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Does Health Insurance Impede Trade in Health Care Services?[*]

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Abstract: There is limited trade in health services despite big differences in the price of health care across countries. Whether patients travel abroad for health care depends on the coverage of treatments by their health insurance plan. Under existing health insurance contracts, the gains from trade are not fully internalized by the consumer. The result is a strong "local-market bias" in the consumption of health care. A simple modification of existing insurance products can create sufficient incentives for consumers to travel. For just 15 highly tradable, low-risk treatments, the annual savings to the US would be $1.4 billion even if only one in ten patients who need these treatments went abroad. Half of these annual savings would accrue to the Medicare program alone. We examine how measures by destination countries to improve and credibly signal the quality of health care can enhance the scope for trade.

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JEL Codes: F1, L8, I11, G22, D82, L83

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1. Introduction

Health-related expenditures account for nearly one-tenth of all expenditures in the OECD countries, and over one-seventh of GDP in the US alone (OECD, Department of Health and Human Services).[1] Outpacing the 7.7 percent growth in US health care expenditures in 2003 was the growth in health insurance premiums, which increased by 14 percent (Kaiser Family Foundation study, 2004). As a result, many US employers are being forced to cut employee health benefits.[2] According to the US Census Bureau (2004), the proportion of people covered by employer-sponsored health insurance fell 1.3 million from the previous year to 60.4 percent in year 2003. The Institute of Medicine (2004) estimates that about 18,000 Americans die each year from treatable conditions because they cannot afford health care.

The costs of health care and health insurance are significantly higher in the US than in a number of other countries. For example, an inpatient knee surgery, 400,000 of which are performed annually in the US, costs over $10,000 in the US, but less than $1,500 at the best hospitals in Hungary and India.[3] According to the Centers for Medicare and Medicaid Services (2002), over 71 percent of hospital costs are labor related, which helps explain why countries with low labor costs have a significant cost advantage in medical treatments. Large savings could be realized if even a fraction of US patients went abroad for treatment. But very few do so.

Is health care so different from other goods and services that it cannot be regarded as tradable? Consumers certainly value both proximity and quality but that has not prevented them from traveling abroad for a range of treatments, such as cosmetic surgeries, rehabilitative care, alternative medicine, and in some cases, even eye and cardiac surgery. Estimates suggest that in 2003, over 350,000 patients traveled to Cuba, India, Jordan, Malaysia, Singapore and Thailand, specifically to consume health care services. A significant number were patients from industrial countries, traveling to a growing number of overseas medical centers to obtain "first-world treatments at third-world prices".[4]

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[1] The rapid advances in medical technology, increased market power in the hospital sector, higher prescription drug costs, and an increasingly aging population are often cited as the main cost-drivers fueling the rise in US health spending (see e.g., Alliance for Health Reform, 2004). To a lesser extent, generous malpractice awards and higher administrative costs for insurers also contribute to rising health care costs.

[2] A typical employer pays for 73 percent of premiums with the employee paying the rest.

[3] The prices outside the US include the cost of travel from the US. The price differentials are even greater for more complicated surgeries such as Coronary Artery Bypass Grafts (CABG), which costs over $35,000 in the US, but under $ 9,000 (inclusive of travel costs) in the best cardiac surgery centers in India and Thailand. Source: CMS hospital reimbursement data and Apollo Hospital, Delhi.

[4] In 2003, an estimated 50,000 "medical tourists" traveled overseas from the UK for a variety of check-ups, treatments and surgeries, to Thailand, South Africa, India and Cuba (The Guardian, May 11, 2004).

The consumers who travel abroad for health care, however, are those whose care is inadequately covered by health insurance, or those who face long waiting periods in their home country. The adequately insured do not travel. Surprisingly, insurers not only fail to provide incentives for consumers to seek cheaper treatment abroad but, in a number of cases, they also dissuade them by making health insurance "non-portable" across borders. In the US, for instance, Medicare and Medicaid cover virtually no services delivered abroad, and most private health plans limit insurance coverage for treatments abroad to emergencies. When plans do offer coverage overseas, the foreign providers are treated as out-of-network, rendering the consumer responsible for higher out-of-pocket costs.

Using a simple model, we show that even if health insurance were neutral to the location of health care consumption, it would still act as a barrier to the realization of gains from trade. Under a third-party payer health insurance system, the consumer of health services is responsible for only the deductible and the co-payment.[5] Thus, the consumer would have an incentive to go abroad for health care only if the out-of-pocket savings were larger than the travel costs, the psychological costs of receiving health care in a foreign environment, and the costs of any perceived (or actual) medical risk. Since the consumer does not reap the full gains from trade but must bear the full costs of traveling abroad for treatment, there is a strong "local-market bias" in the consumption of health care.

We show that a simple modification of existing insurance products to adequately cover the travel and other costs of going abroad can create sufficient incentives for consumers to realize the gains from trade. This modification would neither curtail consumers' freedom of choice nor accentuate the ex-post moral hazard problem that arises with insurance.

In order to illustrate the magnitude of the potential gains from trade, we undertake a price comparison of commonly performed surgeries between the US and 20 countries around the world. For just 15 highly tradable, low-risk treatments, the annual savings for the US would be $1.4 billion even if only one in ten patients who needed these treatments went abroad. The scope for trade would be greatly enhanced if hospitals and physicians in destination countries improved and credibly signaled their quality, and we make some suggestions on how this might be accomplished.

The rest of the study is organized as follows. In section 2, we describe the coverage of health care received abroad under existing health plans such in the US. Section 3 lays out the conceptual case for gains from increased trade in health using a simple model, and proposes a modification of existing insurance contracts. Section 4 assesses the claim that it is not feasible to travel abroad for medical care. An illustration of the potential gains from trading health care is presented in section 5. Section 6 focuses on the impediments to extending insurance coverage for treatments overseas, emphasizing issues relating to US insurers such as Medicare, Medicaid and Managed Care plans. Section 7 emphasizes strategies that destination countries can adopt to enhance the scope of health services trade. Section 8 concludes.

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[5] Many health plans have "stop-loss" provisions under which the insurer pays for 100 percent of the costs of health care after the patient meets their stop-loss limit for a calendar year (usually $2,000 to 3,000).

Table 1. A summary of how US health plans treat health care received abroad

Plan	*US population covered in year 2004*	*Health care received overseas covered?*	
		Emergency care	*Non-emergency care*
Medicare and Medicaid	26% of US population (Mainly retirees, low-income families & disabled people)	Not covered, except when beneficiary is a border resident, and lives closer to the foreign provider than the US provider	Not covered
Tricare	3.5% of US population (Active duty and retired US military personnel and their families)	Covered, with overseas network provider handling the claim filing.	Covered, if beneficiary is stationed or retired overseas, until the age of 65.
Health Maintenance Organization plans (HMOs)	25% of all employees in the US with employer-sponsored health insurance	Covered, but as an out-of-network benefit requiring higher consumer cost-sharing. Initially, beneficiary pays entire cost out-of-pocket and qualifies for reimbursement only when claim form and itemized bill are submitted to insurer upon return to the US.	Not covered
Point of Service plan (POS)	15% of all employees in the US with employer-sponsored health insurance	Same as HMO	Not covered
Preferred Provider Organizations (PPOs)	55% of all employees in the US with employer sponsored health insurance	Same as HMO. However, some plans have a network of overseas providers who accept US insurance (e.g., Blue Cross Blue Shield) and would handle claim filing on consumer's behalf.	Not covered by most plans. When covered, e.g., World Bank employee health plan, it is treated as an out-of-network benefit requiring higher consumer cost sharing.

Sources: Centers for Medicare and Medicaid Services (2005), Tricare, Kaiser Family Foundation Study (2004), US Census Bureau (2004), Blue Cross Blue Shield Association, World Access, and the World Bank Medical Insurance Plan.

2.   Coverage of health care received abroad under existing health plans

Table 1 presents a summary of how different health plans in the US treat health care received overseas. Federally funded programs such as Medicare and Medicaid, which cover almost 26 percent of the US population, do not cover treatments received outside the U.S. as a matter of policy, except in special circumstances.[6] Even though Medicare beneficiaries can purchase supplemental "Medigap" insurance, it only covers emergency treatments abroad during the first 60 days of overseas travel. The lack of adequate overseas coverage under Medicare becomes particularly burdensome for the growing numbers of US retirees abroad in countries such as Mexico and the Caribbean. Other federal health plans, e.g., Tricare, which covers US military personnel and their families, do cover both emergency as well as non-emergency care received while the beneficiary is stationed overseas.

Approximately 60 percent of the US population receives employment-based health insurance. A majority of these health plans are managed care plans such as Health Maintenance Organization (HMO) plans, or Preferred Provider Organization (PPO) plans. Most individual and group HMO plans contract with a network of health care providers, but restrict health care consumption by consumers to that network. HMO beneficiaries are required to select a primary care physician who traditionally acted as a gatekeeper, essentially controlling referrals to in-network specialists.[7] As foreign providers are out-of-network, HMOs do not cover treatments obtained overseas, except in case of medical emergencies that occur while traveling abroad.

PPO health plans also maintain a network of providers, but are more flexible in their coverage benefits, giving the consumer the option to consume health care from any provider they choose.[8] However, the consumer is responsible for higher out-of-pocket payments if the provider is out-of-network. Overseas providers are treated as out-of-network, and insurance coverage abroad typically only applies to medical emergencies. There are also Point of Service (POS) plans which offer consumers the option of obtaining care out-of-network like a PPO plan, except that the in-network portion of the plan is structured exactly like an HMO, with a primary care physician controlling referrals to in-network specialists.

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[6] US Statute, Title 42, Section 1395Y (a4) of the original Medicare (1965) plan states that "No payment may be made under part A or part B of this sub-chapter for any expenses incurred for items or services which are not provided within the US, except for inpatient hospital services furnished outside the US under the conditions described in section 1395F." The conditions are that the beneficiary be a US border resident, require hospitalization, and live closer to the foreign hospital than to the US hospital (see, e.g., CMS, 2005).

[7] Some HMO plans offered by insurers such as Kaiser, Blue Cross of California, and Highmark are Direct Access or Open Access HMOs that do not have a gatekeeper primary care physician requirement.

[8] Interestingly, while PPO premiums are higher than HMO premiums, averaging $10,217 for a PPO plan covering a family of four versus $9,504 under an HMO in 2004, more than half of employees with health insurance coverage chose the former, with only about a quarter enrolling in HMO plans (see, e.g., Kaiser Family Foundation study, 2004).

Some insurers have taken steps to make international networks of providers available to their consumers. The Blue Cross Blue Shield Association has contracted with a third party medical assistance company named World Access, to maintain a network of providers overseas. Blue Cross Blue Shield has established a program called BlueCard Worldwide, which handles the billing, claims translation, and currency conversion for care received abroad from overseas providers.[9] Coverage for care received overseas varies from plan to plan, but non-emergency treatments received abroad rarely qualify for reimbursement. Some multinational corporations and international organizations (e.g., the World Bank Group) offer health plans that reimburse their employees for both emergency as well as non-emergency care received worldwide, but treat the overseas provider as out-of-network, rendering the employees responsible for higher out-of-pocket costs when receiving care abroad.[10]

While this study focuses on the influence of health insurance on trade in health care for the United States, the broader issue is relevant also to other industrial countries. In many European countries, a majority of the public is covered by public health schemes analogous to US Medicare and Medicaid. These schemes have also had to deal with the possibility of consumers traveling abroad for treatment in response to rationing. A judgment in a recent lawsuit filed by a UK resident who faced a long wait for a hip replacement in the UK, and proceeded to obtain the treatment in France without authorization from the National Health Service (NHS), has wide-ranging implications for trade in health services within the EU. The British Court of Appeals judgment in the case of Mrs. Watts v U.K. Secretary for Health relied on a European Court of Justice ruling that "undue delay" should not be tied to NHS waiting list times, but rather be decided through clinical judgment on a case-specific basis, taking into account the seriousness of the condition, severity of pain or impairment, risk of deterioration, and any effect on the patient's job (see R [Watts] v Secretary of State for Health, 2003). This potentially opens the door to many patients who are waiting for authorization on scheduling treatments abroad.

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[9] However, BlueCard Worldwide is not an insurance product. The consumer's Blue Cross Blue Shield Plan provides the insurance coverage and adjudicates claims according to the member's benefit plan.

[10] Recently, a new genre of health plans termed "Consumer-driven" plans, have been gaining popularity among employers and employees. Enrollment in these plans is currently small at less than 1 percent of the population, but is rising (see e.g., Gabel, Lo Sasso and Rice, 2002). These plans are based on the notion that giving financial incentives and exposing consumers to more cost sharing would motivate patients to seek lower cost providers. In one type of consumer-driven plan, the employer establishes a health reimbursement arrangement (HRA), e.g., $1,000 annually, for each employee. As an employee incurs qualified medical expenses, they can submit them for reimbursement until their HRA funds are exhausted. Then, the employee is responsible for 100 percent of medical expenses, until a deductible (e.g., $2,000) is met. At that point, a regular health plan kicks in, covering most expenses (see e.g., Gabel and Rice, 2003). In principle, consumers could use their HRA funds to consume health care abroad, but given the newness of these plans, we do not have information on the extent to which consumers are availing of this option.

3. Realizing the gains from trade in health services: the problem and a proposed solution

In order to demonstrate the dampening effect of health insurance on trade in health care, we recast the model used by Gaynor et al. (2000) in a trade context. There are two countries, home and foreign. Let x denote the quantity of a composite bundle of medical care services consumed by the representative home country consumer. The home price of a unit of care is p_1, and the foreign price for the home consumer is $p_2 = \tilde{p}_2 + F$, where F represents all the costs (travel and psychological) of going abroad and acclimatizing to foreign surroundings while receiving care. Assume that p_1 and $\tilde{p}_2$ are set equal to the marginal cost of production in their respective countries and all prices are common knowledge. Further, assume that the domestic price is higher than the foreign price inclusive of F, i.e., $(p_1 - p_2) > 0$ so that there are gains from trade.

The insurer offers the consumer an insurance contract defined by the parameters (M, θ), where M is the health insurance premium, and θ is the coinsurance rate, $(\theta < 1)$. The fact that the consumer is responsible for a proportion θ of the price of health care is the insurer's response to the well-known ex-post moral hazard in the consumption of health care (see, e.g., Pauly, 1968). For simplicity, assume that the insurance industry is competitive, and faces no other costs in both countries, so that a consumer's premium is set equal to the expected value of claims payouts. The zero expected profit condition for the insurance industry implies

$$M = \lambda.(1-\theta).p.x,$$

where λ is the exogenously given probability that the consumer will need medical treatment. In the absence of health insurance, the representative consumer has a demand curve $x = D(p)$ for health care. Health insurance modifies the demand curve to $x = D(\theta_1.p)$ because the consumer now faces a lower effective price, $\theta_1 p$, as shown in figure 1.

The problem

We shall show that the problem of under-consumption of health care abroad arises even if the insurer offers identical coverage of the costs of treatment *per se* irrespective of the location (even though as we saw above, insurers often discriminate against treatment obtained abroad). Initially, the consumer's effective price is $\theta_1.p_1$ at home, and $\theta_1.\tilde{p}_2 + F$ abroad. Although $(p_1 - p_2) > 0$, that is there are gains from trade, the consumer will not go abroad if $\theta_1.(p_1 - \tilde{p}_2) < F$, implying that the gains from trade will remain unrealized.

Figure 1.
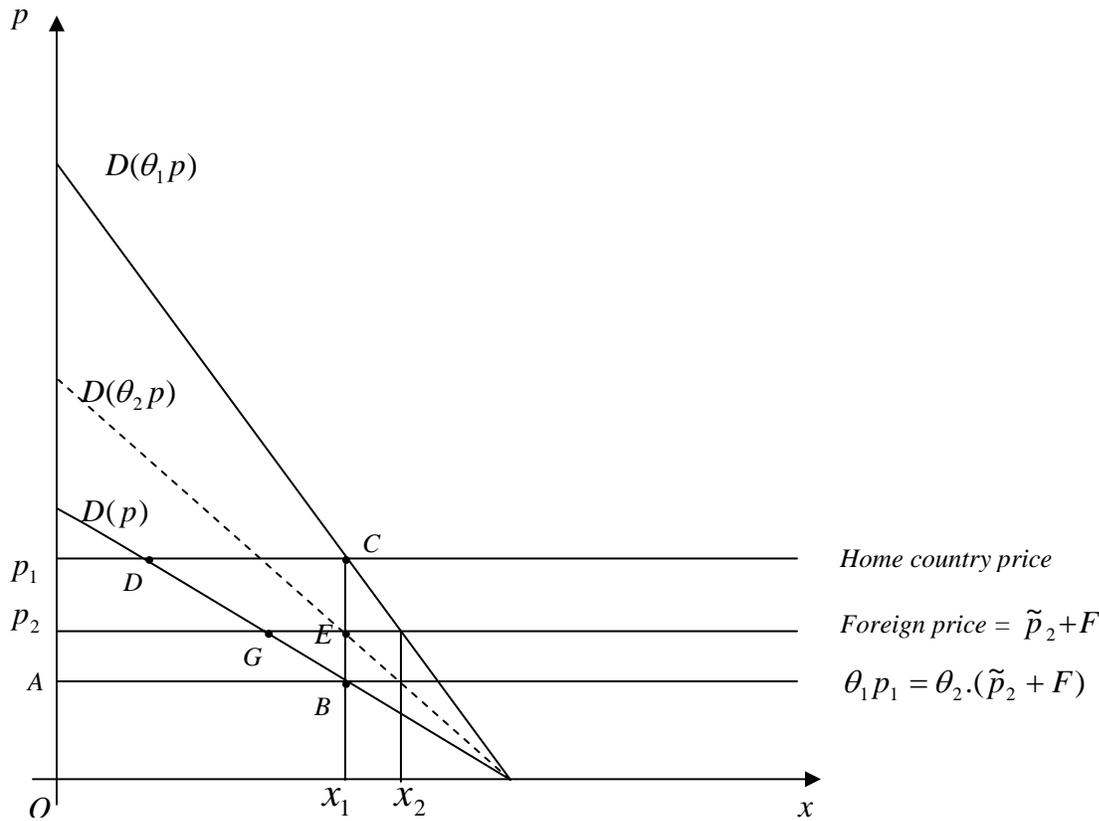
It can be seen from figure 1 that when the price is p_1, the quantity of medical care demanded at home would be x_1. The consumer pays the health care provider a price equal to $\theta_1 p_1$, with his expenditure equivalent to the area of rectangle $OABx_1$. The insurer pays the provider $(1-\theta_1)p_1$, which is equivalent to the expenditure Ap_1CB. The triangle BCD can be interpreted as the efficiency loss from moral hazard in this equilibrium.

A possible solution

A simple solution to the problem of under-consumption abroad is that insurers cover a proportion $(1-\theta_1)$ of not just the cost of health care obtained abroad, $\tilde{p}_2$, but of the "full" price inclusive of travel costs and other costs, $\tilde{p}_2 + F$.[11] The consumer would then face an effective price of treatment abroad of $\theta_1.(\tilde{p}_2 + F)$ which is lower than price of

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[11] Other costs could include the psychological costs of acclimatizing to a foreign environment, and the (interest) cost of waiting for insurer reimbursement.

treatment at home, i.e., $\theta_1.(\tilde{p}_2 + F) < \theta_1.p_1$. It is obvious that if $(p_1 - p_2) > 0$, then $\theta_1.(p_1 - p_2)$ is also positive, so that any gains from trade will always be realized.

However, as Figure 1 shows, the insurer covering a proportion of travel and other costs with an unchanged coinsurance rate, θ_1, would lead the consumer to demand a quantity equal to x_2, which represents a higher level of consumption of health care relative to the home quantity x_1. In some situations, it may be possible to control for moral hazard leading to excessive consumption abroad through utilization reviews, e.g. verification ex ante of the need for treatment, as well as an objective verification ex post of the receipt of treatment. But if such independent controls are not feasible, could the possible "over-consumption" of health care imply a loss in welfare by accentuating the moral hazard problem?

Modifying the solution to deal with ex post moral hazard

We demonstrate that it is possible for the insurer to modify the insurance contract to ensure that the gains from trade are realized, without worsening the moral hazard related efficiency loss. In effect, the insurer could offer the consumer a different "foreign coinsurance rate" applying only to consumption abroad. Consider a coinsurance rate, θ_2, such that the consumer chooses the original level of consumption (x_1) even when faced with the lower foreign price p_2. This gives rise to a demand curve for foreign health care given by $D(\theta_2 p)$, and the consumer moves to point E, consuming x_1 in the foreign country at a price of p_2. We can solve for the new coinsurance rate θ_2 by equating the quantities from the two demand curves. We have

$$x_1 = D(\theta_1 p_1) = D(\theta_2 p_2),$$

which yields the foreign coinsurance rate θ_2 as $\theta_2 = \theta_1.\dfrac{p_1}{p_2}$, which is higher than θ_1

since $\dfrac{p_1}{p_2} > 1$.

When the consumer chooses to go abroad for treatment, his out-of-pocket expenditure is still area $OABx_1$, but the insurer now pays the foreign provider only Ap_2EB, which represents a saving equal to the area $p_2 p_1 CE$ compared to what the insurer would have paid a home country provider. The insurer's saving can also be written as $(p_1 - \tilde{p}_2 - F).x_1$, which would be distributed to the consumer in the form of a lower premium since there are zero expected profits in a competitive insurance industry. Comparing the premia in the two cases,

$$M_1 = \lambda.(1 - \theta_1).p_1.x_1, \text{ and}$$

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$$M_2 = \lambda[(1 - \theta_2).(\tilde{p}_2 + F)].x_1,$$

gives us $M_2 < M_1$, since $\theta_1 p_1 = \theta_2.(\tilde{p}_2 + F)$ and $p_1 - \tilde{p}_2 - F > 0$, by assumption. This implies a lower premium for the consumer. The consumer would clearly be better off since he now pays the same out-of-pocket expenditure, but a lower premium if he agrees to go abroad. Further, the size of the inefficiency due to moral hazard is also reduced from the area of triangle *BCD* to that of *GEB*, if the consumer goes abroad. Thus, if the moral hazard problem cannot be independently controlled, the lower premium serves as an instrument to give the consumer an incentive to travel abroad, while the higher coinsurance rate reduces the efficiency loss from moral hazard when the consumer obtains cheaper treatment abroad.

Summing up

If the cost of health care is lower overseas, then the insurer can design an insurance contract that is unambiguously welfare-enhancing. There are two health plan design possibilities depending on whether or not ex-post moral hazard can be independently controlled for.

a) Possible to independently control for moral hazard

If it is possible to independently control for moral hazard leading to over-consumption abroad e.g., through utilization reviews, then it is sufficient for the insurer to offer consumers identical terms of coverage for health care obtained locally and abroad, provided that the foreign price is defined to include also the travel and other costs of obtaining treatment abroad.

Consider a numerical example. As we noted above, a knee surgery costs $10,000 in the US, but only $1,500 (inclusive of travel costs) in Hungary. Let us say that insurers establish that the standard psychological cost of going abroad for treatment is $1,000. Under a uniform 20 percent coinsurance rate (assuming a zero deductible for simplicity), a consumer would pay $2,000 out-of-pocket if they underwent treatment in the US and the insurance company would pay the US provider $8,000. On the other hand, if the consumer chose to go abroad, he would be reimbursed 80 percent of the foreign price inclusive of travel and psychological costs ($2,500). The consumer would end up making a net monetary gain of $500 (instead of an expenditure of $2,000 in the US) and the insurance company would pay $2,000 for the treatment (instead of $8,000 in the US).[12]

b) Not possible to independently control for ex-post moral hazard

On the other hand, if it is not possible to independently control for moral hazard leading to over-consumption abroad, then the insurer can offer the consumer a choice between

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[12] Interestingly, there are insurance laws in some countries, e.g., Belgium, that prohibit making the insured richer than they were before purchasing insurance (source: Vanbreda).

two different health insurance contracts, i.e., (M_1, θ_1) if the consumer prefers treatment at home, and (M_2, θ_2), involving a lower premium and a higher coinsurance rate, if the consumer is willing to go abroad for treatment for certain procedures.

Such a scheme is not without precedent. Most private insurance contracts apply different coinsurance (and deductibles) depending on whether health care is received from in-network providers or out-of-network providers.[13] The proposed scheme would resemble such arrangements in that foreign providers could be treated as a separate provider "tier".[14] The consumer would thus not lose any of the existing options, but be given an additional choice: a contract with a lower monthly premium and a higher coinsurance rate if a pre-defined set of health care services are obtained from the cheaper foreign provider tier. Incentives for time-inconsistent behavior, e.g., a consumer signing up for the lower premium contract but reneging on the requirement to go abroad at the time of treatment, can be neutralized by introducing a contract clause that stipulates higher consumer cost-sharing in the event of reneging, such that the consumer would pay the same amount ex-post as she or he would have under the "not willing to travel abroad" higher premium plan.

4. Is health care inherently non-tradable?

The realization of the gains from trade hinges on the consumer's willingness to travel abroad for health care. There are a number of myths about trade in health care, and we devote this subsection to addressing the two most important ones: that patients cannot or will not travel; and that going abroad for health care (to developing countries) involves a significant compromise on quality.

Myth 1: The sick cannot travel, so health care must be delivered at home.

It is certainly true that many types of treatment must necessarily be delivered close to home: e.g. when immediate attention is required, as in the aftermath of an accident, or when patients are physically incapable of travel, as in the case of a spinal injury. However, there are a large number of treatments where the patient can both wait and travel for treatment, e.g., for an elective hernia operation or eye surgery. In fact, in some cases, e.g., substance abuse rehabilitation, the desire for privacy and anonymity can create a preference for treatment away from home. That these are not merely hypothetical possibilities is revealed by the growing annual volume of "medical tourists"

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[13] Similarly, under existing health plans, consumers in the US frequently pay less for off-patent generic prescription drugs than for on-patent brand name drugs.

[14] Our proposal could differ from existing insurance schemes in that it would involve a lower premium, but could involve a higher coinsurance rate applying to foreign treatments to minimize moral hazard abroad. The difference would arise in cases where supply-side cost containment measures (e.g., capitation payments to physicians) or utilization reviews are infeasible to implement abroad, leaving demand side measures (e.g., coinsurance) as the likely choice of instrument to limit moral hazard.

from various countries that consume health care services such as cosmetic, dental, laser-vision, orthopedic, and even cardiac surgery abroad (see Table 2).[15]

Table 2. Medical tourism in the developing world

Country	Estimated number of foreign patients ('02-'03)	Estimated number of foreigners visiting specifically for health care ('02-'03)	Countries of origin of foreign visitors	Treatments sought by foreign visitors
Thailand	632,000	126,000	South and South East Asia, Europe, and the US	Cardiac surgery, post-op care, cosmetic surgery, dentistry, cataracts, bone-related procedures
Singapore	200,000	20,400	South and South East Asia, Korea, Japan, Australia, the UK and the US	General surgery, Cardiac surgery, ophthalmology, Orthopedics, Gynecology & Urology
Malaysia	103,000	75,000	Indonesia, India, Middle East, and the UK	Cardiology, hematology, gastroenterology, neurology & cosmetic surgery
India	150,000	62,000	Bangladesh, Middle east, the UK, Europe, and the US	Cardiac surgery, joint replacements, ophthalmology & alternative medicine.
Jordan	N/a	70,000	Yemen, Sudan, Libya, Algeria, Tunisia, and Iraq	Cardiac surgery, correction of spinal injuries, cornea transplants & alternative medicine
Cuba	N/a	3,500	Central and Latin America, and the UK	Cosmetic surgery, Vitiligo treatments, ophthalmology, joint replacements & neurology.

Sources: Tourism Authority of Thailand, Singapore Ministry of Health, Khoo (2004), Malaysian Department of Statistics, Confederation of Indian Industry, South Asia Network of Economic Research Institutes (SANEI), the Jordan Times, and Cuba Travel USA. "N/a" indicates that data was not available.

We have presented estimates for destinations in developing countries because our interest is in trade motivated by differences in costs, but the numbers in Table 2 also include consumers from other developing countries who travel because the required care is not available in their own countries. Medical tourists from industrial countries include both consumers without health insurance as well as those who are insured at home, but opt to have the surgery overseas anyway, either because of long waiting lists at home, or due to prohibitively high out-of-pocket costs. For example, in the UK, as of 2004, over 41,000 people were expected to experience a waiting time of six months or longer to have various surgeries under the National Health Service (NHS) scheme.[16] The NHS has responded by flying patients to neighboring countries such as France, Spain and Germany for orthopedic procedures, eye surgery, and otolaryngological procedures (UK Department of Health).[17]

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[15] Relying only on their website and magazine write-ups, the Mediscapes company in South Africa reports getting about 50-80 bookings a month from parties in the US interested in procedures such as dental whitening, botox treatments, health check ups, and elective surgery (both cosmetic and other).

[16] Source: U.K. Department of health. See http://www.performance.doh.gov.uk for detailed figures.

Besides people that travel abroad for health care, there are a growing number of US retirees in foreign countries such as Mexico and Japan. According to a survey of retired Americans living in Mexico, 94 percent of those surveyed indicated that they would seek medical services in Mexico if Medicare benefits were available in Mexico (see Warner 1999). Medicare's reluctance to offer coverage for care received overseas is especially surprising when one considers that other federal health plans such as Tricare (US military health plan) and VA (Veteran's Administration) plans provide reimbursement for worldwide care.

Myth 2: The quality of health care available in developing countries is significantly lower than in industrial countries.

This statement is certainly true on average. The relevant comparison is, however, not with the standard of an average developing country provider but with the standard of a provider likely to be used by a patient from an industrial country. There is significant evidence that the upper end of the quality distribution of both professionals and hospitals in several advanced developing countries lies well above the minimum acceptable standard in industrial countries.

First of all, a significant number of foreign-educated medical professionals have been deemed to be adequately qualified to work as health care providers in the United States. According to the American Medical Association (2004), the proportion of International Medical Graduates (IMGs, hereafter) in the total US physician workforce has increased by over 160 percent since 1970, and they now account for a quarter of the 853,187 physicians in the US (see figure 2 below).

Figure 2.

Proportion of Foreign Educated Physicians in total US Physician Workforce, 1970-2004
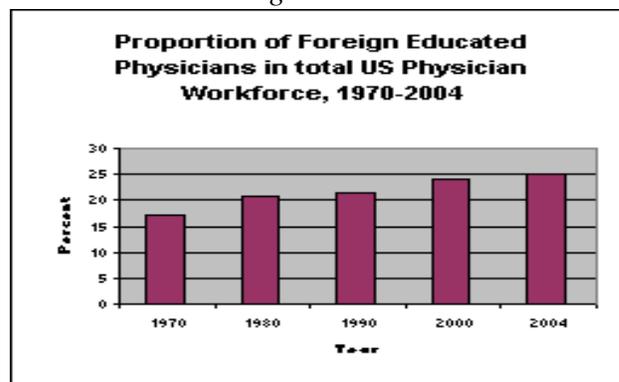
Source: American Medical Association (2004)

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[17] Form E-112 is used to authorize a UK resident traveling to any other EEA country for the specific purpose of obtaining medical treatments, and is issued if the patient's NHS consultant recommends treatment abroad, the patients primary care trust in the U.K. agrees to meet the cost of treatment, and if the treatment being sought is available under the other country's state health scheme.

Interestingly, the top eight countries of origin of foreign physicians in the US are all developing countries (McMahon, 2004). Indian educated physicians constitute, the largest group of IMGs in the US, accounting for 21 percent of all foreign educated physicians, and more than a quarter of IMG residents and research fellows, followed by Filipino, Cuban, Pakistani, Iranian, and Korean educated physicians (see table 3). Similarly, the OECD Human Resources for Health Care project (2000) reports that foreign-trained physicians comprise over 30 percent of the practicing physicians in the National Health Service of the UK.

Table 3. The 10 most prevalent non-US nationalities among International Medical Graduates (IMGs) working in the US

Country of education	Fraction of IMG physicians (%)	Fraction of IMG residents and fellows (%)
India	21	25.1
Philippines	9	3.9
Cuba	4.2	< 2
Pakistan	4.2	6.8
Iran	3.1	3.3
Korea	2.7	< 2
Egypt	2.5	2.7
China	2.4	3.9
Germany	2	< 2
Syria	2	2.8

Source: McMahon (2004)

It is also significant that the numbers of foreign-graduate faculty at US medical schools doubled from 8,100 to 16,200 over the 1981-2000 period, accounting for almost a fifth of total medical school faculties in 2000 (Liu et al. 2000). Again, India is the most important country of origin with a share of 18 percent, with a significant number also from other developing countries such as China, the Philippines and Mexico.

Figure 3.
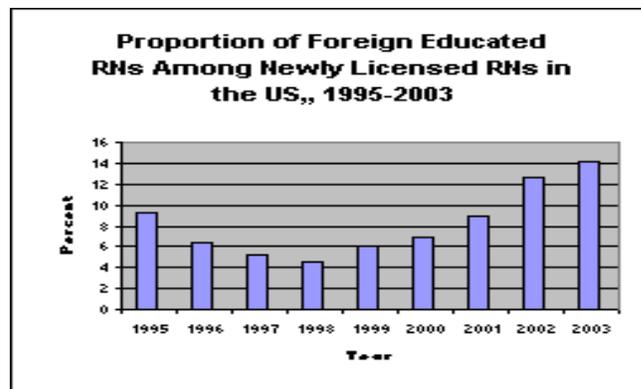
Source: *Brush, Sochalski and Berger (2004)*

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Brush, Sochalski and Berger (2004) show that the share of foreign educated nurses in the total number of newly licensed registered nurses (RNs) in the US has been rising since 1998, exceeding 14 percent in 2003 (see figure 3 above). The growth in the share of foreign educated nurses in the US since 2001 is particularly noteworthy because it occurred despite an increase in the number of US-trained RNs. Filipino nurses dominate the numbers of foreign RNs at 43 percent, followed by countries like Canada, the U.K., India, Korea and Nigeria.

Developing countries not only provide a large number of medical professionals to industrial countries, but also have hospitals that are comparable to some of the best medical facilities in industrial countries. In 2002, the Bumrungrad hospital in Bangkok received international accreditation from the Joint Commission International (JCI, hereafter) - the international arm of the Joint Commission on Accreditation of Health care Organizations (JCAHO), which is one of the leading organizations certifying hospital quality in the US. The Bumrungrad treats over 300,000 international patients annually from 154 different countries, employs over 600 physicians and dentists on staff, most with international training and certification, and has state of the art equipment and facilities.[18]

Similarly, the Apollo hospital chain based in India has treated over 60,000 foreign patients over the last three years in a number of specialties, especially cardiac surgery and orthopedics. It has maintained a success rate of 99 percent in the over 50,000 cardiac surgeries performed, which is on par with the surgical success rates of some of the best cardiac surgery centers (e.g., Cleveland Clinic) in the US. The Apollo has several surgeons that have previously practiced in the US and UK on its staff and it now operates in 28 locations across Asia.[19] It is in the process of obtaining JCI accreditation. The Apollo Health care Group in India is currently in negotiations with US and European insurers to design schemes whereby the latter's clients would have the incentive to travel to India for certain types of elective cardiac and orthopedic surgeries (see e.g., Business Standard, 2005).

The Crossroads Center in Antigua is another example of a world-class facility in a developing country. Founded in 1998, it is now an International Center of Excellence for the treatment of alcohol, drugs and other addictive disorders.[20] Crossroads has an internationally trained staff and its 29-day inpatient rehabilitation program is closely modeled on US treatment programs (see e.g., Gonzales, Brenzel and Sancho, 2001). Treatment costs at Crossroads are a third lower than comparable facilities, such as the Betty Ford and Hazelden clinics in the US. The center estimates about 70 percent of its clientele is from industrial countries such as the UK, US, and Canada.

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[18] More details available at www.bumrungrad.com

[19] More details available at www.apollohospitals.com

[20] See http://crossroadsantigua.org/website/index.html

5. Estimating the gains from trade: an illustration

In this section, we undertake a cost comparison of selected medical treatments to illustrate the potential gains from trade in health care for the US. The biggest challenge in making such a comparison is the difficulty in obtaining the relevant data. We needed data on (a) prices of the surgeries in the US, (b) the magnitude of the demand for the surgeries in the US, (c) prices of the surgeries in other countries, and (d) differences in the quality of services between the US and other countries.

Identifying tradable medical procedures

The first step, however, was to identify the medical procedures that are clear candidates for consumption abroad. It became apparent that it was only for surgeries that the cost savings are likely to be large enough to cover the cost of travel. For minor treatments, e.g., the treatment of hypertension, the cost differential is too small to justify travel. Furthermore, purely diagnostic procedures, such as the interpretation of CT scans, are already being traded electronically cross-border, without requiring the movement of the patient to the foreign country.[21] In collaboration with medical professionals, we developed the following set of criteria:[22]

- The surgery constitutes treatment for a non-acute or non-traumatic condition;
- The patient must be able to travel without significant pain or inconvenience;
- The surgery is fairly simple and commonly performed with insignificant rates of post-operative complications;
- The surgery requires minimal follow-up treatment on site;
- The surgery generates minimal laboratory and pathology reports; and
- The surgery results in minimal post-procedure immobility.

Applying these criteria extremely stringently to the list of the 230 most commonly performed procedures in US community hospitals, published by the Agency for Health care Research and Quality, we selected 15 procedures for price comparison purposes. These procedures are listed in Appendix 1 along with data on patient volume, and summary statistics such as mean charges, mean length of hospital stay, and surgical mortality rates.

US prices

Hospital mean and median "billed charges" were available for each procedure in the Health care Cost and Utilization Project (H-CUP, hereafter) Nationwide Inpatient Sample

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[21] The five radiologists working for Wipro Ltd., and based in India, who interpret 30 CT scans a day for Massachusetts General Hospital, are an example of such cross-border trade in health services that does not require movement of the patient to the foreign country.

[22] The criteria were developed after consultations with Drs Grizzard & Sorock at the World Bank Health Services Department.

database. However, billed charges are a misleading indicator of the actual price of the procedure, since they are an inflated price on which provider discounts to the insurer are based. Typically, only uninsured patients are asked to pay the hospital "billed charges". Thus, while an uninsured patient may be asked to pay a hospital over $13,000 for a hysterectomy, an insured patient's health plan may end up paying a negotiated discounted rate of only about $4,500 for the same procedure, with the insured patient paying only their $250 deductible and a co-payment. The price for a procedure is made up of the insurer's payments to the hospital, physician, anesthetist, and other professionals, and the patient's co-payment. We now turn to the methodology for calculating each of these.

In order to accurately estimate the prices of our selected procedures, we relied on the Medicare provider payment datasets made publicly available by the Centers for Medicare and Medicaid Services (CMS, hereafter). For inpatient procedures, we first identified the relevant Diagnosis Related Group (DRG) code for each procedure from the DRG Expert coding manual, which also lists the national average payment Medicare makes to hospitals.[23] The hospital DRG payment rate varies by hospital, procedure, case complexity, and hospital resource use by the patient. For example, the national average hospital payment rate for a knee replacement (DRG 209) is $9,261, whereas it averages only $4,206 for hernia repairs (DRGs 161 and 162). For outpatient procedures, the hospital/facility fee was obtained from the Medicare Outpatient Prospective Payment System dataset. Unlike inpatient DRGs, outpatient procedures are coded and priced by Current Procedural Terminology (CPT) codes. For example, the facility fee for a toe deformity repair (CPT 29290) performed on an outpatient basis is $1,525, while that for a shoulder joint surgery (CPT 23470, 23472) averages $5,696. See appendix 2 for details on hospital/facility payments for all our selected procedures.

Physician payment rates were calculated from the Medicare physician fee schedule, which are listed by CPT code and setting (facility or physician office) for 92 different regions of the US. We used the national average across regions for each procedure in a facility setting to calculate the physician's fees. For example, the national average physician's fee for skin lesion removal (CPT 11426) was $238, while that for a cataract procedure (CPT 66983) was $592 (see appendices 2 and 3). Medicare payment rates to providers are lower than those paid by private insurers, and much below what is paid by the uninsured; in fact, Medicare operates *de facto* as a large government administered PPO with a very aggressive rate structure for provider payments. In 2001, Medicare physician payment rates were 83 percent of average private rates, having risen from 64 percent in the mid 1990s (see e.g., Medicare Payment Advisory Commission, 2001).

Anesthesiology fees are calculated based on the number of base units and time units (one time unit is 15 minutes of time) for a procedure, which is then multiplied by an anesthesia conversion factor that varies by region (see Medicare Claims Processing Manual). We obtained the number of base units by anesthesia CPT code from the Medicare anesthetist fee schedule, assumed a uniform four time units for each procedure (as suggested by the

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[23] National Average Hospital Payment rate reported by the DRG Expert (2005) is calculated by multiplying the current relative weight of the DRG by the national average hospital Medicare base rate of $4,555.

CMS anesthetist fee payment department), and used the national average anesthetist conversion factor of $17.71 per anesthetist unit (see appendices 2 and 3 for an estimate of anesthesiology fees).[24] We then calculated the inpatient prices for our selected procedures in the US by adding hospital payments, physician fees and anesthetist charges for the year 2004 (Column 1, Table 4).

Since outpatient treatments under Medicare are also subject to a patient co-payment, we used the minimum adjusted co-payment for reported by CMS for the relevant CPT codes. Examples of minimum co-payments include $157 for a glaucoma procedure and $370 for a prostatectomy procedure such as TURP. We then calculated Outpatient prices by adding hospital fees, physician fees, anesthesia charges, and co-payments for the year 2004 (Column 3, Table 4).

Magnitude of Demand

We also obtained patient volume data from the H-CUP Nationwide Inpatient Sample database. The latest year for which H-CUP data were available was 2002. However this dataset covered only inpatient treatments in US community hospitals for 36 US states (see Column 2, Table 4), and thereby excluded the large volumes of the selected surgeries that are performed in an outpatient setting (Column 4, Table 4). Since, we were unable to find a centralized source of data on the number of outpatient surgeries by procedure, we had to collect outpatient volume data from a variety of sources. In each case, we contacted the relevant professional organization of surgeons, e.g., the American Podiatric Medical Association provided data on the annual number of Bunionectomies (toe-deformity repairs). In some cases, we had to rely on outpatient volume estimates from health care research firms, e.g., OptiStock, a vision care research firm, provided estimates on the annual number of cataract procedures. See appendix 3 for the detailed list of sources from which outpatient volume data was estimated.

Foreign prices

Vanbreda International, a Belgium-based employee benefits consulting and administration firm, whose clients include about 124 international organizations with operations in 185 countries, provided the data on international prices for the selected procedures in 21 countries from their own claims (see appendix 4 for details). In order to make a meaningful comparison between US and international prices from a trade standpoint, we added the cost of round-trip airfare to these countries from the US to the international prices. Since the psychological costs of going abroad are hard to quantify, and our focus is on the monetary gains from trade, we do not include the former in our cost comparison. Further, since there can be a lot of intra-procedural variation in prices, we used the average of the three lowest foreign country prices for each procedure as the benchmark foreign price (Column 5, Table 4). This minimizes any price bias arising from the paucity of claims data in certain countries.

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[24] The number of time units can be larger than 4 for a major surgery, while only one time unit may be charged for a minor procedure.

Quality control

Price comparisons would be much more credible if we could effectively control for differences in quality. However, in the absence of more information, we can only implement two implicit controls. First, as our selected procedures are routine and relatively uncomplicated, they do not require a relatively high level of surgical expertise. Hence, there is a presumption that there are not big quality variations for these procedures between the best hospitals in developing countries and those in developed countries. Second, since Vanbreda's clients abroad are mainly international organizations that have citizens from industrial countries on staff, their claims data from foreign countries reflects prices of procedures in the best hospitals in that country, thereby mitigating the quality differentials concern. While these implicit quality controls are imperfect, no superior alternative was feasible given the lack of data on quality of care in developing countries.

Price comparisons

The results of the cost comparison are illustrated in the last column of Table 4. The column contains an estimate of cost savings that would accrue if ten percent of the number of patients requiring a procedure in the US instead chose to undergo the procedure overseas.[25] Since the patient volumes are for 2002, while the prices pertain to the year 2004, our calculation of savings assumes that annual demand for procedures stays unchanged. In fact, studies have shown that the annual patient volumes for many of our selected procedures, e.g., knee and shoulder surgeries have displayed a rising trend over the last few years (see e.g., American Association of Orthopedic Surgeons).

As shown in Table 4, the gains from trade are large. If one in ten patients currently undergoing these fifteen procedures in the US instead were treated abroad, the savings would amount to $1.4 billion dollars annually. Based on the volume of Medicare patients in the H-CUP sample, we estimate that $690 million of these savings would accrue annually to the Medicare program alone. If we expand the list of tradable procedures to include coronary artery bypass grafts, which are already being consumed abroad in growing numbers, the estimate of annual savings would exceed $2 billion.

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[25] It is conceivable that foreign prices for these services could increase in the short run with greater consumption by visiting foreign patients, but in the long run, higher revenues could be used to create additional capacity in foreign hospitals, thereby mitigating price increases.

Table 4: Estimating the gains from trade in health services for the US

Procedure	US inpatient price ($)	US inpatient volume	US outpatient price ($)	Estimated US outpatient volume	Average of three lowest foreign prices including travel cost ($)	Savings if 10% of US patients undergo surgery abroad instead of in the US ($)
Knee surgery	10,335	399,139	4,142	60,000	1,236	380,604,366
Shoulder Arthroplasty	5,940	23,300	7,931	N/a	2,204	8,704,809
TURP	4,127	111,936	3,303	88,064	2,385	27,581,317
Tubal Ligation	5,663	78,771	3,442	621,229	1,248	171,065,574
Hernia Repair	4,753	40,553	3,450	759,447	1,608	152,655,706
Skin lesion excision	6,240	21,257	1,696	1,588,884	812	151,952,860
Adult Tonsillectomy	3,398	17,251	1,931	102,749	1,010	13,588,218
Hysterectomy	5,783	640,565	5,420	N/a	1,869	250,704,845
Haemorrhoidectomy	4,945	12,787	2,081	137,213	781	23,160,663
Rhinoplasty	5,050	7,265	3,417	N/a	1,906	2,284,315
Bunionectomy	6,046	3,139	2,392	41,507	1,487	5,186,290
Cataract extraction	3,595	2,215	2,325	1,430,785	1,133	171,078,116
Varicose vein surgery	7,065	1,957	2,373	148,043	1,393	15,618,521
Glaucoma procedures	3,882	-	2,292	75,838	1,017	9,670,440
Tympanoplasty	4,993	754	3,347	149,246	1,261	31,408,685
Total savings						1,415,264,725

Sources: Health care Cost and Utilization Project (H-CUP) database, 2002, Vanbreda International, and authors' calculations. An "N/a" denotes that data was not available. Patient volume data pertain to 2002, while the prices pertain to 2004.

Although this figure amounts to only a small proportion of total health spending in the US, the savings are nevertheless impressive for three reasons. First, the savings pertain to only fifteen treatments drawn out of a large universe. Given that patients from the US and UK are traveling to India for major procedures such as cardiac surgery (see e.g., Srinivasan, 2005), the list of tradable procedures is arguably much wider. Identifying the universe of tradable treatments would be a useful exercise but is beyond the scope of this paper. Second, our estimate of cost savings is understated to the extent that we have used Medicare payment rates to calculate US prices, which are lower than those paid by private insurers and the uninsured, as noted above. Third, patient volume data was not available for all procedure categories, and a fuller accounting would certainly magnify the estimate of savings.

6.   Are there good reasons to deny coverage for treatment abroad?

Given that there are large gains from trade in health care, it is a puzzle that insurers in countries with expensive health care deny coverage for non-emergency treatment obtained abroad rather than encourage patients to seek care overseas. We consider possible reasons that have emerged from discussions with insurers.

Insurer concerns about quality of overseas providers and malpractice law

Insurers may care about the quality of the providers because of a potential negative spillover effect in the consumption of health care. A consumer's decision to receive care from low-cost overseas providers may prove expensive to the insurer if the treatment worsens health problems and the insurer is obliged to cover the costs of subsequent treatment. The insurer may also be concerned that malpractice may occur in a foreign jurisdiction where the legal regime makes it difficult to sue care providers.

It would make sense to deny the consumer the *option* of receiving cheaper treatment abroad for these reasons if two conditions hold true. First, the insurer cares more about potential future cost implications of poor provider quality than consumers care about the impact of provider quality on their own health. Second, the insurer is more concerned than the consumer about the difficulty in seeking compensation for malpractice abroad. These conditions cannot be ruled out but do not seem very plausible. Moreover, if these concerns really exist then it should be possible to write contracts that insulate the insurer from bearing any additional costs that arise from the consumer's decision to go abroad.[26] Quality concerns can be more directly addressed by creating provider networks abroad, as we describe in section 7 below.

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[26] One response to high costs of malpractice insurance in the US has been for American doctors to simultaneously practice in two countries, offering routine care at home, and performing procedures with higher surgical risk offshore, or in a foreign country. This practice is becoming more common, and could simultaneously allay both quality and legal concerns.

Cost of monitoring health care consumption abroad

Insurers may face high costs of monitoring care received overseas. As discussed previously, ex-post moral hazard tends to make the consumer over-consume health care. To an extent, this problem can be addressed through demand-side cost-containment measures as shown in the model in section 3. An insurer could also institute the requirement for objective verification *ex ante* by a US doctor (possibly in the insurer's network) of the need for treatment, as well as an objective verification *ex post* of the receipt of treatment in order to minimize fraudulent claims.[27]

Institutional impediments

Public health schemes such as Medicare and Medicaid face institutional impediments to extending coverage for health care received abroad. These are government-controlled schemes and allowing participation of foreign providers would require an amendment of the Social Security Act. The Medicare program, however, has built-in waivers, such as the CMS Section 1115 Research and Demonstration Waiver, which could be used to study alternative programs of cost-effective health care delivery overseas (see e.g., Warner, 1999, 2001). According to Warner, coverage for care received overseas, especially in a neighboring country such as Mexico, could be extended through the introduction of a Point of Service (POS) option for Medicare beneficiaries, or through the introduction of a Medical Savings Account (MSA).[28]

Distorted incentives in oligopolistic markets

The fact that federal programs such as Medicare and Medicaid do not offer coverage for health care received overseas could reflect implicit protection for domestic health care providers. The bigger puzzle is why private insurers deny coverage for treatment abroad. One reason could be insurers' inertia in a changing world (opportunities for trade are new, insurance business practices are old).

Another speculative explanation may be the oligopolistic nature of the health insurance industry. As appendix 5 shows, the three largest health plans account for well over 65 percent of the market in a large majority of US states (see, Robinson 2004). In a competitive market, insurers have no choice but to seek out the slightest cost advantage. Under an oligopoly, a different market equilibrium is possible. One health insurer may benefit by offering consumers the possibility of consuming cheaper health care. But if other firms follow suit, then its advantage would disappear. It is possible that overall

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[27] It should also be possible to deal with administrative concerns about treatments received abroad, such as the difficulties with incorrectly coded or improperly translated claims through collaboration with insurers in the destination countries (see, e.g., Albro and Norton, 1997).

[28] MSAs are similar to the Health Reimbursement Arrangements discussed in footnote 10, but differ from the latter in that they are portable, earn interest, and can be used for expenses other than health care. Medicare beneficiaries using MSAs would be able to display, in more immediate terms, how much less expensive overseas health care is vis-à-vis the US.

profits would be lowered if health care costs declined as a result of the introduction of the possibility of consuming health care abroad (Mattoo, 2001). The reason is that while firms would benefit from health care cost reductions, they could lose more from heightened competition in a low cost environment. In these circumstances it is conceivable that the industry gravitates towards the sub-game perfect equilibrium where each firm chooses the strategy of not offering consumers the possibility of cheaper care abroad as long as other firms behave the same way.

7. What can developing countries do to increase the scope for trade?

While this paper has focused on what inhibits foreign demand for care in developing countries, action is also clearly needed on the supply-side. The scope for trade would be greatly enhanced if the quality of services provided abroad is improved, and this improvement is credibly signaled. We have two suggestions.

7.1 Accreditation of foreign hospitals

One strategy for hospitals in developing countries that seek to attract foreign patients is to credibly signal their quality by obtaining accreditation from the Joint Commission International (JCI, hereafter). JCI is the international arm of the Joint Commission for Accreditation of Health care Organizations (JCAHO), which is one of the leading organizations certifying hospital quality in the US. Currently, there are about 14 JCI accredited hospitals and medical centers in developing countries, including the Einstein Hospital in Brazil, the Bumrungrad Medical Center in Thailand, the St. Luke's Medical Center in the Philippines, and the American Hospital in the UAE Arab Emirates.[29] The number of JCI accredited hospitals is expected grow in the coming years, with hospital chains such as the Apollo in the process of obtaining accreditation.

JCI accreditation standards are similar in rigor to the JCAHO standards that apply to US hospitals, but differ slightly, in order to accommodate: a) differences in health care laws and regulations across countries, b) differences across countries in the models that govern relationships between the medical staff, the hospital management, and the hospital governing body, and c) differences in other areas such as the interpretation of various terminologies used in the development and testing of international standards, and the laws and customs governing the informed consent process.[30]

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[29] See the Joint Commission website at http://www.jcrinc.com/international.asp?durki=7656 for more details.

[30] For example, NFPA Life Safety Code for facility safety is specific to US circumstances, and may not appropriately fit into an international context, and thus it is not required by the JCI standards. Similarly, JCAHO standards addressing medical staff bylaws are unique to the US model where physicians have admission and staff privileges at the local hospital, but are not directly employees of that hospital, as they are in many countries. Finally, the informed consent process overseas, by law or by custom, may include other people in addition to the patient, such as the family unit, a spouse, parent, etc., a difference from the US practice, which JCI standards for informed consent have to reflect. (Source: Anne Rooney, Executive Director, JCI)

Hospitals that undertake high volumes of relevant procedures are likely to be stronger candidates for accreditation, as studies have shown that surgical complications and mortality rates are inversely related to the volume of procedures (see, e.g., Birkmeyer et al., 2002 and Katz et al., 2002). JCI accredited hospitals are responsible for renewing their accreditation every three years, and have to collect and report outcomes data on services rendered as well as quality indicators. Studies have found a positive association between hospital performance reporting and hospital quality improvement efforts (see, e.g., Hibbard et al., 2003).[31]

The receipt of JCI accreditation by foreign hospitals could be used as the basis for selection to join the provider network of an industrial country insurer.[32] Foreign hospitals could also signal quality by establishing affiliations with reputed hospitals in industrial countries and mirroring their procedural standards, guidelines and clinical pathways. Foreign investment in the health care sector, sometimes inhibited by developing country restrictions, could also be a powerful vehicle for improvements in technology, managements and overall standards.

7.2   Accreditation of foreign medical professionals

The second proposal is for doctors and nurses in export-oriented health care organizations to credibly signal quality by passing, respectively, the United States Medical Licensing Exam (USMLE) and the US National Council Licensure Examination for Registered Nurses (NCLEX-RN).[33] Since foreign medical graduates that practice medicine in the US are obliged to pass these examinations, a natural extension from a trade in health care perspective would be to institute a similar requirement for foreign physicians in export-oriented health care organizations abroad. It is also possible that as part of the residency program for physicians, foreign medical boards could form partnerships with medical centers in developed countries involving an exchange of medical experts, for example, as in the partnership between the Methodist Health care System of San Antonio and Mexico (see Albro and Norton, 1997).

Doctors that have passed the USMLE written and clinical skills exam, and have a sufficient number of training credits could be included in the overseas provider network

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[31] Hibbard et al. (2003) evaluate the impact of private versus public reporting on hospital performance on quality improvement. They found that hospitals that received low scores in cardiac surgery and obstetrics initiated a higher level of quality improvement activities. Also, quality improvement efforts in hospitals whose reports were made public appeared to be significantly greater than in hospitals given only private reports.

[32] For example, companies such as WGA, Frontera and SMI have successfully maintained provider networks across the US-Mexico border for almost 15 years.

[33] The first stage of the USMLE involves a test of medical science concepts, the second stage involves a test of clinical knowledge and skills, while the third stage assesses whether the candidate can apply medical knowledge and understanding of biomedical and clinical science essential for the unsupervised practice of medicine, with emphasis on patient management in ambulatory settings.

of industrial country insurers.[34]   Further measures could involve hospitals and medical boards collecting data on outcomes and costs so that physician performance could be tracked using tiered network programs such as the ones used by insurers in the US (see, e.g., Fronstin, 2003, and Robinson, 2003).[35]

Familiarity with doctors from certain regions could also help in removing concerns about the quality of care. For example, many British nationals reportedly seek treatments in India because they are familiar with the expertise of doctors of Indian origin in the UK.[36] It may be possible for US insurers to offer a health plan option, for example, where an immigrant consumer is offered the option of undergoing certain treatments in his/her home country, where she/he is familiar and comfortable with the health care system, physicians, culture.

8. Conclusion

Our study has shown how existing health insurance plans inhibit the consumption of health care abroad by consumers. Modifications of these health insurance contracts to adequately cover the costs of care received abroad would give consumers adequate incentives to undergo tradable treatments overseas. We should emphasize that we are not suggesting that insurers should force patients to seek treatments overseas in order to cut costs but that insurers should offer patients the *option* of obtaining care overseas.

Using price data from the Medicare program and Vanbreda International, we undertook a worldwide price comparison of 15 low-risk, highly tradable surgeries. We included only non-emergency and routine surgeries, such as knee and shoulder arthroplasties, skin lesion excisions, toe-deformity repairs, and cataract extractions. The magnitude of the gains from trade in just these 15 surgeries was estimated to be over $1.4 billion, even if only one in ten US patients chose to undergo treatment abroad rather than in the US. Of these annual savings, $690 million would accrue to the Medicare program alone.

The scope for trade would be greatly enhanced if quality abroad were further improved, and credibly signaled through international accreditation of export-oriented hospitals and

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[34] Currently, stages 1 and 2 of the USMLE can be taken abroad, while plans to set up overseas locations for the NCLEX-RN are still in the pipeline (Sources: National Board of Medical Examiners and National Council of State Boards of Nursing).

[35] For example, Aetna's Aexcel program rates physicians by regional network (e.g., the Baltimore/DC/Northern VA region) and medical specialty, after controlling for patient volume, clinical performance, cost-efficiency, and network adequacy (see Aetna, 2004). This is evidence of that fact that insurers are interested in identifying high-quality cost-efficient domestic providers in the US. If foreign hospitals and medical boards were to collect and report outcomes and cost data on treatments provided by their physicians, then insurers could rate foreign providers on a similar basis and thereby maintain quality and cost standards for the overseas network as well.

[36] The Guardian, May 11, 2004.

medical professionals. Insurers could then widen their networks to include these internationally accredited providers overseas.

One concern pertains to the effect of trade in health care on the local health system of the destination country. Might the inflow of industrial country consumers crowd out poorer local patients? This concern may be exaggerated for several reasons. First of all, a large number of developing country doctors and nurses emigrate every year to industrial countries, as we saw in Section 4. Inflows of rich country consumers could lead to higher incomes at home and a reduced incentive to emigrate. Furthermore, in these circumstances, it would be possible to cross-subsidize care for the poor by taxing the increased export revenues or by requiring providers also to extend care to the poor. Finally, health care capacity in destination countries will not remain fixed, but is likely to expand as increased foreign demand leads to greater domestic and foreign investment.

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Appendix 1: *Summary statistics of selected tradable procedures*

Treatment	Number of inpatient discharges in 2002	Mean charges	Mean length of hospital stay	Risk of surgical mortality in US (%)	Proportion of Male patients (%)
Knee Arthroplasty	399,139	28,032	4.0	0.1	37.2
Arthroplasty other than hip or knee	46,037	20,898	2.7	0.2	41.2
TURP	111,936	12,501	3.1	0.3	100.0
Tubal ligation	78,771	9,018	2.2	*	0
Inguinal and femoral hernia repair	40,553	22,609	5.6	0.9	80.5
Excision of skin lesion	21,257	20,970	5.6	0.8	48.0
Tonsillectomy	17,251	10,250	2.0	*	56.0
Hysterectomy	640,565	13,448	2.8	0.1	0
Hemorrhoidectomy	12,787	12,656	3.3	*	50.8
Rhinoplasty	7,265	16,772	3.0	*	59.0
Bunionectomy	3,139	12,190	2.2	*	20.7
Lens and cataract procedures	2,215	11,483	2.4	*	40.4
Varicose vein stripping, lower limb	1,957	12,596	2.6	*	42.1
Glaucoma procedures	*	9,955	2.0	*	*
Tympanoplasty[37]	754	11,983	1.3	*	*

Source: H-CUP Nationwide Inpatient Sample, 2002. Statistics based on estimates with a relative standard error (standard error / weighted estimate) greater than 0.30 or with standard error = 0 in the nationwide statistics are not reliable. These statistics are suppressed and are designated with an asterisk (*).

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[37] Volume pertains to year 2000.

Appendix 2: *Calculation of US inpatient prices*

Procedure	DRG Code	Hospital Payment($)	Representative CPT codes	Physician Payment($)	Anesthetist units	Anesthetist fee ($)[38]	Inpatient price($)[39]
Knee surgery	209	9,261	29882, 29873, 27437, 27446, 27447	879	11	195	10,335
Shoulder Arthroplasty	223, 224	4,267	23470, 23472	1,443	13	230	5,940
TURP	337	3,271	52601	696	9	159	4,127
Tubal Ligation	361	5,124	58670, 58671	362	10	177	5,663
Hernia Repair	161, 162	4,206	49650	388	9	159	4,753
Excision of skin lesions	270	5,861	11426	238	8	142	6,240
Tonsillectomy	59	2,924	42820, 42821	315	9	159	3,398
Hysterectomy	358, 359	4,492	58550, 58553	1,113	10	177	5,783
Haemorrhoidectomy	158	4,436	46255	349	9	159	4,945
Rhinoplasty	56	4,137	30400	754	9	159	5,050
Bunionectomy	225	5,456	28290	448	8	142	6,046
Cataract extraction	39	2,861	66983	592	8	142	3,595
Varicose vein surgery	119	6,524	37720	382	9	159	7,065
Glaucoma procedures	46, 47	3,020	66150	702	9	159	3,882
Tympanoplasty	55	4,150	69631	701	8	142	4,993

Sources: DRG Expert 2005, Current Procedural Terminology (2004), Medicare Physician and Anesthetist Fee Schedules

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[38] Anesthetist fees were calculated as the national average anesthetist fee of $17.71 per unit multiplied by the number of units.
[39] Inpatient prices equal the sum of hospital payment, physician and anesthetist fees.

Appendix 3: *Calculation of US Outpatient prices*

Procedure	Representative CPT codes	Facility fee($)	Physician fee($)	Anesthetist fee($)	Patient co-pay ($)	Outpatient price($)	Estimated outpatient volume[40]	Source of volume data
Knee surgery	29882, 29873, 27437, 27446, 27447	2,569	879	195	499	4,142	60,000	American Association of Orthopedic Surgeons
Shoulder Arthroplasty	23470, 23472	5,696	1,443	230	562	7,931	N/a	
TURP	52601	2,078	696	159	370	3,303	88,064	American Urological Association
Tubal Ligation	58670, 58671	2,458	362	177	445	3,442	621,229	CDC
Hernia Repair	49650	2,458	388	159	445	3,450	759,447	National Center for Health Statistics
Excision of skin lesions	11426	1,111	238	142	205	1,696	1,588,884	American Society for Dermatological Surgery
Tonsillectomy	42820, 42821	1,232	315	159	225	1,931	102,749	American Academy of Otolaryngology
Hysterectomy	58550, 58553	3,505	1,113	177	624	5,420	N/a	
Haemorrhoidectomy	46255	1,330	349	159	242	2,081	137,213	Ethicon Endosurgery
Rhinoplasty	30400	2,120	754	159	384	3,417	N/a	
Bunionectomy	28290	1,525	448	142	277	2,392	41,507	American Podiatric Medical Association
Cataract extraction	66983	1,340	592	142	251	2,325	1,430,785	Market Watch: Optical Sector report 2002
Varicose vein surgery	37720	1,558	382	159	274	2,373	148,043	American college of Phlebology
Glaucoma procedures	66150	1,273	702	159	157	2,292	75,838	Albright et al. (2002)
Tympanoplasty	69631	2,120	701	142	384	3,347	149,246	CDC

Sources: Current procedural Terminology (2004), and Centers for Medicare and Medicaid Services

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[40] Outpatient volume was calculated as total volume minus the H-CUP inpatient volume for each procedure. An "N/a" indicates that volume was not available.

Appendix 4: *Calculation of Foreign Prices ($)*

Country	Knee Arthroplasty	Shoulder Arthroplasty	TURP	Tubal ligation	Hernia repair	Excision of skin lesions	Adult Tonsillectomy	Travel cost
BARBADOS							1,478	401
BELGIUM	1,927	2,637	3,424	2,008	2,282	736	845	380
BRASIL	5,088	5,627	5,638		2,763	1,931	2,717	961
CHILE	3,733	4,966	4,825	2,755	3,071	1,607	1,965	857
COSTA RICA			3,819			192	1,145	342
DOMINICAN REPUBLIC	1,240							265
EGYPT	2,738	1,734	1,743		1,062	573	364	715
FRANCE	1,645	2,172	4,148	1,251	2,200	763	663	336
GERMANY	3,144	3,619	4,505	982	2,787	929	994	337
HUNGARY	637				1,317			415
INDIA	662		1,263	113	701	512	175	1,008
JAMAICA								
JORDAN	4,564				1,387	874	419	810
MEXICO	4,706	7,773	4,224		3,686	3,086	3,288	410
PERU	2,390		4,719		2,719	184	315	638
PHILIPPINES	2,312	2,402	1,768		1,667	748	1,122	1,204
POLAND	3,672	1,213			2,400		898	441
SINGAPORE	5,381				3,913	4,515	3,967	808
THAILAND	2,860	3,874	2,551		1,715	750	1,194	793
TRINIDAD and TOBAGO	2,249	2,249	1,928	803	884	578	884	500
U.K.	4,955	6,199	7,190		3,158	2,334	3,090	307

Sources: Vanbreda International, and Expedia.

Appendix 4 (cont.): *Calculation of Foreign Prices ($)*

Country	Hysterectomy	Hemorrhoid procedures	Rhinoplasty	Bunion removals	Cataract procedures	Varicose vein stripping	Glaucoma procedures	Tympanoplasty	Travel Cost
BARBADOS	2,599	2,143							401
BELGIUM	4,594	1,895	2,135	2,859	1,982	1,240	784	4,271	380
BRASIL	5,198	1,941	3,266		1,832	3,923			961
CHILE	5,524	2,359	3,432	2,972	2,426	2,439	1,232	3,741	857
COSTA RICA	3,022				1,090				342
DOMINICAN REPUBLIC		166	1,727			875			265
EGYT	2,298	738	1,677		1,096				715
FRANCE	3,998	1,550	1,874	2,337	1,821	2,025	2,474	1,730	336
GERMANY	5,096	1,402	3,709	3,426	1,970	2,555	618	2,818	337
HUNGARY	354	80						293	415
INDIA	1,260	489	792		396		240	469	1,008
JAMAICA	3,145				1,064				
JORDAN	1,939	1,570	1,562	440	1,367	1,116	734		810
MEXICO	6,106	5,745	3,930	3,307	1,827	3,175			410
PERU	3,795	1,381	1,287	594	1,067		934		638
PHILIPPINES	2,475	1,082	2,939		864	1,165	331	1,947	1,204
POLAND					490	977			441
SINGAPORE	6,781	3,996			2,375	4,707	1,274		808
THAILAND	3,071	1,201		2,405	1,022	2,570	140	806	793
TRINIDAD and TOBAGO	2,490	916	2,249	1,478	2,892	1,124	1,478	1,928	500
U.K.	11,036	3,152	4,565	3,982	4,426	4,681	1,779		307

Sources: Vanbreda International and Expedia.

Appendix 5: *Commercial Insurance Enrollment, Consolidation, and Antitrust Concern Levels in US State Health Insurance Markets, 2002-'03*

State	Commercial Insurance Enrollment (000's)	Share of Largest Health Plan (%)	Share of three largest health plans (%)	Herfindahl-Hirschmann Index of Market Concentration	Antitrust concern[41]
Alabama	2,836	71	81	5,054	High
Arizona	3,020	30	84	2,461	High
Arkansas	1,343	56	74	3,283	High
California	19,677	27	67	1,842	Moderate
Colorado	3,651	19	41	883	Low
Connecticut	2,507	57	78	3,629	High
Delaware	543	59	84	3,931	High
DC/NOVA	1,837	69	98	5,495	High
Florida	8,583	30	65	1,758	Moderate
Georgia	4,916	43	65	2,184	High
Idaho	836	32	75	2,041	High
Illinois	7,905	47	64	2,471	High
Indiana	3,951	46	57	2,258	High
Iowa	1,983	66	78	4,405	High
Kansas	1,738	37	56	1,587	Moderate
Kentucky	2,562	46	75	2,685	High
Louisiana	2,217	41	66	2,058	High
Maine	766	70	97	5,312	High
Maryland	3,833	34	92	2,921	High
Massachusetts	4,350	47	81	2,883	High
Michigan	6,563	47	61	2,393	High
Minnesota	3,745	53	89	3,535	High
Mississippi	1,584	47	59	2,356	High
Missouri	3,812	36	71	2,111	High
Montana	476	59	67	3,490	High
Nebraska	1,112	54	72	3,160	High
Nevada	1,203	17	40	664	Low
New Hampshire	860	66	100	5,275	High
New Jersey	6,113	39	60	2,260	High
New Mexico	884	25	65	1,541	Moderate

Source: Robinson (2004)

[41] Antitrust concern is based on the Federal Trade Commission (FTC) & Department of Justice (DOJ) thresholds. An HHI below 1,000 denotes a low level of antitrust concern, between 1,000 and 1,800 denotes a moderate level of antitrust concern, and higher than 1,800 denotes a high level of antitrust concern.

Appendix 5: *Commercial Insurance Enrollment, Consolidation, and Antitrust Concern Levels in US State Health Insurance Markets, 2002-'03 (cont.)*

State	Commercial Insurance Enrollment (000's)	Share of Largest Health Plan (%)	Share of three largest health plans (%)	Herfindahl-Hirschmann Index of Market Concentration	Antitrust concern[42]
Downstate New York	8,191	26	51	1,497	Moderate
Upstate New York	3,659	26	69	1,786	Moderate
North Carolina	4,799	50	91	3,353	High
North Dakota	395	51	N/a	N/a	N/a
Ohio	7,859	33	62	1,677	Moderate
Oklahoma	1,957	36	48	1,441	Moderate
Oregon	2,195	43	66	2,282	High
Pennsylvania	8,797	33	63	1,718	Moderate
Rhode Island	894	56	100	5,071	High
South Carolina	2,266	44	74	2,444	High
South Dakota	462	56	69	3,305	High
Tennessee	3,451	43	62	2,217	High
Texas	11,116	32	55	1,428	Moderate
Utah	1,571	32	70	1,767	Moderate
Vermont	342	44	71	2,316	High
Virginia	4,642	57	80	3,519	High
Washington	3,764	27	66	1,796	Moderate
West Virginia	819	43	58	1,972	High
Wisconsin	3,405	17	39	689	Low
Wyoming	275	44	64	2,105	High

Source: Robinson (2004)

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[42] Antitrust concern is based on the Federal Trade Commission (FTC) & Department of Justice (DOJ) thresholds. An HHI below 1,000 denotes a low level of antitrust concern, between 1,000 and 1,800 denotes a moderate level of antitrust concern, and higher than 1,800 denotes a high level of antitrust concern.