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I. INTRODUCTION

Public-private partnerships (PPPs) are becoming increasingly credible as effective mechanisms for improving public health. Public organizations, including universities, national health ministries, and multi-lateral agencies, are establishing partnerships with private firms such as drug manufacturers and healthcare providers. PPPs currently enjoy remarkable acclaim in official, scholarly, and industry circles (IGD 2006, Sengupta and Sinha 2006, Linder 1999). They "enable different people and organizations to support each other by leveraging, combining, and capitalizing on their complementary strengths and capabilities," (Lasker et al 2001, 180). The approach theoretically fits within the neoliberal development paradigm (Miraftab 2004), by embracing a combination of New Public Management and decentralization strategies (Manning 2002).

Several limitations of PPPs for public health, such as lack of accountability or conflicts of interest, have been raised and debated at length (Reich 2002). However, such discourse overlooks a major problem that development theorists and practitioners report from the field: how to understand why private partners choose (and, more problematically, choose *not*) to engage in PPPs. Public organizations recognize the importance of profit-making for prospective private associates. One agency prioritizes "the legitimate need of the private sector [partner] to pursue a profit in order to ensure a sustainable supply of the product" (PATH 2002). But the attrition rate of private providers in PPPs can be very high, and public partners often have difficulty understanding the incentives of private participants (Croft 2005). This may be a problem particularly when they are local service providers in poor countries

The premise of this dissertation is that a combination of financial and institutional incentives, including not only local policy and regulatory systems but also local relationships and customs of interaction, guide the decision-making of firms in a partnership. Evaluating these incentives in a systematic way enables both the prospective firm, and other stakeholders in the PPP, to understand behaviour in the context of a PPP. After reviewing the literature, I present an original conceptual model to explain how and whether private partners embrace a PPP. This framework incorporates investment risk, social net present value (NPV), and financial and institutional incentives, and is based on the New Institutional Economics (NIE) and financial theory.

The proposed model is then applied in a case study, to evaluate a PPP involving private pharmacists in Vietnam. In the aftermath of Vietnam's post-Socialist market transition in the late 1980s, the pharmacy industry expanded radically and now provides 2/3 of total healthcare contacts. It has enabled healthcare to reach previously inaccessible populations, such as young people, but also varies widely in quality. Three years ago, an international public health alliance engaged private pharmacists in a PPP to increase the quality of these services. While some pharmacists have participated actively in the programme, others did not comply with the intervention's principles; still others chose not to participate. Using the proposed model, I conduct a primary study of Vietnamese pharmacist-owners; this is the first qualitative study of pharmacist behaviour conducted in Vietnam (Chuc 2006) and utilizes a "control group," a rare technique in qualitative studies. I argue that strong financial incentives to provide emergency contraception (EC) and counseling services, as well as

prominent institutional disincentives which complicate good STI treatment and referrals, dictate pharmacist-owner behaviour in the partnership. This study bridges NIE literature with one of the key applications of development theory—community health—and takes a first step toward characterizing PPP participation.

II. LITERATURE REVIEW AND CONCEPTUAL MODEL

Questions of economics have been intrinsic to the field of public health since antiquity. Aristotle wrestled with the goal of a limitless "pursuit of health" in light of "limits to wealth" in 350B. C. In 1790, Frank (1790) described the importance of the state creating and funding an efficient healthcare system in order to send soldiers to army and reinforce the state's legitimacy. However, it was not until the 1980s that a health economics discipline fully emerged (Fuchs 1999). Scholars advance at least three reasons for this slow evolution. First, it is difficult to commoditize illness or health, or the myriad costs and benefits that are consumed or created in the process of imparting public health (Drummond 1980). Second, religious and charitable sources have often funded and provided health services (Leonard 2000), but their motivations do not fit easily into rubrics of economic assessment. Third, there has been a professional gap between public health providers (natural scientists: epidemiologists, clinicians) and those managing the field (social scientists: economists and policymakers) (Krieger 2001, Allen 2006). These factors continue to complicate efforts to manage public health or to understand incentives underlying health provision.

Since the 1980s, two shifts in health care management have had major implications for the way incentives function. First, new analytical tools enable managers to better evaluate health interventions economically. Drummond et al (2003) describe the shift in analysis from cost-minimization, to cost-effectiveness, to cost-utility, to cost-benefit. In the course of this evolution, costs have been increasingly related to the "consequences of the programmes or treatments being considered," (ibid, 3) thus increasing the completeness of analysis. Mills and Shillcutt performed cost-benefit analysis for communicable disease treatment and basic health services, and found benefits exceeding costs for all measured interventions by ratios of 1.8-49.9 (2004, 104). This suggests that most public health interventions have high social optimality. Thus, there is substantial motive to maximize incentives to compel these interventions to occur, despite real challenges such as market failure or inadequate state apparatus (Leonard 2000).

Second, there has been increasing focus on the organizations best suited to provide health services. Organizational pluralism has been emphasized because it more directly leverages the broad resource inputs needed (technical innovation, management, service provision, funding), and because having multiple providers enables *exit*, as described by Hirschman (1970). But the decentralization that has accompanied this pluralism has not been without problems. Chandhoke (2002) argues that decentralization generally undermines state capacity and accountability. This has been particularly contentious when private actors are involved. Musgrove asserts that in settings of poverty, or where capable private partners can complement state service provision, the conventional domains of public or private goods are quite irrelevant (1996, 9-11). But public health often concerns itself with protecting the poor, a group that could be highly vulnerable to profiteering of private firms.

To reconcile this tension, alliances between public and private providers became more predominant in the early 1990s. Early public-private alliances such as the Children's

Vaccine Initiative floundered due to distrust, divergent objectives, and corrosive competition among partners (Burke 2000). However, subsequent public-private partnerships (PPPs) have been seen as increasingly innovative, particularly as they achieve synergies between public and private sectors, and more likely to produce desired outcomes (Reich 2002). PPPs have now become largely institutionalized (ibid), and are seen simultaneously as a best practice and a sort of minimum ethical standard by the WHO (Kickbusch and Quick 1998). In the 1990s, the most celebrated PPPs involved large-scale actors, such as multinational drug manufacturers and regional national government associations. The private partner often played a production role, with the public agency providing coordination and distribution. Defining incentive structures for the private partner in these relationships has usually been satisfactory: few private firms were involved in a given PPP, and those that were had extensive corporate finance apparatuses.

However, PPPs in public health have diversified considerably in the last decade (Reich 2002). They now commonly involve small-scale, private service providers. Partnerships between public health organizations and these providers are consistent with Reich's theory of the utility of the partnership: it can support the profit-making goal of the private partner while improving public health delivery. The need to understand incentives for private providers in the context of PPPs has been argued by scholars and practitioners (Goel et al 1996, PATH 2003). However, no previous work has evaluated a socially-optimal public health intervention from the perspective of how private firms engage in partnerships.

Proposed Framework

The current problem arises because there is no adequate way of characterizing the incentives that a prospective private firm or individual faces when engaging in PPPs, a major challenge for small-scale prospective partners such as laborers, store owners, salespeople, distributors, or front-line service providers lacking financial and legal resources. Yet mobilizing this "bottom of the pyramid" is essential to creating sustainable industry, economic development, and alleviating poverty (Prahalad 2006). It is also often a problem for the public organizations that seek their partnership, but do not understand their decision-making context. The purpose of this proposed model is to systematically identify financial and institutional incentives and disincentives, evaluate them, and incorporate them into the decision-making process.

Given that financial concepts evolved primarily in more developed economies, it is necessary to assess their applicability to different settings in depth. In many ways, a discussion about exporting these institutions might parallel the mid-20th century discourse between monoeconomics and development economics (Hirschman 1981). Applicability is addressed at each step of the proposed model, which involves three sequential parts: first, assessing the relative risk of the project in order to determine a discount rate; second, assessing the net-present social value of a proposed project; and third, assessing the financial and institutional incentives relevant to the project. The first two steps are prerequisite for the third. In a high-risk environment, a partnership might be suboptimal regardless of incentives; similarly, if the project does not have positive social return, it would be suboptimal for "public health" despite pertinent incentives.

1. Risk and Discount Rate

The first step of this framework is to consider the level of risk and instability underlying the economy in which the investment is being made. In contrast to a simple cost-benefit comparison, net-present value (NPV) incorporates the "time value of money" (Brealey et al 2006, 16). Future cashflows from an investment are worth less than money now, because of the opportunity cost of not being able to invest resources in other investments, so they are devalued over time by a discount rate. This rate is affected by characteristics both of the underlying economy and the investment itself.

In emerging markets, the discount rate may far exceed the "safe" levels of under 10% found in developed countries. De Soto (2002) argues that where state protection of property is lacking, capital is not appropriately valued or leveraged, which in turn creates two problems. First, an owner of capital has no incentives to invest in or improve their own assets; second, assets cannot be effectively leveraged to gain more capital or credit (ibid, 44-54). De Soto describes these problems *qua* barriers to economic development, but they are useful here *qua* disincentives to invest in marginal capital-dependent opportunities. Further, in settings where war or civil conflict yields political or economic instability, opportunity cost may decrease but risk and corresponding discount rate will increase Gossen et al (2002). Discount rates may often be at least 10-20% but sometimes are over 100% in high-risk settings, such as in Zimbabwe where inflation alone is over 600% per year (IRIN 2006). This may powerfully orient investors to a short-term outlook.

In addition to the underlying economic climate, aspects of the investment itself and the industry in which it is made also affect discount rate. Palmer and Smith (1999) attempt to mitigate the problem of uncertainty in health care investment decisions through "option pricing" techniques. Although they explicitly address health technologies in mature markets, their analysis is helpful for characterizing an investment in other settings. The key determinants of "option value" include the type of uncertainty, the ability to defer a decision, and the irreversibility of the decision (ibid, 8). This complements a broader mainstream discourse on investment valuation, which involves cost and benefit timing and asset analysis (Brealey et al 2006).

Mills and Shillcutt find in their cost-benefit analysis of health interventions that "the discount rate has a substantial effect on net benefits because it influences the weight of future treatment…" (2004, 82). They determine that benefits from future disease protection correlate directly with discount rate, in four-fold proportion. This suggests that for public health investments in infrastructure, there is a strong future protective benefit. But if such a trend holds for private partners facing startup investments to engage in a PPP, future returns would diminish substantially with increasing discount rates. Mills and Shillcutt use discount rates of only 3 and 6% in their analysis, but do not explain their rationale for using rates that convey such high stability. Given the many forms of risk in developing countries where these health interventions occur, they may significantly underestimate the realistic discount rate.

The methodology used for determining discount rate in this model is purely qualitative. Indeed, even in developed countries, "methodologies for incorporating

uncertainty into health technology evaluation are currently at best crude, and are at worst distinctly misleading" (Palmer and Smith 1999, 2). Nonetheless, even crude assessments would be expected to vary in different settings and among different providers, and thus would be helpful in assessing the feasibility of investment. Risk characteristics of both the underlying economy and the particular investment are elicited from the perspective of the prospective investors. First, how stable is their industry; specifically property rights, long-term and liquid assets, and their customer bases? Second, how risky is the investment, in terms of irreversibility, timing of costs and benefits, and exposure to new risk (new markets, roles, or regulation)? Conceptually speaking, their total risk would equal the product of each of these two categories of risk, and their discount rate would derive from this. If total risk is fairly low, one can proceed with the framework; if total risk is high, one should consider restructuring the investment project as risk may be too high for *any* incentive structure to function.

2. Social Return

Once a sense for discount rate has been achieved, but before considering incentives for a private firm, we determine whether a given public health investment is in society's interest. Increased private involvement in public health over the last two decades has introduced new potential for efficiency and innovation but has also complicated the motives for certain projects (Musgrove 1996). Economic science distinguishes between social and private welfare; the former applies to society as a whole, the latter to a given individual or group within it. The social NPV encompasses all of the total costs and total benefits of an intervention, without regard to funding source, and discount as appropriate. The intricacies of a cost-benefit analysis are complex and beyond the scope of this dissertation; methodologies and strategies have been discussed by many authors (for example Carrin 1992, Drummond 1980, Drummond et al 2003, Mills and Shillcutt 2004). In any case, if a project is designed to improve health outcomes for the general public, and particularly if it is financed by public or donor resources to that end, it must have a positive social NPV to be appropriate.

3. The Incentive Structure

The key component of the conceptual model presented here is to identify the incentive structure that guides the decision-making process of prospective private partners. Participation incentives are categorized as one of two types: financial (start-up costs, increased revenue stream, etc) and institutional (bureaucratic obstacles, community objection due to social stigma, institutional synergy, etc).[1] I contend that a combination of these two incentive types explains private firms' abstention from PPPs even where there is a reasonably low discount rate and the project has a positive social NPV.

[1] A given incentive need not be distinctly institutional or financial; corrupt tax collectors impose a very direct financial burden as a result of weak institutions.

1. Financial Incentives

Consistent with neoclassical economic theory, a *financial* incentive structure may dissuade private providers from investing in a project. In the case of private pharmacies in developing countries, Chalker et al (2000) show that Vietnamese pharmacists are highly sales-oriented, regularly sell multiple similar treatments during an encounter, and rarely give instructions or engage in counseling. They prioritize activities that are closely linked to transactions with immediate profit, suggesting a short-term financial orientation.

Financial benefits might include increased volume of reproductive health product sales, cross selling, or fees for service. In addition to increasing marginal pharmacist revenue, Leonard (2000, 260) proposes that fees might also improve healthcare infrastructure development, by "unlocking improved supply rather than simply reducing demand," as critics have argued. Thus incentives for private providers are not necessarily inconsistent with social welfare.

Financial costs may include training costs, printed materials, public awareness campaigns, increased time spent with each client, or perceived opportunity costs. Another potential financial cost could be a reduction in clinically inappropriate practices such as selling partial treatments and/or ineffective remedies. This last cost has not been proposed in the literature, but it is theoretically analogous to the concept of professionals subsisting on other's suffering, intentionally or not, as proposed by Keen (1994).

Finally, although they may appear to be more universal or static than institutional incentives, financial incentives are dynamic and subject to political agency, particularly in developing countries. Moe argues that economic rights are always susceptible to capture due to political power (1990). Additionally, Mokyr (2000) proposes the significant impact that political action has on capital valuation, technological growth, and unemployment—phenomena that we might take for granted as apolitical.

2. Institutional Incentives

The New Institutional Economics (NIE) theory transcends neoclassical economic theory by proposing that transactions may be costly and therefore determine economic structures and performance (Coase 1937).Transaction costs may arise from or be exacerbated by a variety of sources, such as unreliability, corruption, or the cost of carrying out business. Further, NIE holds that the relative costliness of transactions will depend on the underlying institutional character of a given society. It is useful to use North's definition of institutions, as "the rules of the game of a society or more formally the humanly-devised constraints that structure human interaction. They are composed of formal rules (statute law, common law, regulations), informal constraints (conventions, norms of behavior, and self imposed codes of conduct), and the enforcement characteristics of both" (1993, 5). Williamson (2000a) stratifies four institutional levels, ranging from slow-changing informal relationships to the continuously changing resource allocation described by neoclassical economics. He argues that NIE concerns itself with two intermediately-changing levels: those of

governance and formal rule structures. Thus an *institutional* incentive structure may be a second mechanism that influences private providers' project investment.

Leonard and Leonard (2004) applied NIE to evaluate healthcare in rural Africa. They probed the role of informational asymmetry, principal-agent relations, moral hazard and adverse selection—characteristics that also affect pharmacists' incentive structures but are rooted in institutions. However, they describe healthcare decisions as an investment good rather than a normal economic good (ibid, 53). Although this may be true for some cases, youth decision-making about seeking and paying for reproductive health services probably is better represented as a normal economic good, due to their limited disposable income and immaturity. Hence they have a short-term outlook and small budget constraint, and pharmacist owners likely respond to this.

Leonard found that the NIE is superior to financial analysis for understanding informal markets such as the "ingenious supplementary strategies" health sector personnel have found to "charge for their services and the drugs they dispensed" (2000, 262). Institutions shaped by governments, communities, and among providers may also manifest themselves as non-financial but real incentives for private partners. De Soto (2000) shows that government policies as well as regulatory enforcement dramatically shape business opportunities, formally and informally. Community values may create powerful norms to which businesses are subject (Ostrom 1997), or may constitute stigmas that have ramifications for professional acceptability (Kinghorn 2001). And norms of professional interaction can range from unification under common standards of practice to bitter rivalry and competition, which will also affect incentives (Goel et al 1996).

For private pharmacists considering investment in a PPP, institutional benefits may include increased community respect and increased patronage. Institutional costs may include additional licensing fees for expanded services, increased regulation and monitoring, tension with other existing reproductive health services providers (government clinics, private clinics), stigma of providing adolescent STI treatment, and stigma of providing adolescent contraception services.

It may be difficult to view some institutional forces as either costs or benefits. For example, professional standards of care, such as those that are common among doctors, may exist in professions such as pharmacy (Bissell 2003). If decision-making is guided more by professional standards than by business incentives, this institution will feature prominently in the overall incentive structure that pharmacist-owners use to consider new activities, and should be identified.

The methodological approach for delineating private partners' incentive structures and their role in decision-making must identify financial and institutional incentives of two types. First are those pertinent to the underlying economy and industry in which the private partner works. These include aspects of the regulatory setting, industry scope and standards, and decision-making context. Second are those specific to the investment being considered. In the case of private pharmacies looking to professionalize reproductive health services for young people, they might include aspects of the specific services: providing STI treatment, emergency contraception, counseling, and referrals.

Importantly, the proposed model attempts to elucidate the existing incentive structures, and then reason *inductively* to determine how these incentives would render a prospective investment. It is not a *deductive* exercise in which to identify whether certain incentives exist or not; abundant literature propounds the dangers and limitations of trying to make deductive assessments from arms' length (for example Beall 2001). A major added value of this framework is its emphasis on identifying and understanding the organic and integrated institutions that guide decision-making. Therefore qualitative research methods conducted through flexible interview guides which provide opportunity for probing the respondent are best suited to understanding these incentives.

Putting the Framework to Work

Because of the sequential nature of this model, once the stage of identifying incentives has been reached, it has already been established that risk is reasonably contained and social NPV is positive. In reviewing the role of incentives, it is possible that either the financial or the institutional disincentives, or both, will exceed the respective incentives. This implies that a private provider will not undertake a given project, particularly in the long-term. This may be because she bears substantial costs of investment herself, but shares the benefits of the investment with society (or because she *perceives* herself as bearing substantial costs of investment but sharing benefits with society.) In a functional sense, she subsidizes the benefit that society receives from her undertaking this investment project herself. This sets the stage for interventions such as reallocative distributions to correct the disincentives; these are discussed in the conclusion.

III. CASE STUDY: A PPP WITH PHARMACISTS IN VIETNAM

Background

During much of the 20th century, Vietnam followed the Soviet model of economic development and health provision; citizens of Vietnam enjoyed "comparatively good health and human survival at low cost" (Chuc and Tomson 1999, 325). In 1986, as part of the *doi moi* (renovation) reforms in Vietnam, private firms for the first time entered the healthcare sector, profoundly effecting healthcare supply and demand (World Bank 2001). On the one hand, the public health care system and particularly the community health centers began to flounder under "insufficient and erratic" funding from the local People's Committees, and faced "imminent collapse" (ibid, 16). Meanwhile, deregulation had three major effects on pharmacy practice: the drug supply improved dramatically, both in quantity and quality; domestic drug prices decreased; and the number of private providers grew rapidly, especially drug outlets and private pharmacies.

Two large household surveys assessing the distribution of health service contacts in the 1990s showed that approximately 65% of total health contacts were with private pharmacies and drug vendors (World Bank 2001). Further, while an individual made an average of 2.1 contacts with drug vendors and pharmacies in 1993, this number had increased to 6.8 by 1998 (ibid). Although a large portion of the population in Vietnam relies on pharmacies as the "first stop" for health services, more marginalized groups may rely solely on pharmacies for their health care (PATH 2003). Poor and young people are often drawn to pharmacies for their convenience, low cost, and anonymity.

Deregulation and pharmacy-based care has also resulted in some concerning trends, because there is little oversight and widely varying quality of pharmacy-based care (Chuc and Tomson 1999, PATH 2003). In violation of a 1995 law, some 90-99% of controlled drugs are dispensed without a prescription (Chalker et al 2000, Chuc and Tomson 1999). Further, and particularly with regard to STIs, the treatment given is frequently ineffective. In a recent study of *Chlamydia* treatment in Vietnam using mystery clients, none of 297 pharmacists gave adequate treatment (Chalker et al 2000). Perhaps most concerning, pharmacies are often viewed as a "first stop" for healthcare that can direct patients to more advanced health resources as appropriate; yet neither counseling nor referrals are provided appropriately in most patient encounters (Chalker et al 2000). Thus, despite the proliferation of pharmacies as a site of care and their popularity among clients, the dramatic shift towards use of pharmacies may actually be contributing to poorer health outcomes.

The RxGen programme

Beginning in 2003, the Program for Appropriate Technology in Health (PATH), an international health NGO, launched an intervention to improve the role of private pharmacies in providing reproductive healthcare to young people. The programme, called RxGen, involved a combination of interventions, including strengthening

pharmacists' technical and counseling skills; development of service models; providing youth outreach/education; and monitoring and supervision. RxGen was focused around providing four key youth-friendly services: emergency contraception distribution, counseling, STI risk assessment and care, and appropriate referrals. The programme was conducted in Thanh Hoa City, trained pharmacists from 90 licensed, registered private pharmacies, and cost approximately £160,000.

PATH methodically tracked the performance of involved pharmacies compared to baseline. There were some cases of substantial improvement: the occurrence of STI and EC information provision increased up to 250% and 300%, respectively. And several measures of unintended pregnancy management quality increased 4-32% (PATH 2006). However, in particular technical areas the programme was poorly incorporated, and there was general attrition. While some pharmacists have embraced the programme and modified their practices to comply with the principles of RxGen, others decided not to participate. Still other pharmacists dropped out of the programme or continued to participate, but not fully. The factors underlying this attrition are not well understood.

Hypotheses

1. Given the recent and tumultuous transition to a market economy in Vietnam, the amount of risk in the pharmacy industry will be moderate. However this risk will be tempered by the relatively short-time horizon and low capital requirements of the project.

2. The social NPV of the project will likely be positive: global welfare is increased and the project "should" be undertaken from a societal perspective. Given that the project is being coordinated by a reputable NGO with international financing, the projected costs and benefits of the project were probably well-assessed.

3. The financial and institutional incentive structure will likely be divergent. There will be net financial incentives (compared to disincentives) because programme planners likely aimed to alleviate financial costs (training costs or fees, cost of promotional materials, etc). However, net institutional *dis*incentives may predominate over institutional incentives. Where net financial incentives exceed net institutional disincentives, pharmacist-owners will "invest" in the project. Where net institutional disincentives exceed net financial incentives, pharmacists will not "invest." It remains to be seen whether pharmacist-owners see the investment project as all-or-none, or whether they invest in certain components of the RxGen intervention selectively.

Methodology

The study was carried out in Thanh Hoa City, Vietnam. Thanh Hoa is located approximately 120 miles south of Hanoi, on the main highway linking Hanoi with Ho Chi Minh City. A provincial Ministry of Health informant reported that there are currently 200 private pharmacies in Thanh Hoa city, which has a population of 200,000 (density = 1:1,000 people). It is the capital of Thanh Hoa province, a relatively poor province with a primarily agricultural economy.

Study Design

Two study groups were evaluated using qualitative and quantitative research methods (appendix A). One was composed of "pharmacist-owners", and further subdivided into those who had adopted the principles of RxGen and those who had not. Pharmacist-owners were stratified to one of these groups based on their performance on evaluations conducted by PATH involving mystery clients during the past 3 years. The other group consisted of six officials in the Ministry of Health, the Pharmacy Association, and academic community, and provided the perspective of "stakeholders and informants". Each respondent was interviewed using an interview guide prepared in advance (appendices C and D). The interview guide was written originally in English, and revised in Vietnamese and English to ensure appropriate language and context. The final English guide was translated to Vietnamese using a third-party translation service to ensure accuracy and reduce bias.

The pharmacist-owner interview guide was piloted on the first two respondents, one from each of the two subgroups, and modified to improve appropriateness. The interview guides were designed to be conceptually consistent with the framework for analyzing retail pharmacy behavior in developing countries proposed by Goel, Ross-Degnan, Berman, and Soumerai (1996). Counterfactual methodology (see Fearon 1991 and Sekhon 2004) was utilized in order to gain comparative responses when participants answered in the negative or had not participated in given programmes.

Data Collection and Analysis

Data was collected during July-August 2006 in Thanh Hoa City (pharmacist-owners) and both Thanh Hoa City and Hanoi (stakeholders). Interviews were carried out by the author in conjunction with PATH, with whom the study was planned and who assisted particularly by providing logistical support, participant recruitment, and translation.

Pharmacist-owner interviews were conducted at the pharmacies of the pharmacist-owners, frequently behind the counter in the family living room, given that the majority of pharmacies were located in homes. The interviewing team was introduced to the pharmacist-owner by either a provincial Pharmacy Association executive or a Ministry of Health official, who then left the premises to allow the interview to take place confidentially. Stakeholder interviews were conducted at their offices or in a hotel. The study was explained and informed consent was obtained (see appendices E and F). The average interview length was 45 minutes for pharmacist-owners, 90-120 minutes for stakeholders. Responses were probed for further information or clarification, as relevant and appropriate. During the interviews, additional observations were recorded (such as the number of customers who visited the pharmacy). Translation was provided by a bilingual PATH programme officer; the interviewer recorded the translated responses verbatim. The interviewer was initially blinded as to the study group of the pharmacist-owners; however, their identity usually became evident in the course of the interview.

Ethical Considerations

The study was approved by the Human Subjects Protection Committee (HSPC) of PATH. The study was explained to all participants in advance of their involvement, and informed consent was obtained. It was conducted in collaboration with officials from the Thanh Hoa provincial Ministry of Health office, the Thanh Hoa Pharmacist Association, and the Thanh Hoa Medical College.

Results

This section highlights findings first from the pharmacy industry, and then specifically about the services in question: STI treatment, EC provision, counseling, and referrals. All data in this section is from either "stakeholder" interviews or "pharmacist-owner" interviews.

1. Pharmacy characteristics and Regulatory Setting

Of the 20 pharmacist-owners interviewed, the majority were middle-aged females, and most were educated to the level of secondary-pharmacy school (Appendix B, Table 1). All but one was a licensed pharmacist, and all but three were actually primary pharmacy owners. Compared to the non-RxGen pharmacists, all of the RxGen pharmacists were middle-aged or older and, on average, they had been working as pharmacists for a longer period of time and in pharmacies that had been in an existence 64% longer. However gender balance, pharmacy ownership, and other factors were similar across both groups. Of all of the pharmacists, 45% had previously held positions as public pharmacists; according to a stakeholder, prior to *doi moi* "their salaries did not depend on how much sold. But now benefit depends on sales." 85% of pharmacies are located in the home of the pharmacist-owner.

Vietnamese law mandates that drug prices are standardized to wholesale cost plus a 5-20% margin, to ensure that pharmacies make some profit but not so much that drugs become unaffordable. However this is variably enforced and price markups are not uncommon. Ministry of Health supervisory visits occur 2-4 times annually but are usually brief and limited to checking register books and drug inventories. Pharmacist-owners stated that fines, which they reported in the VND50,000 (£1.90) range, were rare among themselves or colleagues and were not large enough to curb illicit practice. Of the pharmacist-owners, 73% expressed that the supervisory visits were not inconvenient and did not take much time. Stakeholders report that the supervisory apparatus is grossly under-resourced and inadequate, underscoring problems of access to essential medicines.

2. Pharmacy industry and decision-making context

Pharmacist-owners in both groups reported that antibiotics were both the most commonly sold products and the products with the highest profit margins (Table 2). When asked specifically about products for youth, 60% of RxGen pharmacists stated that their contraception sales, including EC, had the highest profit margin and only 30% said that antibiotics had the highest profit margin. In contrast, among non-RxGen pharmacists, 70% reported that antibiotics had the highest profit margin while 30% attributed high profit to contraception. Pharmacist-owners reported their highest

margins in the 4-10% range. However, independent calculations from purchase and selling price data provided by the pharmacists indicated margins of 13% for amoxicillin, 17% for EC, and 43-100% for condoms.

Almost all of the pharmacists perceive that they operate in a highly competitive environment. When asked about factors that contribute to their pharmacy's competitive advantage, pharmacist-owners from both groups mentioned good counseling services, price of drugs, good/trusting relationships with clients, quality of drugs, sensitivity to new products, and a good variety of stock (Table 3). Location near clinics and offering the familiarity of home-based care were also mentioned. However, pharmacist-owners report that little variation in drug stock among pharmacies and government control of prices make it difficult to differentiate their pharmacies from others.

The pharmacy industry grew rapidly in the 1990s, but is currently stable. In the context of the semi-Socialist state, stakeholders report that the security of their property and inventory is high. Most pharmacists report that customer bases are also relatively stable and secure, because so many pharmacies serve their neighbors. Many felt that the RxGen programme did not require much capital or start-up investment, but instead involved improving the quality of existing services, and offering new ancillary ones such as counseling.

Good pharmacy standards listed by pharmacist-owners overlapped substantially with those perceived as contributing to competitive advantage (Table 4). Non-RxGen pharmacists were much more likely to report that counseling services were a good standard (78% compared to 44% of RxGen pharmacists), and that good knowledge was important (67% compared to 22% of RxGen pharmacists). However, none of the pharmacists referred to formal guidelines in their description of good pharmacy standards, even when prompted. Yet a stakeholder reported that the Ministry of Health has adopted, endorsed, and disseminated Good Pharmacy Practice (GPP) standards (see FIP 1998).

Pharmacist-owners reported that government regulation tightly constrained the services they offered. Moreover, many acknowledged that extralegal services were common, such as dispensing misopristol for abortions and offering antibiotics without prescription. These were perceived as being profitable, without restrictions against them enforced. In terms of decision-making about the products and services *offered to specific clients*, the majority of pharmacist-owners indicated that their behaviour is influenced by whether they think a client has a "serious or non-serious problem." For non-serious problems, they report substantially more aggressive and profitable offerings, including diagnosing, providing drugs without prescription, and trying multiple remedies simultaneously. Only for serious problems are they likely to refer clients to a clinic. They unanimously stated that pharmacies were generally run more like businesses, being driven by profit, than as organizations driven by healthcare standards.

Pharmacists reported that personal letters from the provincial Ministry of Health were a motivating factor in their decision to participate in RxGen. Many, particularly those who agreed to participate but were non-compliant with the programme, said that refusal would have been culturally inappropriate.

3. Pharmacy Treatment for Young People

Pharmacist-owners in both groups report that just under 40% of their clients are young people aged 13-24 years (Table 5). RxGen pharmacists were only slightly more likely to serve youth who were visiting the pharmacy as their "first stop" for healthcare (59% of youth clients) than were non-adopters (53%). Stakeholders report that youth often initially seek reproductive care at pharmacies due to the anonymity and convenience of the pharmacy, and their reluctance to go to a clinic where they would likely see acquaintances. Pharmacist-owners and stakeholders asserted that there no substantial community stigmas about EC, young people using EC, or young people being treated for STI. As one pharmacist-owner pointed out, "many adults come to the pharmacy and purchase EC and STI medications for their children or younger brothers and sisters."

4. STI Treatment

Non RxGen pharmacists reported nearly twice as many (36) youth seeking STI treatment per month than those who adopted RxGen (19). Young people either presented with symptom complaints consistent with STI or explicitly asked for STI treatment (Table 6). Pharmacists frequently dispense drugs as one "packet," referring to the plastic and foil tray containing 4-12 tablets, of which there are usually several in a retail-sized box. The RxGen pharmacists dispensed *more* packets of drugs per month (59 packets) than non-adopters (53 packets). However, the average number of packets per youth client seeking STI treatment dispensed by RxGen pharmacists was two times that of non-RxGen pharmacies (3.1 vs.1.5 packets.)

In addition to prohibition against antibiotic distribution, according to stakeholders, pharmacists are explicitly ordered not to treat any STI symptoms. However, when clients presented with STI symptoms, pharmacist-owners in both groups inquired about signs and symptoms and offered treatment for "non-serious" conditions. They reported that this approach offered best service to clients and was in their best business interest. For non-serious conditions, pharmacists profit by selling medications, particularly antibiotics, which they believe address the client's problem appropriate. For serious conditions, pharmacists they were concerned that they might cause a client's condition to grow worse (either as a result of giving the wrong treatment or missing the underlying problem). A poor outcome would be damaging to their reputation and cause substantial business loss. Many pharmacists reported that 80% of STI conditions were "non-serious."

Regarding quality of treatment, the most common drugs that pharmacist-owners provided for "genital pain" were quinolones (ciprofloxacin and pefloxacin), followed by cephalosporins (ceftriaxone and cephalexin) (Table 5). When asked the quantity or dosage course of drugs, only 12% reported sub-therapeutic average medication dose; many knew that a full dose was important for both a good patient outcome and preventing antibiotic resistance. However, the two most commonly-dispensed drugs are not consistent with Vietnam Ministry of Health (2003) guidelines and may be ineffective or dangerous. Further, medication doses listed by many pharmacist-owners were frequently arbitrary and supra-therapeutic (Johns Hopkins 2006, Ministry of

Health 2003). Additionally, 54% of pharmacist-owners stated that they sold partial doses to half or more of their clients.

5. Emergency Contraception

Emergency contraception (EC) appears to be widely used in Thanh Hoa, and was readily available at 95% of pharmacists studied. Pharmacist-owners perceive that EC has a very high profit margin and is consistent with their counseling and instructional role because dispensing EC does not require any clinical evaluation. Of concern, however, they reported that, although illegal, the abortifacient misopristol is commonly dispensed, often without effective instructions. Several stakeholders reported that when some clients ask for emergency contraception, the pharmacist realizes that she has surpassed the therapeutic window for EC and dispenses misopristol instead without informing the client. Health officials reported that this could lead to frequent complications, such as hemorrhage.

6. Counseling

Pharmacist-owners defined counseling services broadly, including speaking with clients about their health problems, providing education and advice, engaging in medical consultation, and listening to clients in a nonjudgmental way. In both pharmacy groups, 100% of pharmacists reported that they provide counseling services regularly. An informant reported that imitation is common: "if peer pharmacies provide counseling and have more clients, others notice and try to do the counseling."

Pharmacist-owners reported the counseling increases both client volume and sales per customer. One noted that "when I provide counseling, I make my pharmacy competitive. There are 20 pharmacies on my street but only 3-4 provide these services to clients. So it's a huge advantage." In addition to the commercial advantage of increasing the general customer base, several pharmacist-owners pointed out that they are able to sell more products when they provide counseling. Also, one pharmacist-owner charges a consultation fee of VND10,000 (£0.43), about 1/3 the lowest price of a clinic consultation, and said that about 10% of youth pay the fee. Some stated that it takes additional time and thus has a labor cost, but that they could interrupt counseling to serve a regular customer, and none needed to hire additional staff.

Stakeholders said that pharmacy-based counseling was quite rare five years ago, and that the frequency and number of sites providing counseling have increased dramatically since. They attribute this increase directly to PATH's RxGen programme.

7. Referrals

All pharmacist-owners were aware of their responsibility to refer clients with STIs or other specific conditions to medical facilities. However, their self-reported referral volumes suggest that they refer substantially fewer youth clients than they are required to according to regulations. Pharmacist-owners report referring an average of 15.3 youth clients per month (Table 8). Based on the reported number of youth clients seen for STI's, the data suggests that the RxGen pharmacists refer only an average 68% of those eligible and non-adopters only 51%.. Given that some youth

clients are referred for non-STI conditions, this probably substantially overestimates the STI and total referral rates.

As for their decision-making to refer, many pharmacist-owners reiterated their belief that it was acceptable to treat clients for "non-serious" conditions, though they knew it violated the law, and that this was in their short-term profit interest. But they also reported that a substantial portion of referred clients do not return to the pharmacy post-referral. Almost one-half (47%) of the pharmacists believe that the majority of referred clients *do not* return to patronize the pharmacy after referral to a medical facility.

Pharmacists attributed the low return rate to various institutional mechanisms that exist between doctors and certain pharmacies to promote each others' business through "kickbacks" and commissions. For example, historically doctors followed the illegal practice of writing a prescription that was valid at only one pharmacy, from which they would receive a monetary commission. Now it is more common to use extra-legal practices such as writing prescriptions for a new or uncommon antibiotic that is only available at one pharmacy, despite the fact that more common, lower-cost alternatives are equally (or more) effective. When asked about the incentives of making referrals, pharmacist-owners reported that they lost business and they thought the doctor-pharmacy collusion worsened the care and increased costs for clients. Several pharmacist-owners reported that one factor in increasing the likelihood of a client returning from a referral was whether trust and familiarity had developed over the visit and any previous ones.

Discussion

Using the conceptual framework outlined in the previous chapter, these findings are analyzed first by evaluating the risk, discount rate, and social NPV, and then considering the financial and institutional incentives that drive the private pharmacists' NPV of participation in the PPP.

Evaluation of the Model

1. Risk and discount rate

Both the pharmacy industry in Vietnam and the nature of the RxGen intervention constitute a low investment risk, particularly for a developing country. The private pharmacy industry has transitioned from high growth in the 1990s when profits were in the 100-150% range (Chuc et al 1999, Chalker et al 2000), toward maturity. The market has become quite saturated with participants—the pharmacy ratio of 1:1,000 people exceeds that of nearly every developing and developed country (WHO 2006). Profit margins have fallen substantially, probably due to inter-pharmacy competition more than government control, but restriction of permissible drugs may have increased somewhat. Although regulation is still weak and inconsistent, property and inventory is secure, which may be attributable to the post-Socialist political milieu (Tuan et al 2005).

Pharmacist-owners reported fairly stable customer bases, despite the difficulty in differentiating their services from others. Further, the nature of the PPP did not

require pharmacist-owners to bear substantial capital costs or to enter new markets. This reduced the levels of uncertainty and irreversibility in their investment in the programme. Additionally, the intervention actually increased their regulatory compliance with existing requirements rather than exposure to new regulation. Finally, there is no striking opportunity cost to the project: sunk investments are minimal, much of the investment involves surplus staff time, and the Thanh Hoa economy is quite static. Thus the risk and discount rate of the project were perceived by pharmacist-owners to be quite low, even more so than hypothesized.

2. Social Return

Measuring social return was not an objective of this project. Nonetheless, an approximation of social return is important for establishing a positive social NPV, which in turn is a prerequisite for assessing pharmacist-owner incentives. Among social costs are pharmacist-owner time, surveillance and measurement, training, and the underlying international donor funding. Social benefits include better health outcomes (decreased STI morbidity and complications) and decreased chronic care costs. Assigning monetary costs to these factors and measuring them is difficult, and involves tools such as quantifying disability (McCullouch 2005). However there are many reasons to believe the expected social NPV of this project is positive. Based on Mills and Shillcutt's cost-benefit ratios for similar projects (2004), the relatively low donor cost, and the coordinating NGO's successful history of similar interventions, we can assume a positive social value for this project.

3. Incentive Structure

a. Incentives

Two components of the RxGen intervention substantially maximized incentives of the pharmacist-owners. First, promotion of EC provided strong financial incentives due to the widely-reported high profit margin. Contraception does not require any diagnostic or medical expertise to dispense. It is in the best interest of all parties involved—pharmacist-owners, clients/patients, and health officials—for contraception to be disseminated. Few negative externalities are generated by EC. The potential problem of EC being used instead of conventional barrier contraceptive methods could increase STI transmission. However, youth are generally quite price-sensitive (Grossman et al 1994), so substitutability is low. It is alarming that pharmacists may covertly replace EC with abortifacients, seeing the two on a continuum of alternatives, but this occurs rarely. Consequently, there are few institutional disincentives to provision of EC as supported by RxGen.

Second, despite the paucity of counseling services in Thanh Hoa three years ago (affirmed by baseline studies in PATH 2006), now 100% of pharmacist-owners in both study groups offer them. The competitive environment was instrumental in institutionalizing pharmacy-based counseling after PATH introduced it, because pharmacist-owners perceive counseling as a unique way in which to differentiate their business. This is consistent with Schumpeter's "concept of competition between different techniques struggling to be adopted by existing firms or between different final products slugging it out over the consumer's preferences" (cited in Mokyr 2000, 61). Counseling enables pharmacies to achieve commercial advantage by attaining

higher profits, by both increasing their customer base and sales volume per customer. The role that competitive advantage has played in the proliferation of counseling services is further affirmed by our finding that even those pharmacies who did not receive RxGen training are now offering counseling services.

For the pharmacist-owners, the advantages of offering counseling services far outweigh the main disadvantage—the cost of pharmacy staff time—primarily because most pharmacies are small and often run by the pharmacist-owner with only one or two 'part-time'assistants. Incidental observations during interviews indicated that most pharmacies have 0-3 customers per hour, and the average encounter is 1-2 minutes. Pharmacy staff are typically idle between customers, thus there are surplus labor resources available for counseling. An institutional conflict is associated with "counseling" to the extent that medical consultation includes prohibited behaviours such as diagnosis or prescribing drugs. This can create a perverse incentive, for pharmacists to practice beyond their professional capacities. However, based on findings from this study, there is no evidence of increased clinical practice beyond baseline as a result of RxGen.

Each of these components of the RxGen programme, EC and counseling to youth, provide substantial financial incentives with minimal institutional disincentives. A synergy between these two services was observed: pharmacist-owners reported that counseling increases their volume of EC sales, reinforcing both practices. As a result, both RxGen adopters and non-adopters have embraced these services.

b. Disincentives

First, a goal of RxGen is to improve the quality of STI care. Because pharmacy-based STI diagnosis and drug provision is prohibited, quality "care" at the pharmacy level means identification and referral, as opposed to direct treatment. However, due to financial and institutional incentive structures, pharmacists are compelled to overlook this regulation. Pharmacists stated that STI "diagnosis" and treatment is profitable (at least 80% of clients are sold treatment), and in the best clinical interest of their clients (who avoid the inconvenience and cost of clinic consultation). However, this commitment to the client is questionable, though it may be pharmacists' ignorance rather than predation that is problematic. First, given the complexity STI's, it is very difficult for an individual without medical training to determine the severity of a client's condition (Cecil et al 1996). Second, for patients who are treated by the pharmacist because their condition is determined to be "non-serious," the quality of care is likely poor inadequate. The two STI drugs most frequently offered by pharmacist-owners, both fluoroquinolones, are excluded from Ministry of Health guidelines (2002) and 50% resistance to these drugs was reported in 1997 (Chalker 2000, 301). Drugs are often dosed arbitrarily based on the number of tablets in a packet, and partial drug doses are sold because clients cannot afford full doses.

These practices are governed by two deeper institutions. In order to provide STI treatment, the pharmacist must first determine the disease according to the reported signs and symptoms. This is acquired from two sources. When a referred client returns to the pharmacy, the pharmacist-owner associates the diagnosis stated on the prescription with the signs and symptoms the client reported prior to the referral. Also, pharmacists who participated in RxGen training were taught about signs and

symptoms of STIs to alert them to make a referral; however, they now use this knowledge to independently treat STIs. Second, the pharmacist's determination of appropriate treatment for a given diagnosis is typically based on standard issue Vietnamese pharmacy books, which list diagnoses and medications in conjunction with instructions for dispensing medications according to doctor's prescriptions. Thus, by providing additional knowledge about symptoms of STI's, it appears that the RxGen intervention actually reinforced the institutional incentive structure that enables pharmacist-owners to avoid adequately caring for STIs.

The second service that generated substantial disincentives was providing referrals. The referral process mandated by Vietnamese policy, especially for young people with STI's, suffers from three disincentives. First, for pharmacist-owners, referrals are both a financial disincentive, (due to loss of potential customers), as well as a client disadvantage (because the client may receive inferior care and pay extra expenses for their care). Although social capital, as described by Ostrom (1997), may mitigate some referral loss, it does not figure prominently in pharmacists' decision-making. Second, pharmacist-owners believe that it is better to offer treatment to reluctant young people than have the client forgo treatment altogether. Stakeholders report that Ministry of Health officials unofficially agree this should be done, which then undermines the policy of referrals, but reinforces financial incentives of pharmacists. Third, the recent proliferation of pharmacies and their product offerings has increased clients' perception of pharmacies as an alternative to conventional healthcare sites.

These latter two RxGen services implicated major institutional and financial disincentives for pharmacist-owners whilst lacking compelling financial incentives. Consequently, we found substantial resistance from pharmacist-owners and low rates of adoption of these practices, as evidenced by the high reported treatment of "non-serious cases." Non-RxGen pharmacists were patronized by almost twice as many youth seeking STI treatment each month compared to RxGen pharmacists, which may be explained by increased r likelihood of dispensing medications. Similarly, RxGen pharmacists were more likely to refer young people to medical providers than non RxGen pharmacists (68% vs. 51%). A pharmacist-owner who thought EC was the most profitable product for youth was twice as likely to adopt RxGen, and the odds of one who thought antibiotics were the most profitable not-adopting RxGen was 2.3:1. This suggests that existing perceptions about which products were profitable was a substantial driver of the decision to undertake the PPP.

Summary

Decision-making was found to be guided substantially by the business interest of pharmacist-owners, as opposed to alternative institutions. Formal standards of care are absent and informal guidelines are weak; and only one pharmacist-owner reported that she followed official standards when they caused her to lose profit. Although there is a high level of competition, there is little differentiation among pharmacies given policy constraints on the scope of services pharmacies can offer; thus pharmacists' decision-making is guided by competitors minimally. Finally, the use of personalized Ministry of Health letters to invite participants to the RxGen programme represented what Goel labels a coercive force on their decision-making (1996), but other instances of coercion were not identified. Hence, pharmacy-owners report that profit and client welfare jointly steer their decision-making in situations such as

engaging in a PPP, but when divergent, pharmacist-owners are more strongly guided by profit.

Finally, the data indicates that the incentives model was highly explanative but inadequately predictive. Few factors, such as a young pharmacist-owner or one who believes that (illicitly) dispensing antibiotics is most profitable, distinguish the pharmacists who elected not to participate in the PPP. And when pharmacist-owners were asked to weigh the financial and institutional incentives, the vast majority from both study groups identified similar net financial incentives and net institutional disincentives. But, the explanatory power of the model is high. For example, it is clear that many pharmacist-owners do not make an "all or none" decision about investing in the PPP; rather, they choose particular components that best fit their incentive structures.

IV. CONCLUSION

Public-private partnerships for public health are becoming increasingly universal but our understanding of why private partners engage or participate in these partnerships is inadequate. I proposed a model for identifying and evaluating their incentive structure, based in large part on the New Institutional Economics and financial theory. When applied to private pharmacists considering participation in a PPP to improve youth reproductive health in Vietnam, this framework methodically showed how financial and institutional incentives either promoted or hindered their adoption of certain interventions. Specifically, providing emergency contraception and counseling services augmented financial incentives, but providing quality care for STIs or making referrals implicated significant institutional disincentives.

Study limitations

First, the subject for the case study may not have tested the proposed incentives framework as fully as possible. The regulatory environment was poor but had the effect of being weak as opposed to hindering, and, contrary to our expectation, there were no major social stigmas. More restrictive governmental and social institutions are common in developing countries (DeSoto 2000, Kinghorn 2001), and would have introduced more institutional tension in the model. Nonetheless, this case study certainly did present a number of major institutional incentives and disincentives.

Second, there were some limitations inherent in the study. Because respondents self-reported behavior and incentives, there was a potential for information bias. There was little reason for pharmacist-owners to provide untruthful answers, other than to conceal illegal business practices. But previous work using "mystery clients" has demonstrated the discrepancy between reported and actual practice, particularly with regard to STI treatment among youth in Vietnam (Chalker 2000). However, based on the observed willingness of the pharmacists in this study to reveal the extent of illegal activities, the majority of respondents appeared to be forthcoming and honest.

An additional constraint was the short timeline on which the study was conducted. This limited the sample size and the possibility of comparing multiple regions, both of which limit the ability to generalize the results. However, the sample included a full 10% of the private pharmacy market in Thanh Hoa. The fact that we stratified our study group by compliance and participation increased its representativeness of the pharmacist-owner population, and helped mitigate selection bias. For any multi-language study, cultural and language misunderstanding must be considered. This was overcome in part by receiving feedback on the appropriateness of questions from PATH staff in Vietnam, performing translation independently when possible, and piloting one of the interview guides.

Policy recommendations

This study offers insight for changes to development strategy and policy to facilitate success of PPPs to improve pharmacy practice in Vietnam. Interventions to introduce counseling services and increase EC availability were very successful; they could be

disseminated more widely. However, in order to promote better STI care, the government could launch public awareness campaigns about the risks of pharmacist diagnostic or treatment decisions. This could effect behavior change by informing popular attitude, but risks undermining trust in the legitimacy of pharmacies. Alternatively, regulatory changes, such as requiring pharmacists to show proof of prescriptions for all antibiotics dispensed, could induce administrative change through existing institutions. However, this approach relies on a regulatory structure that has been shown to be inadequate.

In order to increase the incentives for pharmacists to make referrals, stakeholders could facilitate more collegial interaction between pharmacists and doctors that treat reproductive diseases for youth. Pharmacists could refer directly to physicians as opposed to clinics, thereby reducing the opportunity for predatory physicians to opportunistically direct clients to other pharmacies. On a smaller scale, a discount scheme could be developed in which pharmacists give discount cards to clients when making referrals, to be used when they return to the pharmacy. These could be subsidized by a third party, such as the Ministry of Health.

Two more general policy considerations relevant for development organizations emerge from this study. First, it is important not to destabilize existing institutions in the effort to promote new ones through PPPs. Although there is appropriate attention on promoting pharmacies as a locus of care, and installing incentive structures to such ends, this may undermine existing resources. For example, relative to treatment for STI in Vietnam, physicians have been trained at great government and personal expense. The challenge then is to mobilize access to existing resources in the context of building new ones.

Second, if a PPP-based intervention is socially optimal but private firms do not realize sufficient incentives to marshal their participation, redistribution of allocations should be leveraged. This logically begins by determining who stands to gain from a successful PPP. If the social NPV is positive, but the private partners' NPV is negative, there must be other stakeholders who offset the private partners negative NPV. In the context of public health, this would likely be the Ministry of Health and population at large. The society would gain both directly, by saving costs of treatment for chronic illness or days of missed work, and indirectly, by enjoying healthier lives. If mechanisms can be created such that these groups provide additional incentives to private partners to participate in the PPP, an optimal and efficient outcome will occur. In impoverished communities with inadequate or corrupt financial institutions, achieving these mechanisms can be difficult. But solutions may exist. For example, the marginal funding for the referral discount card scheme, recommended above, could come from the Ministry of Health, or even from large community employers who stand to gain from the PPP succeeding.

The crafting of effective public health interventions remains challenging, particularly with the added imperative of designing them to leverage the resources of private firms. However, plausible programmes must begin with an adequate understanding of private firms' incentives. This conceptual model, and its findings from Vietnam, is a modest first step.

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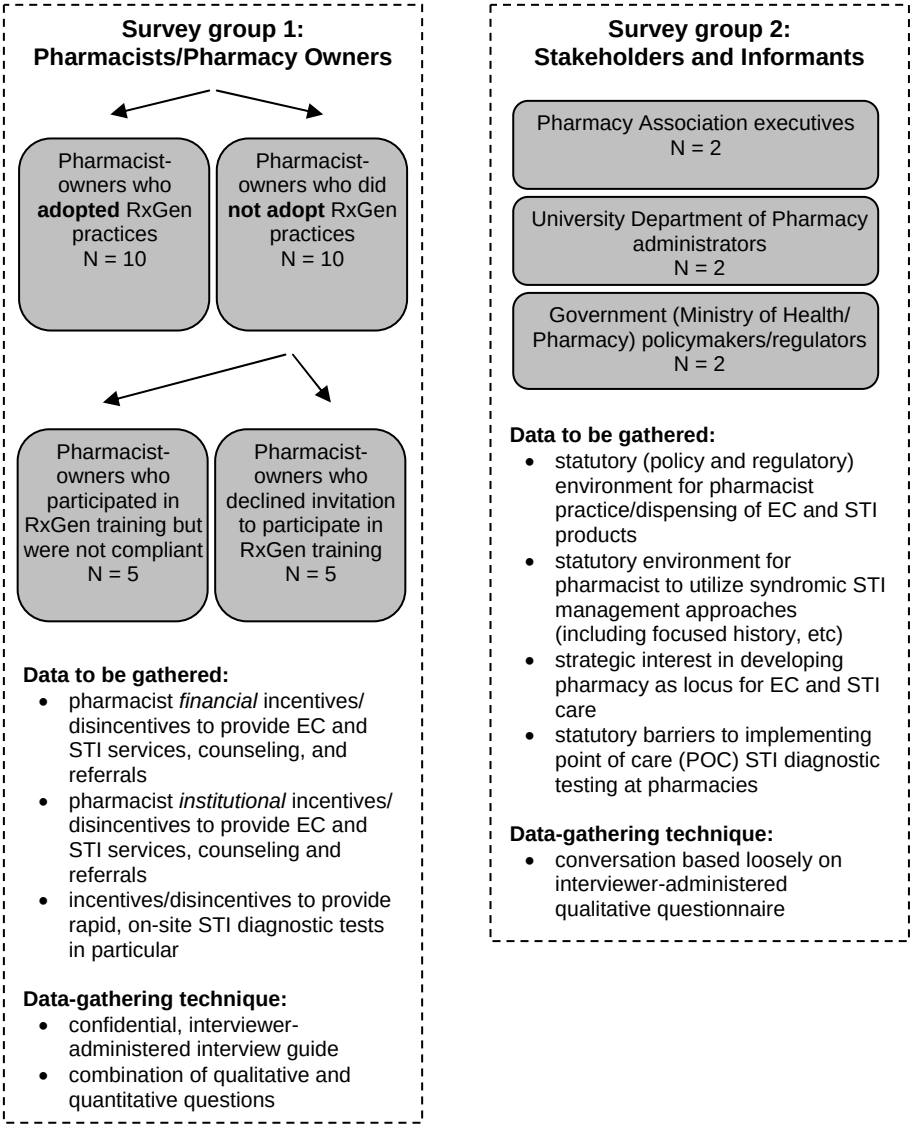
VI. APPENDICES TO THE CASE STUDY

Appendix A: Study Design



Appendix B: Data Tables

Table 1: Characteristics of Pharmacist-Owner Respondents

characteristic	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Gender			
Female	70% (14)	70% (7)	70% (7)
Male	30% (6)	30% (3)	30% (3)
Estimated Age			
Young	25% (5)	0% (0)	50% (5)
Middle-aged	55% (11)	60% (6)	50% (5)
Old	20% (4)	40% (4)	0% (0)
Licensed Pharmacist			
Yes	95% (19)	100% (10)	90% (9)
No	5% (1)	0% (1)	10% (1)
Education			
University	40% (8)	30% (3)	50% (5)
Secondary Pharmacy School	55% (11)	70% (7)	40% (4)
Pharmacist Certi-ficate	5% (1)	0% (0)	10% (1)
Pharmacy Owner			
Yes	85% (17)	90% (9)	80% (8)
No	15% (3)	10% (1)	20% (2)
Pharmacies Owned			
None	15% (3)	10% (1)	20% (2)
1	85% (17)	90% (9)	80% (8)
>1	0% (0)	0% (0)	0% (0)
Avg years worked as pharmacist	17.75 years (range 2-37)	19.1 years	16.4 years
Avg age of pharmacy	9.9 years (range 3-16)	12.3 years	7.5 years
Avg years pharmacy under current ownership	9.75 years (range 3-16)	12 years	7.5 years
Total	(20)	(10)	(10)

Table 2: Most common and most profitable pharmacy products

Most commonly sold product(s)

product	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Antibiotics	50% (10)	60% (6)	40% (4)
Vitamins	35% (7)	30% (3)	40% (4)
Contraceptives, incl EC	5% (1)	0% (0)	10% (1)
Antipyretics	15% (3)	20% (2)	10% (1)
Flu medicine	10% (2)	10% (1)	10% (1)
All similar/don't know	10% (2)	10% (1)	10% (1)

Highest margin product(s)

product	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Antibiotics	60% (12)	70% (7)	50% (5)
Vitamins	15% (3)	20% (2)	10% (1)
Contraceptives, incl EC	10% (2)	10% (1)	10% (1)
Antipyretics	0% (0)	0% (0)	0% (0)
Flu medicine	5% (1)	0% (0)	10% (1)
All similar/don't know	15% (3)	10% (1)	20% (2)

For products sold to youth, class of product with highest profit margin

product	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
- antibiotics	50% (10)	30% (3)	70% (7)
- contraception and EC	45% (9)	60% (6)	30% (3)
- not sure	5% (1)	10% (1)	0% (0)

Table 3: What makes a pharmacy competitive?

	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Are there characteristics that make pharmacies competitive?			
Yes	88% (17)	90% (9)	89% (8)
No	12% (2)	10% (1)	11% (1)
Total (n=19)	100% (19)	100% (10)	100% (9)
What characteristics make pharmacies competitive?			
Good counseling service	53% (9)	44% (4)	63% (5)
Price of drugs	35% (6)	33% (3)	38% (3)
Good/trusting relationship with clients	29% (5)	22% (2)	38% (3)
Quality of drugs	29% (5)	11% (1)	50% (4)
Sensitivity to new products	12% (2)	11% (1)	13% (1)
Good variety of stock	12% (2)	22% (2)	0% (0)

Table 4: What constitutes a good standard of practice?

	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Good counseling service	61% (11)	44% (4)	78% (7)
Good knowledge	44% (8)	22% (2)	67% (6)
Quality of drugs	28% (5)	22% (2)	33% (3)
Good attitude	28% (5)	33% (3)	22% (2)
Price of drugs	22% (4)	22% (2)	22% (2)
Good/trusting client relationships	11% (2)	11% (1)	11% (1)
Good variety of stock	11% (2)	22% (2)	0% (0)
Good instructions	11% (2)	0% (0)	22% (2)
Don't know	6% (1)	11% (1)	0% (0)

Table 5: Characteristics of youth pharmacy treatment?

characteristic	Total % (n)	RxGen adopters % (n)	RxGen non-adopters % (n)
Portion of clients that are young people	38%	38%	39%
Portion of youth clients visiting as "first stop"			
- "first stop" for health care	56%	59%	53%
- "had visited a doctor of clinic first"	44%	41%	47%
Most common reasons for visit			
- contraception	80% (16)		
- EC	80% (16)		
- STI treatment	75% (15)		

Table 6: Characteristics of STI treatment for youth in pharmacies

characteristic	Total (n total)	RxGen adopters (n total)	RxGen non-adopters (n total)
Mean youth per month seeking STI treatment	27.2 (20)	18.6 (10)	35.8 (10)
Mean STI treatments dispensed per month	52.6 (11)	59 (4)	53 (7)

Table 7: Most common STI medications provided to youth?

Medication	% (n)
Ciprofloxacin	63% (12)
Pefloxacin	37% (7)
Ceftriaxone	37% (7)
Cephalexin	21% (4)
Amoxacillin	21% (4)
Lincomycin	16% (3)

Table 8: Characteristics and volume of referrals

characteristic	Total (n total)	RxGen adopters (n total)	RxGen non-adopters (n total)
Mean referrals of youth per month	15.3 (19)	12.7 (10)	18.2 (9)
Percent of STI clients referred, if referrals were only made for STI	56.2% (19)	68.3% (10)	50.9% (9)
Percent of pharmacist-owners who stated that only half or fewer of referred clients return to pharmacy	47% (19)	44% (9)	50% (10)

Appendix C: Pharmacist-Owner Interview Guide

PHARMACIST / PHARMACY OWNER INTERVIEW GUIDE:
What Motivates Pharmacists to Provide Reproductive Health Services to Youth, and Why Would They Expand Their Scope of Practice?
July-August 2006

INTERVIEW NUMBER ☐☐
DATE ☐☐ (date) ☐☐ (month) 2006
ADMINISTERED BY _____

Introductory Explanation (to be read to respondent)

My name is _____, and I am a researcher working with PATH to better understand ways to improve health care for young people. Today, we are specifically trying to find out more about the advantages and disadvantages for pharmacists to provide reproductive health services for young people.

[Informed consent form is then introduced and explained. This provides further information about the study.]

[Interviewer is expected to probe for detail, clarification, and amplification as appropriate. For questions in which the respondent did not participate in the program (questions 35-37), change question to the counterfactual form (eg, "if you had participated in the program, would you have…").]

Part I: The Pharmacist and the Pharmacy

(1 and 2 through observation):

1. Gender
   ☐ male or ☐ female (check one)

2. Estimated age
   ☐ Young
   ☐ Middle-aged
   ☐ Old

3. Are you a licensed pharmacist?
   ☐ yes or ☐ no (check one)

4. What was your highest level of education completed?

5. Are you a pharmacy-owner?
   ☐ yes or ☐ no (check one)

6. How many pharmacies do you own/operate?
   ☐☐ pharmacies

7. How many years have you been working as a pharmacist?
   ☐☐ years

8. How long has the pharmacy you work at been in existence?
   ☐☐ years

9. How long has the pharmacy you work at been under its current ownership (you, or the pharmacy owner if you are a pharmacist?)
   ☐☐ years

Part II: Current STI Treatment and EC Practices for Youth Clientele

10. Overall, which classes of products or medicines have the highest profit margin for your pharmacy?

11. Which classes of products do you sell the most?

12. Do you serve young clientele aged 13-24? Please estimate what proportion of your clients are young people between the ages of 13-24.
    ☐☐ percent

13. What proportion of youth clientele comes to the pharmacy after visiting a doctor and/or clinic, compared to youth clientele who come to the pharmacy as their "first stop" for health care?
    ☐☐ percent come to the pharmacy after visiting a doctor/clinic
    ☐☐ percent come to the pharmacy as their "first stop"

14. What are the products and services youth clientele most frequently seek at your pharmacy?
    ☐ make-up or cosmetic products
    ☐ shampoo, soap, or common hygienic products
    ☐ bandages or other health supplies
    ☐ drugs or treatments for non-sexual/reproductive issues
    ☐ contraceptive products (before intercourse)
    ☐ emergency contraception (after intercourse)
    ☐ medicine for sexually-transmitted infections
    ☐ Other:

    In what volumes do you sell these products to youth? Are some products more profitable than others?

15. What are some of the differences between what is common practice at pharmacies and what the regulations say to do?

16. Describe the regulatory environment you work in. How do regulations work? How are they enforced? What happens to pharmacies that violate them? What are the advantages and disadvantages of the regulatory environment that you operate in?

STI Treatment Provision

17. Do youth clientele come to the pharmacy seeking treatment for STIs? If yes, how many young people per month would you estimate come to the pharmacy for this reason?
    ☐☐ young people per month

18. What is the general approach you take when a youth comes to the pharmacy and complains that he/she (or a "friend") has pain in his/her genital area?

19. Do you diagnose the problem? If yes, what questions do you ask to arrive at the diagnosis?

20. What products do you usually offer, and in what quantities or for what length of treatment?

antibacterial drugs
- quinolones
  - ☐ pefloxacin, quantity:
  - ☐ other, quantity:
- tetracyclines
  - ☐ doxycycline, quantity:
  - ☐ tetracycline, quantity:
  - ☐ other, quantity:
- cephalosporins
  - ☐ type, quantity:
- amphenicols
  - ☐ type, quantity:
- beta-lactams
  - ☐ penicillin, quantity:
  - ☐ non-penicillin, quantity:
- sulfonamides
  - ☐ type, quantity:
- trimethoprim
  - ☐ type, quantity:

antifungal drugs
- ☐ metronidazole, quantity:
- ☐ spectinomycin, quantity:

other drugs
- ☐ urologicals
- ☐ vitamins
- ☐ diuretics
- ☐ corticosteroids

☐ topical non-antibiotic creams
☐ douche or other cleaning products
☐ contraceptives
☐ emergency contraception
☐ Other:

21. What are the most common STIs you provide drugs for? Why do you think these are the most common STIs?

22. Are there circumstances when you think it is appropriate to give an abbreviated course of drugs? Explain.

23. What flexibility do you have when it comes to selling medicines without a prescription?

24. What happens if you do sell medicines without a prescription? Is there any enforcement? Are the any fines or threat of shutdown?

25. Do you build consultation or counseling costs into the end price of the medicine, or do you charge for a consultation separately? Why do you do counseling or consultations?

26. Are there any age restrictions on any STI treatment? If yes, what are they? If yes, which authoritative body oversees these restrictions?

27. What would cause you to refer a youth client outside the pharmacy for further STI diagnosis or treatment? Where do you refer clients?

28. How many youth clientele per month would you estimate that you make referrals for?
    ☐☐ youth clientele per month

29. If they follow through with a referral, and they are prescribed medicine, do they usually return to your pharmacy to get the medicine, or do they get it elsewhere? Where else do they get it? Are there characteristics of clients that typically cause them to return or not to return when you refer them?

30. Do you think that clients will return to a pharmacy more often if they are referred from that pharmacy to a health clinic, and receive good treatment from the clinic? Why?

Unprotected intercourse – emergency contraception and STI treatment provision

31. Do youth clients come to the pharmacy asking specifically for emergency contraception? How many young people seek this in an average month?
    ☐☐ youth per week

32. What products do you offer? Do the products depend on if the client is male or female?

33. What is the general approach you take? Are there any specific questions you ask?

Part III: Reasons Pharmacists Currently Provide STI Treatment/EC to Youth Clientele

34. Do you conduct any marketing and awareness-raising for your services to youth, particularly for STI and emergency contraception?

35. How does the community view the treatment for STI that you provide to youth? If you were to expand these services or advertise them more aggressively, what would the community view be?

36. Did you participate in RxGen? Why or why not?

37. What investments (were/would have been) required of you and your pharmacy? (Were these investments/Would these investments have been) worth the effort? Why or why not?

38. (Have there been/Would there have been) aspects of participating in RxGen or providing services like you learned about in RxGen that (have been/would have been) more or less profitable to you?

39. Before doing RxGen, did you expect to make higher profits because of doing RxGen? Did this influence your decision (to do/not to do) RxGen?

40. If you participated in RxGen, (did you have/would you have had) more interaction with clients? Did you see this as a near-term or long-term benefit or cost? Why?

41. Is the environment in which your pharmacy operates competitive? What makes your pharmacy competitive? Does this influence which products and services you provide?

42. What do you think is included in providing a good "standard" of services at a pharmacy, particularly when it comes to reproductive health services for youth?

43. You have talked about several reasons either to do or not to do the RxGen project or provide services, such as increase your STI knowledge, provide STI treatment, provide counseling, or refer clients. You talked about some financial reasons [interviewer may only repeat responses that respondent already volunteered, if necessary]. What do you think are the main financial advantages? What do you think are the main financial disadvantages? Which do you think are larger, the advantages or disadvantages?

44. You also talked about some non-financial reasons [interviewer may only repeat responses that respondent already volunteered, if necessary]. What do you think are the main non-financial advantages? What do you think are the main non-financial disadvantages? Which do you think are larger, the advantages or disadvantages?

Part IV: Potential for Increasing the Scope and Quality of Reproductive Health Services for Youth Clientele

"Magnet pharmacies" could provide expanded reproductive health services to youth clientele, and could include emergency contraception, diagnosis of sexually-transmitted infections using syndromic management and rapid urine or blood test kits for specific STIs, prescription of treatment, counseling, and awareness-raising. It could be a sort of "one stop shop" for receiving STI services.

45. If a broader range of such services were sanctioned legally, would you be interested in providing these services? Why or why not?

46. What investments do you think would be required to expand into such services? Why or why would you not be willing to make such investments?

47. Do you think there would be commercial advantages or financial benefits in expanding your scope of services to be such magnet center? What about financial disadvantages? How would magnet pharmacies affect existing pharmacies?

This is the end of the interview. Thank you very much for your time.

Appendix D: Stakeholder Interview Guide

Interview Guide for National Pharmacy Association Executives, University Department of Pharmacy Executives, and Government Policymakers/Regulators
July 2006

DATE ☐☐ (date) ☐☐ (month) 2006
TITLE OF INTERVIEWEE _____
INTERVIEWED BY _____

Introductory Explanation

My name is _____, and I am a researcher working with PATH to better understand ways to improve health care for young people. Today, we are specifically trying to find out more about the advantages and disadvantages for pharmacists to provide reproductive health services for young people.

[Informed consent form is then introduced and explained. This provides further information about the study.]

[Interviewer is expected to probe for detail, clarification, and amplification as appropriate. For questions in which the respondent did not participate in the program (questions 35-37), change question to the counterfactual form (eg, "if you had participated in the program, would you have…").]

Part I: Traditional Role of Pharmacies and Service Provision

1. What is your perspective of the role of pharmacies within the broader national healthcare system? What were (and are) the linkages between pharmacies and the broader healthcare system?

2. Do pharmacies currently still do much or any compounding of drugs? How is the professional role of the pharmacist changing? Are there new professional opportunities that pharmacists are seeking, so as to add value in the healthcare system?

3. Have pharmacies traditionally been a site for any sort of service provision (such as laboratory services, diagnostic services, etc) aside from compounding of drugs? Are they still today? How has this been regulated?

Part II: Current Statutes for STI and EC

4. What are current statutes related to the role of pharmacists in caring for STI?
   - Are they able/encouraged to prescribe medications?
   - Are they able/encouraged to take a focused patient history?
   - Are they able/encouraged to perform any physical examination?
   - Are they able/encouraged to refer to other facilities? If so, for what and to where?

5. Are there statutes that regulate pharmacist provision of STI services or treatment to young people? For example, is parental permission required at certain ages?

6. Is "syndromic management" a common practice in Vietnam? Is it allowed or endorsed in policy? Is it practiced commonly in pharmacies?

7. Are there statutes that regulate pharmacist provision of EC to young people? Is parental permission required at certain ages?

Part III: Policy-Practice Diversion and the Informal Sector

8. What are the main ways in which common practice differs from that prescribed by policy, particularly with regard to reproductive health and young people?

9. Are all antibiotics or other STI treatments prescription-status? How common is off-label use of medications?

10. Is there a robust informal sector in pharmacy? How do you define this informal sector?

11. What causes pharmacists to practice in the informal sector? Are there factors that force them out of the formal sector? Are there substantial barriers to enter the formal sector from the informal sector?

12. What level of training or certification is required of frontline service providers? To the extent that pharmacy providers are not trained pharmacists, is it a priority to regulate staff credentials more aggressively? Are there pharmacist-assistant type credentials, or plans to introduce them?

Part IV: Pharmacist Scope of Practice

13. For what sorts of services (or products) do you think pharmacists or pharmacies are naturally suited?

14. Are there particular groups of patients/clients to which you think pharmacists or pharmacies are naturally suited?

15. What are the main influences on pharmacists' decisions whether and how to offer STI treatments?

16. What are the main influences on pharmacists' decisions whether and how to offer EC?

17. Are pharmacists and pharmacies commonly guided by the concept of a 'standard of care,' which all practitioners aim to attain, much like medical practitioners? Is this standard of care officially documented?

18. Or are they guided more by business principles, in which they will seek to enter markets that are new or exit markets that are fully-populated?

19. How stable do you think that pharmacists feel the industry is? How stable are their costumer bases, the stock of medicines they use, and their ownership of their stores? Is it a high-turnover industry or a low-turnover industry? What do they have the most uncertainty about?

20. In what ways are pharmacists' choices about what services to offer influenced by peer or rival pharmacies?

Part V: Potential for Increasing the Scope and Quality of Reproductive Health Services for Youth Clientele

21. Do you have any indication that there are better health outcomes as a result of pharmacists increasing the quality and amount of their reproductive health services for youth?

22. What factors motivate or inhibit a pharmacist to further expand his/her scope of services?

23. Are you familiar with rapid STI diagnostic tools that can be used outside of the hospital or laboratory? Are these common in Vietnam? What do you know about them?

24. Is there any existing or pending regulation that would govern them or permit or prohibit pharmacists from using them?

    "Magnet pharmacies" could provide expanded reproductive health services to youth clientele, and could include emergency contraception, diagnosis of sexually-transmitted infections using syndromic management and rapid urine or blood test kits for specific STIs, prescription of treatment, counseling, and awareness-raising. It could be a sort of "one stop shop" for receiving STI services.

25. What does your organization see as the advantages or disadvantages of creating such magnet pharmacies?

26. At the national level, are there certain institutional forces that support expansion of pharmacy practice to include pharmacy-based services, such as syndromic management and prescription of medicine accordingly?

27. At the national level, are there institutional forces that oppose this type of service expansion?

28. Would regulations need to change to accommodate magnet pharmacies with increased service provision? If so, what is the likelihood that they will change and when might this be possible?

29. Could special accreditation be given to pharmacies providing these expanded STI services? If yes, how?

Appendix E: Pharmacist-Owner Informed Consent Form (English)

Expanded Pharmacy Services: Incentives, Costs, Benefits

PHARMACIST/PHARMACY OWNER

CONSENT FORM

Interviewer: _____

Introduction: You are invited to participate in a research study in which PATH is gathering information from pharmacists and pharmacy owners regarding the RxGen pharmacy reproductive health services program. We are seeking information from pharmacists or pharmacy owners who participated in the RxGen program as well as those who did not participate in it. We recognize that there are advantages and disadvantages for a pharmacist or pharmacy owner to offer reproductive health services, such as emergency contraception and treatment for sexually-transmitted infections, and seek to understand these better so that we can improve programs aiming to increase access to quality pharmacy-based health services. At any time as we go through this questionnaire you may ask questions.
We estimate that it will take about 45 minutes to answer these questions.

Participant's Signed Statement:

☐ **I understand that**

- **The research study has been explained to me.**
- **My participation in this study is voluntary.**
- **I can refuse to answer any questions.**
- **There is no cost to me in taking part in this study**.
- **No payment will be made to me for taking part in this study.**
- **All of my responses will be kept confidential.**
- **No personal details about me or my pharmacy will be revealed to the public, the government, or shared with any other respondents at any time.**
- **I have had the opportunity to ask questions.**
- **I will receive a copy of this consent form.**

☐ **The research study has been explained to me.**
☐ **I have had the opportunity to ask questions.**
☐ **I will receive a copy of this consent form.**
☐ **I agree to participate in this research study.**

_____
Participant's Signature Date

_____
Print participant's name

_____
Signature: _____, Interviewer Date

_____
Printed Name of Interviewer

Appendix F: Stakeholder Informed Consent (English)

Expanded Pharmacy Services: Incentives, Costs, Benefits
PHARMACY PRACTICE STAKEHOLDERS
CONSENT FORM

Interviewer: _____

Introduction: You are invited to participate in a research study in which PATH is gathering information from key stakeholders, including representatives of the Ministry of Health, the Pharmacy Association, and School(s) of Pharmacy. We seek to know more about the policy and regulatory environment that governs pharmacy practice, specifically pharmacists' prescription of treatment for sexually-transmitted infections and emergency contraception. We also are considering how this statutory environment, and other factors, may create incentives or disincentives for pharmacists to offer these treatments. We recognize that there are advantages and disadvantages for a pharmacist owner to offer these services, and seek to understand these better so that we can improve programs aiming to increase access to quality pharmacy-based health services.

Participant's Signed Statement:

☐ **I understand that**
- **My participation in this study is voluntary.**
- **I can refuse to answer any questions.**
- **There is no cost to me in taking part in this study**.
- **No payment will be made to me for taking part in this study.**
- **To protect the privacy of participants in this study the following steps have been taken:**
  - Pharmacy stakeholders have been contacted individually to request their participation in the study.
  - All of my responses will be kept confidential.
  - The data collected from this questionnaire will not be linked to an individual's name; identifiers for the policymaker group will be by title: for example, "MOH representative," pharmacy association representative", or "academic".
  - I will be given the opportunity to speak "off the record" and these responses will not be linked by title or country.

☐ **The research study has been explained to me.**
☐ **I have had the opportunity to ask questions.**
☐ **I will receive a copy of this consent form.**
☐ **I agree to participate in this research study.**

_____
Participant's Signature Date

_____
Print participant's name

_____
Signature: _____, Interviewer Date

_____
Printed Name of Interviewer