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The Effect of Competition on Patient Care

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Dentistry is a competitive industry. Every dentist is competing against other dentists in the community, using the latest technologies available to increase the demand for their service (Chambers, Page 47). This paper will analyze the effect competition has on the patients of the dental industry, by evaluating the effect competition has in the consumer market, as well as the effect competition has in the closely related health care industry.

Competition is at the heart of the American Economy. Since the early colonies, businesses have fought to make their product faster and cheaper than the guy down the street. If Producer A is less efficient than Producer B, the consumer will choose B over A, forcing A to adapt or close its doors. In this situation, Producer B profits while Producer A suffers, but the consumer benefits in a separate but similar way. The situation described above normally results in the consumer purchasing a quality product at a cheaper price, or the consumer purchasing a product with more utility.

Two economists, Jerry Hausman of MIT and Economic Research Service, and Ephraim Leibtag of the U.S. Department of Agriculture decided to test this theory during the fall of 2005(Hausman and Leibtag, 2005). Hausman and Leibtag evaluated the effect caused by the introduction of new competition in an isolated market, by analyzing the price fluctuation of common goods between 1998-2001(Hausman and Leibtag, 2005, Page 9). Hausman and Leibtag focused specifically on regions where Walmart Supercenters began operating within those years of the study. Hausman and Leibtag hypothesized that not only would price levels equalize throughout suppliers (Hausman and Leibtag, 2005, Page 15) but overall utility for the consumer would increase (Hausman and Leibtag, 2005, Page 7).

Hausman and Leibtag supported their hypothesis using massive amounts of data. In their table "Ratio of Supermarket and Other Outlet Prices to SMC Prices" (Hausman and Leibtag, 2005, Page 14) they demonstrate clearly the price of twenty different food items commonly purchased at supermarkets. The table clearly displays the cost of each good at supermarkets as a ratio compared to the cost of the same good at Walmart Supercenters. The costs analyzed are average costs over a 48-month period, and thoroughly demonstrate the dramatic difference in prices of the different suppliers. Nineteen of the twenty items analyzed are found cheapest at Walmart Supercenters.

In response to the dramatically lower prices of a new competitor, supermarkets reduced prices to match the Walmart Supercenters. Hausman and Leibtag then analyzed the change in price of each good over the same 48-month period to demonstrate the overall effect of competition (Hausman and Leibtag, 2005, Page 16). Hausman and Leibtag's evaluation quantifies the price decrease realized in the same twenty goods, allowing them to validate a portion of their hypothesis. During a period of new market competition, supermarkets were obligated to reduce the price of their goods to remain competitive. Consumers benefited from reduced prices when shopping whether they shopped at Walmart Supercenters or the same supermarkets (Hausman and Leibtag, 2005, Page 21).

To measure the change in value Hausman and Leibtag used the virtual price approach that Hausman developed in 1997 (Hausman and Leibtag, 2005, Page 21). The function compares the change in the cost of commodities from before the emergence of Walmart in a market to after the emergence. Hausman maintains utility constant, using post emergence utility as the consistent value to achieve an accurate comparison (Hausman and Leibtag, 2005, Page 22). This formula determines the value of two effects, the variety effect and the indirect cost effect, which together equal the change in consumer value. The variety effect is the effect a new competitor has on the variety of goods, while the indirect cost effect is the effect a new competitor has on the price of other suppliers' goods. Broken down and simplified, the equation written out is as follows: Consumer value is the sum of the variety effect and the indirect price effect (Hausman

and Leibtag, 2005 Page 22). Hausman and Leibtag conclude that competing retailers will continue to increase the consumer value of goods when the prices of the good become more competitive.

Summarizing the thoughts of Hausman and Leibtag, competition benefits the consumer in multiple ways (Hausman and Leibtag, 2005, Page 29). The first benefit is the direct cost reduction found by consuming the goods of the new competitor. The second is the indirect price benefit found at previously existing suppliers that must adjust their prices to remain competitive. These two benefits increase the utility per dollar spent, which increases the real value of each good the consumer purchases. By reducing overall prices, consumers spend less to receive the same utility and quantity of goods.

Competition in the health industry is not viewed the same as in other markets. Many discussions have taken place debating if competition over quality health care is ethical, and whether or not it jeopardizes the patient's care. Many economists hypothesize that health care is always improving and increasing patient care because high-quality health care providers always find a way to remain competitive.

Three economists researched this subject at great length. Martin Gaynor, Rodrigo Moreno-Serra, and Carol Propper published a paper in 2010 analyzing this hypothesis. Gaynor Moreno-Serra and Propper closely examine the effects that took place in the British health care system after the reformation in 2006, and they openly discuss their findings. They first discuss the history of the UK's National Health Service, the NHS, and what incentivized the government to reform the existing system.

In 1991the NHS started funding health care with public funds, injecting competition into the market place by separating the provider and the consumer. Up until then doctors and hospitals were funded directly by the patients they treated(Gaynor, Page 6). A local health authority was given the charge to sell the providers contracts to help the consumer. Hospitals and general practitioners were obligated to compete for the contracts, offering their services at a cheaper, more competitive price. The standards for quality were not strict, but the free market regulated them. If a doctor or hospital performed poor services, the demand for higher quality would find another supplier.

In 1997 a new policy was implemented to reduce the competition that had swept the market. Health care contracts were now negotiated at annual terms, guaranteeing continuing patient care by one staff (Gaynor, Page 6). The negotiation still included price and quality, but at a longer-term length, the buyer quickly lost the advantage. During the following years, the public became very disgruntled with the status quo of the health care industry and began to openly criticize the NHS. The cost of health care had increased dramatically, but the public was not sure why (An Independent Audit, pages 13-17). In 2001 productivity was the lowest it had ever been during public funding (An Independent Audit, Page 18), and there were more patients waiting longer than they had during the competitive market (An Independent Audit, Page 22). The public demanded an explanation.

In 2002 the government announced a reformation of NHS to allow competition to re-enter the market by 2006 (Gaynor, Page 6). The policies implemented ranged from increased efficiencies to patient choice, but all the benefits stem from competition. After 2006 general practitioners were required to offer five different hospitals to provide their care, and to guarantee the patient was aware of the benefits of the different choices. The NHS implemented an online system, Choose and Book, to make booking appointments easy for their patients, as well as the

Payment by Result system, that changed payment from annual contracts to procedure based payments (Gaynor, Page 7).

Patients were now equipped with competitive tools to change the health care industry. Choose and Book increased the supply for health care providers dramatically, by opening appointments to a much larger area. Hospitals now completed for each patient and each procedure, to increase the overall revenue (Gaynor, Page 7). The NHS sets a standardized price for every medical procedure and pays the hospital that completes the work for each patient (An Independent Audit, Page 10). If a patient had an unpleasant experience during a procedure at Hospital A, that patient had four other hospitals to choose from, because higher quality care is the demand.

The reformed competitive policies of the NHS have incentivized health care providers in the UK to increase patient care. By increasing the profitability of competition and the range, health care providers give more to guarantee the quality of the care given and the patient's satisfaction.

This case study of the NHS reflects the findings of Hausman and Leibtag that were discussed previously. While not every aspect of the two studies aligns, many parallels can be drawn, but two stand out above the others. First, all the patients benefited from competition in the health care system, just as the all the consumers benefited from competition in the shopping markets. Second, utility increased when other health care providers became available, which follows suit to the increased utility of the consumers when Walmart entered the market.

The health care system in the UK is not the only group that benefits from a competitive health care system. The UK's health care system is not even the highest quality health care, ranking twentieth on the Legatum Prosperity Index (Legatum, Page 4). The Legatum Prosperity Index, now in it's the tenth year of production, ranks countries prosperity on nine different factors; Economic Quality, Business Environment, Governance, Education, Health, Safety and Security, Personal Freedom, Social Capital, and Natural Environment (Methodology). The ranking criteria in the area of health care are; basic physical and mental health, health infrastructure, and preventative care (Methodology).

Nations with the highest health rankings in the Legatum Prosperity Index should, in theory, be the example to the rest of the world. If the policies and structure of these systems are replicated in other nations, hypothetically those nations would see the same benefit. The highest three ranking health care systems, based on the mentioned criteria, are; Luxembourg, Singapore, and Switzerland (Legatum, Page 4).

Luxembourg's health care system operates in a similar manner as the reformed NHS, the major difference being that it is not entirely publicly funded. About 40% of the nation's health care system is financed by the federal government, the other 60% is shared by employers and the insured population (Health Systems, Page 6). 97% of the population was insured in 2012 (Health Systems, Page 7) allowing the government to partially step away from health care.

Health care providers in Luxembourg are compensated at a uniform rate, similar to the Payment by Result system used in the UK, The Luxembourgian equivalent is called Fee for Service. The National Health Insurance determines the cost of each service rendered by health care providers, and each provider earns for every service provided. Providers are compensated the same amount whether they choose to work in a larger organization, hospitals or clinics, or to

be self-employed, operating a private practice. However, fees paid for services rendered in a hospital or clinic are paid directly to the organization (Health Systems, Page 7)

Patient Choice is another similar characteristic between the UK's health care system and Luxembourg's. While the patients in the UK have some choice, they are limited to five hospitals which are recommended by a general practitioner. Patients in Luxemburg are free to choose any institution they would like (Health Systems, Page 11), obligating health care providers to provide high-quality services. There are thirteen hospitals across the small nation (Health Systems, Page 8), all of which are in direct competition with each other.

In 2014 the Luxembourgian Government passed legislation increasing the power of Patient Choice by granting patients access to all their available health information (Health Systems, Page 12). Patients can now request information on all their past conditions and services that were provided, making them aware of exactly what the health care providers did to treat them. Patients now have access to their current records, including examinations, diagnosis, and treatment options. Access to this information empowers patients to make informed decisions, causing providers to be increasingly more competitive.

The competition generated in this patient empowered market is what regulates quality standards in the Luxembourg health care system, especially concerning primary care (Health Care Systems, Page 14). There are very few mandatory requirements dictated by the government for doctors that wish to practice in Luxembourg. To be allowed to be a practicing doctor in Luxembourg, the Ministry of Health has to review their diploma and authorize each of them to begin practicing. The majority of the health regulations the Luxembourgian government involves itself in are environmental health issues, such as water purity and sewage treatment (Health Care Systems, Page 16).

Singapore's health care system is slightly different than that of Luxembourg's, primarily in funding. In 1984 Singapore introduced a new program titled MediSave, to help citizens prepare for medical expenses (Meng-Kin, Page 18). Instead of a more common insurance system, MediSave automatically saves 6-8% of every workers' monthly income for personal health care expenses, which is then matched by the employer. On top of that contribution, all workers contribute 16% of their monthly income to a public program that funds hospitals, while businesses contribute 20%.

The MediSave funds saved are accessed when the patient receives services (Taylor, Page 2), but these funds are limited. MediSave accounts do not have enough with held earnings to pay for critical care in life or death situations. MediSheild was introduced in 1990 as a catastrophic illness insurance (Meng-Kin, Page 18). In the case of a catastrophe, MediSheild would cover the costs of care. The premiums are paid monthly from individuals' MediSave accounts. If the patient wants to use MediSheild outside of a catastrophic illness, the copay is 20% (Taylor, Page 2).

MediFund is the third part of the Singaporean health care system. MediFund, established in 1993, was initially funded with US$150 million (Taylor, Page 2), and increases from budget surplus. MediFund supports the poor of Singapore when their MediSave and MediSheild cannot cover the cost of procedures. MediFund pays the remaining amount using the surplus added and interest earned (Taylor, Page 3). MediFund has grown substantially since 1993, valuing US$1.3875 Billion in 2010.

Singapore, like Luxembourg, does not highly regulate their primary care givers. Each year a survey is given to all patients to gauge patient satisfaction and overall expectations of health care services (Mossialos, Page 148). Doctors, Hospitals, and all other health care providers are required to apply for licensing each year, but the government reviews the results of the survey when considering license renewal. Each provider and institution is given a scorecard, based on the results of the survey, as an indicator of their overall quality (Mossialos, Page 148). Patients are more likely to visit more highly critiqued providers, making all providers more competitive.

Switzerland has the third highest ranked health care system in the world, according to the Legatum Prosperity Index (Legatum, Page 4). The Swiss have organized their health care to allow competition to control the quality of their health care (Mossialos, Page 167). Health care provider compensation is also based on the Fee-for-Service scale (Mossialos, Page 165), incentivizing providers to treat more patients. Swiss patients will most often be treated by a general practitioner for primary care, but they are not restricted to one practitioner for life. Patient Choice is very important in the Swiss health care system. The high-quality health care is attributed to competitions role in the market (Mossialos, Page 167), but competition has not been able to keep health care costs down.

The Swiss health care system is funded like the Luxembourgian system, by insurance and public funds. Cantonal taxes, the Swiss equivalent of state taxes, are the largest form of funding provided to hospitals (Mossialos, Page 161). These public funds pay for the costs of construction, maintenance, and equipment used in the hospitals, while private funds and insurance pay for treatment. Insurance is mandatory for all Swiss citizens and residents, requiring all residents to have proof of purchased insurance within three months of arrival in Switzerland (Mossialos, Page 161).

The Swiss have implemented basic regulations into their health care system, which revolve around educational benchmarks. Healthcare providers must meet the Swiss educational standards to become licensed, and are required to complete continuing education throughout their careers (Mossialos, Page 165). Local government incentivizes health care providers by providing them with resources to meet these bench marks, such as establishing medical peer groups, but no fiscal incentives are given.

The major common traits of Luxembourg's, Singapore's and Switzerland's health care systems are Patient Choice and Fee-for-Service, both of which create competition in the market. The competitive market obligates providers to raise their quality standard. When the price is locked by legislation, the only way to increase revenue is to increase the number of patients seen. To attract more patients, health care providers must offer better care, or they will lose market share to competitors.

To compare the health care systems of all 149 countries that participate in the Legatum Prosperity Index (Legatum, Page 4) would demonstrate exactly what difference competition makes in health care, but Gaynor, Moreno-Serra, and Popper created a model to confirm their hypothesis. After studying the effect competition had on the UK's NHS, they hypothesized that pro-competition markets had a positive impact on patient care in hospitals (Gaynor, Page 10), Using a difference-in-differences approach they compared 251 hospitals during two periods in time, 2003 and 2007The hospitals were analyzed in two groups, a group that remained in a concentrated, non-competitive market during the period of the study, and the other that became competitive over time (Gaynor, Page 13). The study focused on hospitals with a minimum of 5,000 total admissions, and that focused on short term care. These qualifying factors eliminated

small hospitals, which are normally categorized as specialty hospitals that do not have emergency rooms, and long-term care hospitals, (Gaynor, Page 13).

The results of the study confirmed the hypothesis formed by Gaynor, Moreno-Serra, and Porter. Patient care in a competitive market is higher quality than patient care in a concentrated market (Gaynor, Page 20). The main determining factor of quality was mortality rates, which was measured in four different ways. The first is the mortality rate after emergency heart attack admission, also referred to as an acute myocardial infarction, or AMI (Gaynor, Page 21). Heart attacks are high volume and mortality rate is unfortunately common in these situations (Gaynor, Page 14), making this procedure a prime indicator of change. When competition increased by 10%, mortality in emergency heart attack procedures decreased by 2.4% (Gaynor, Page 21).

The second mortality rate measured is the AMI mortality rate in any location 30 days after admission. It is common for patients to be released from care for many different reasons, but hospitals track patients 30 days post-admission as part of their quality measurement. This indicator confirms the effect of competition, demonstrating that hospitals in competitive areas have lower 30-day AMI mortality rates than hospitals in concentrated areas (Gaynor, Page 21). The third mortality rate tracked is the all-cause mortality rate. This mortality rate includes all causes of death, which reconfirms the effect of competition increasing patient care by significantly reducing the mortality rates in competitive hospitals (Gaynor, Page 22). The final mortality rate measures the mortality rate in the hospital, excluding post heart attack patients to. This rate demonstrates that the heart attack rate does not drive the all-cause rate. All deaths excluding heart attacks reflect the trends of the previous rates, decreasing when competition is increased (Gaynor, Page 22).

Gaynor, Moreno-Serra, and Popper conclude that competition is a powerful and important factor in patient care (Gaynor, Page 32). Monopolistic trends of health care can be very dangerous, as demonstrated by the NHS during the late 1990s. They believe that introducing competition will have positive effects in other health care systems, specifically European systems (Gaynor, Page 32).

The evidence of competition in other health care systems is already clear. The highest quality health systems in the world are all highly competitive markets. By increasing patient choice, health care providers are obligated, by demand, to increase the quality of service. Competition is an indicator of quality in consumer markets as well. Increased competition amongst suppliers will reduce prices and increase the utility of goods.

As part of the health industry, dentistry follows suit to the same trends identified in this paper for health care systems, as well as the trends for overall consumer market trends. Patients will benefit when dentistry is competitive, both in patient care and in price.

Work Cited

"AN INDEPENDENT AUDIT OF THE NHS UNDER LABOUR (1997–2005)." King's Fund, 2005, 1-92. Accessed July 9, 2017. https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/independent-audit-nhs-under-labour-1997%E2%80%932005-sunday-times-march-2005.pdf.

Chambers, David W. "Industry Competition." Journal of the American College of Dentists 64, no. 3 (1997): 47-52. Accessed July 15, 2017. https://www.dentalleadership.org/PDF-JACD/JACD-64-3-Chambers.pdf.

Gaynor, Martin, Rodrigo Moreno-Serra, and Carol Propper. "Death by Market Power: Reform, Competition and Patient Outcomes in the National Health Service." American Economic Journal: Economic Policy, American Economic Association 5 (2013): 134-66. The National Bureau of Economic Research. Web. 10 July 2017. <http://www.nber.org/papers/w16164.pdf>.

Hausman, Jerry and Ephraim Leibtag, "Consumer Benefits from Increased Competition in Shopping Outlets: Measuring the Effect of Walmart," working paper, Massachusetts Institute of Technology, October 2005.

"Health Care Systems in Transition Luxembourg." European Observatory on Health Care Systems (1999): 1-76. 1999. Web. 27 July 2017. <http://www.euro.who.int/__data/assets/pdf_file/0007/95128/E67498.pdf>.

"Health Systems in Transition Mini HiT Luxembourg." European Observatory on Health Systems and Policies, 2015, 1-18. Accessed July 13, 2017. http://www.euro.who.int/__data/assets/pdf_file/0006/287943/Mini-HiT_Luxembourg-rev1.pdf?ua=1.

"International Health Care System Profiles." Singapore: International Health Care System Profiles. Accessed July 20, 2017. http://international.commonwealthfund.org/countries/singapore/.

"Legatum Prosperity Index 2016." 1-52. 10th ed. London: Legatum Institute, 2016. Accessed July 9, 2017. https://lif.blob.core.windows.net/lif/docs/default-source/publications/2016-legatum-prosperity-index-pdf.pdf?sfvrsn=2.

Meng-Kin, Lim. "Health Care Systems in Transition II Singapore Part 1. An Overview of Health Care Systems in Singapore." Journal of Public Health Medicine 20, no. 1 (1998): 16-22. Accessed July 12, 2017. http://www.hpm.org/Downloads/Singapore.pdf.

"Methodology." Legatum Prosperity Index 2016. November 04, 2016. Accessed July 19, 2017. http://www.prosperity.com/about/methodology.

Mossialos, Elias, and Martin Wenzl. "2015 International Profiles of Health Care Systems." The Common Wealth Fund, January 2016, 1-180. Accessed July 15, 2017. http://www.commonwealthfund.org/~/media/files/publications/fund-report/2016/jan/1857_mossialos_intl_profiles_2015_v7.pdf.

OUTCOMES IN THE NATIONAL HEALTH SERVICE." NATIONAL BUREAU OF ECONOMIC RESEARCH, July 2010, 1-54. Accessed July 9, 2017. http://www.nber.org/papers/w16164.pdf.

Taylor, Rob, and Simon Blair. "Financing Health Care: Singapore's Innovative Approach."Public Policy for the Private Sector, no. 261 (May 2003): 1-4. Accessed July 14, 2017. http://www.ifc.org/wps/wcm/connect/c65e7d80498391968524d7336b93d75f/VP_Financing+Health+Care+Singapore.pdf?MOD=AJPERES.