs rural

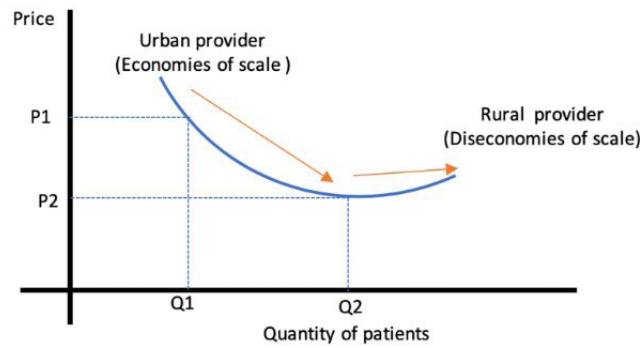


Figure 8. Tax cuts effect on supply curve

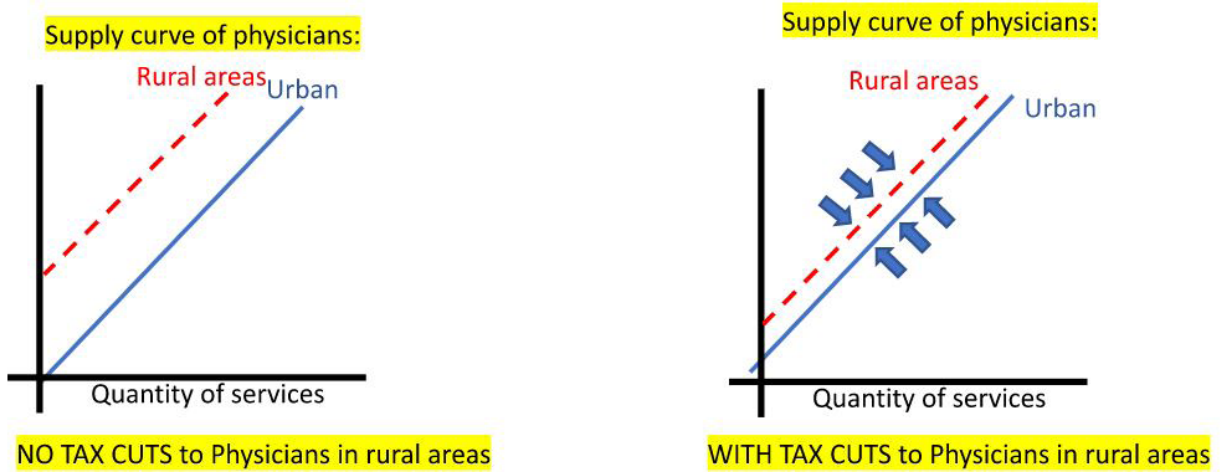


Figure 9. Average total cost influence by regulations.

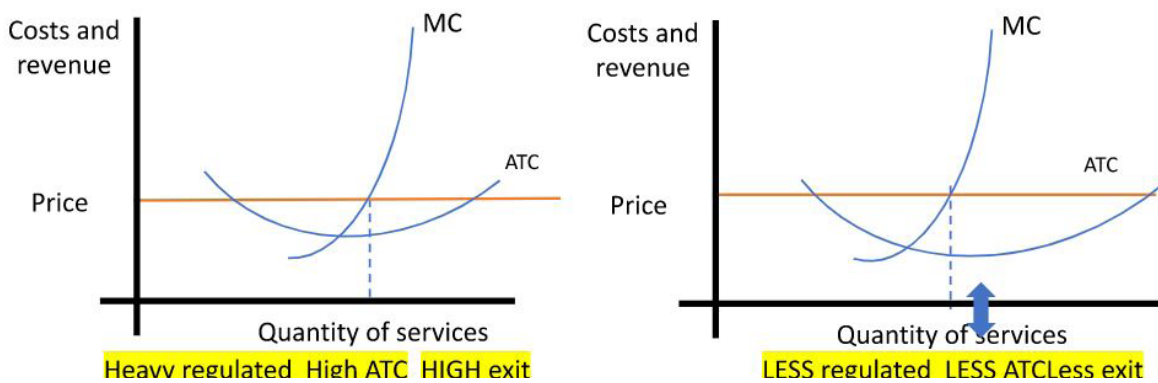


Figure 10. Supply curve influence by allowing foreign physicians to own practices.

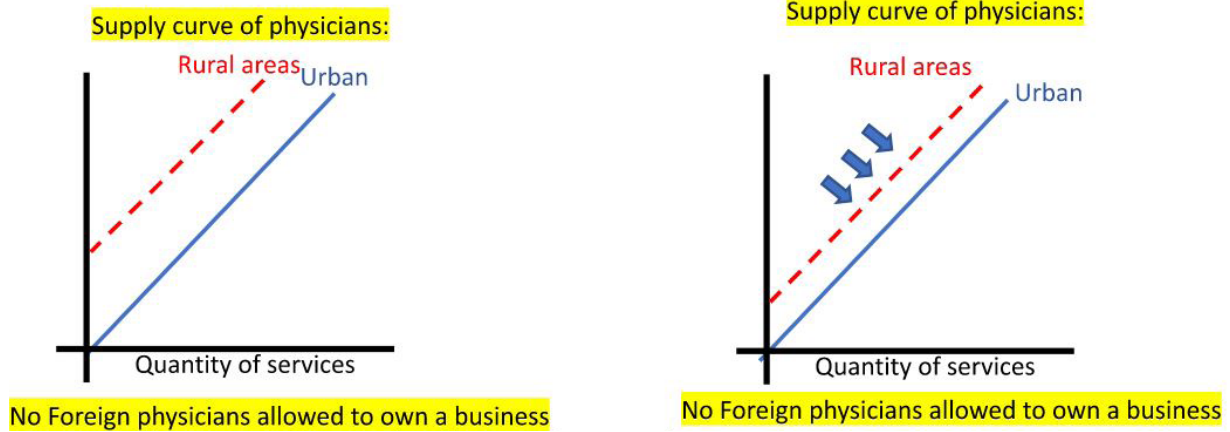


Figure 11. Demand curve influence by chronic illnesses.

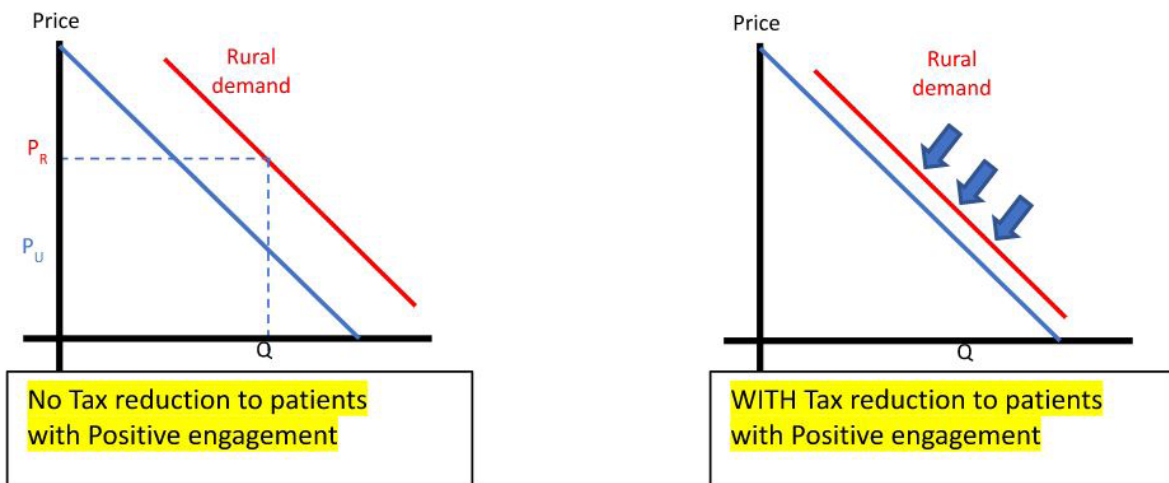


Figure 12. Insurance incentives for physicians

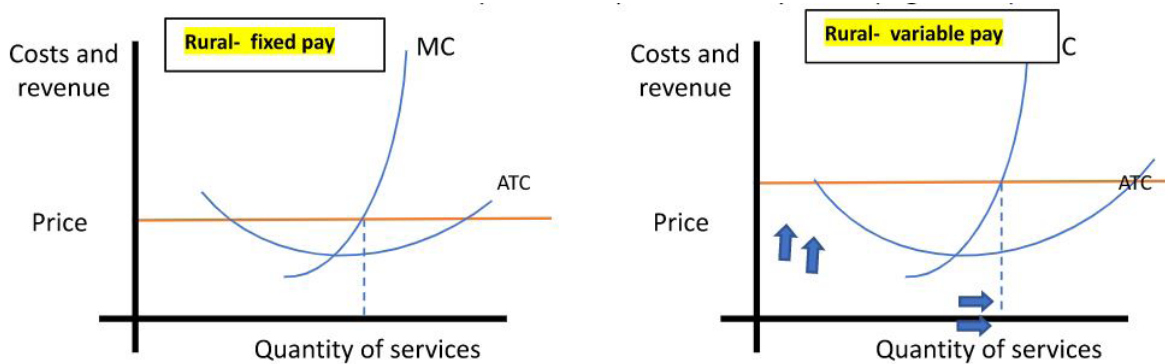
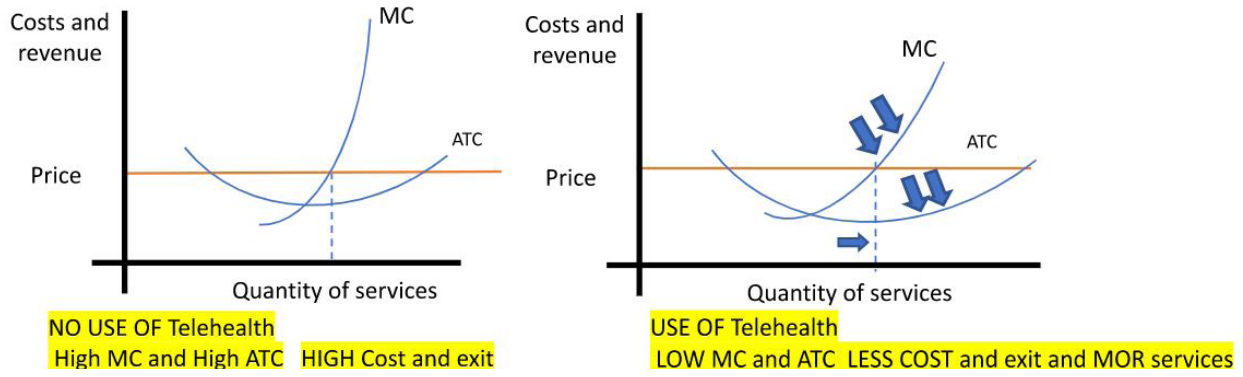


Figure 13. Insurance incentives for physicians



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