AIDS in Eastern Europe: An Analysis of Policy Choices

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Outline

I. Motivation:

Stylized Facts and Recent Trends

- Magnitude and Dynamics
- Means of Transmission

I. The model of HIV Transmission through intravenous drug users (IDU)

II. Discussion of policy choices

III. Conclusion

I. Magnitude and Dynamics

- Environment
  - unstable economic situation
  - extensive migration
  - trafficking illegal goods and people
  - shift in relative prices due to economic shock
- The rise of epidemic in EEC
  - Since mid-nineties
- Comparison with other epidemic centres
  - Over one percent of population infected in several EEC
  - The HIV prevalence rates in Ukraine and Russia are among the highest across non-African countries

I. Magnitude and Dynamics

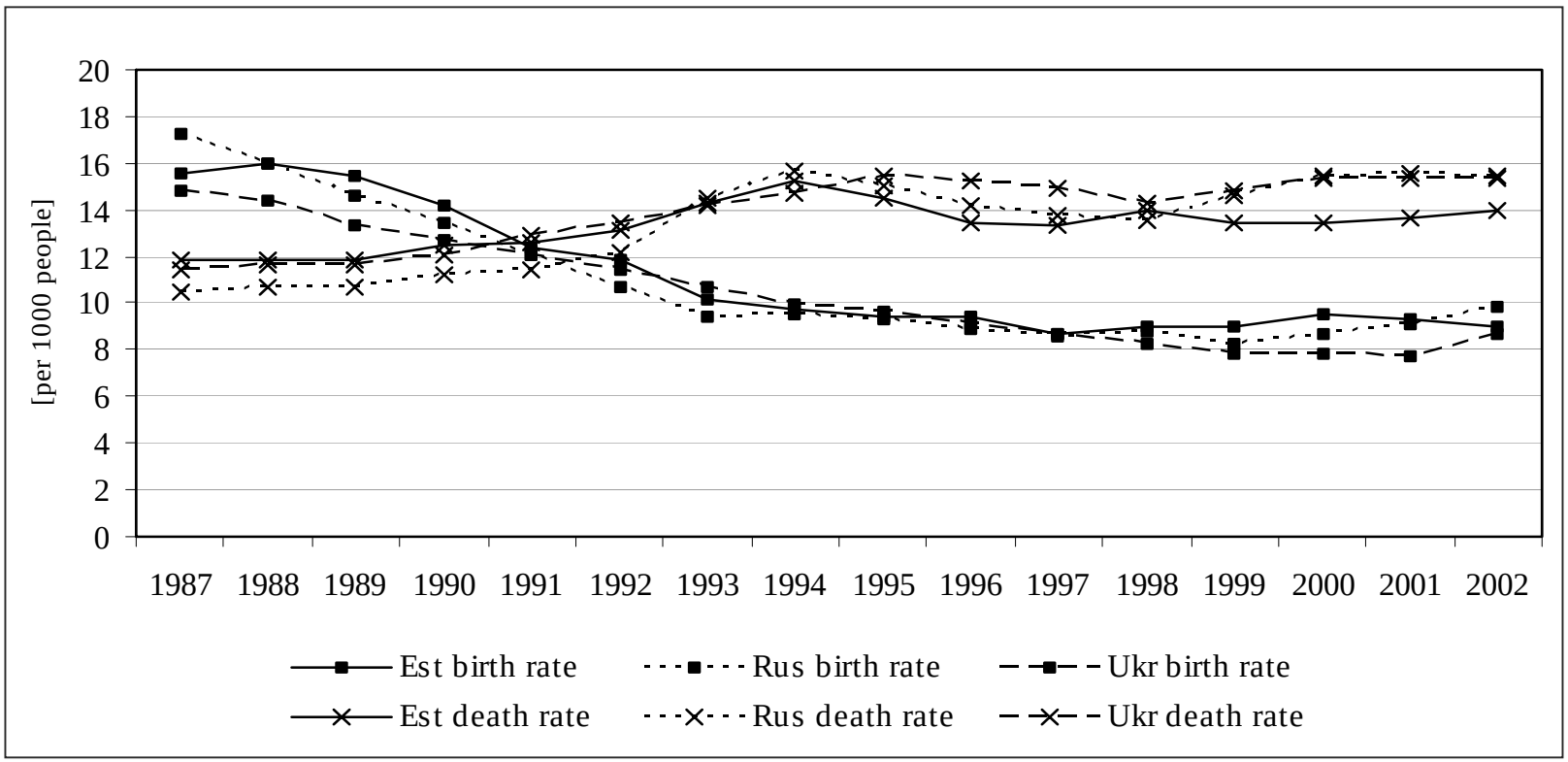
Figure 1: The evolution of HIV prevalence rates across last decades

I. Magnitude and Dynamics

- Adverse magnifying effect of aging society
  - The primary victims of HIV are young adults, being prevented from building-up the human capital.
  - Negative population growth may have serious long-term implications, impeding investment and economic growth by reverting intergenerational resource flows toward consumption and strains social systems.

I. Magnitude and Dynamics

Figure 2: Birth Rate – Death Rate Cross

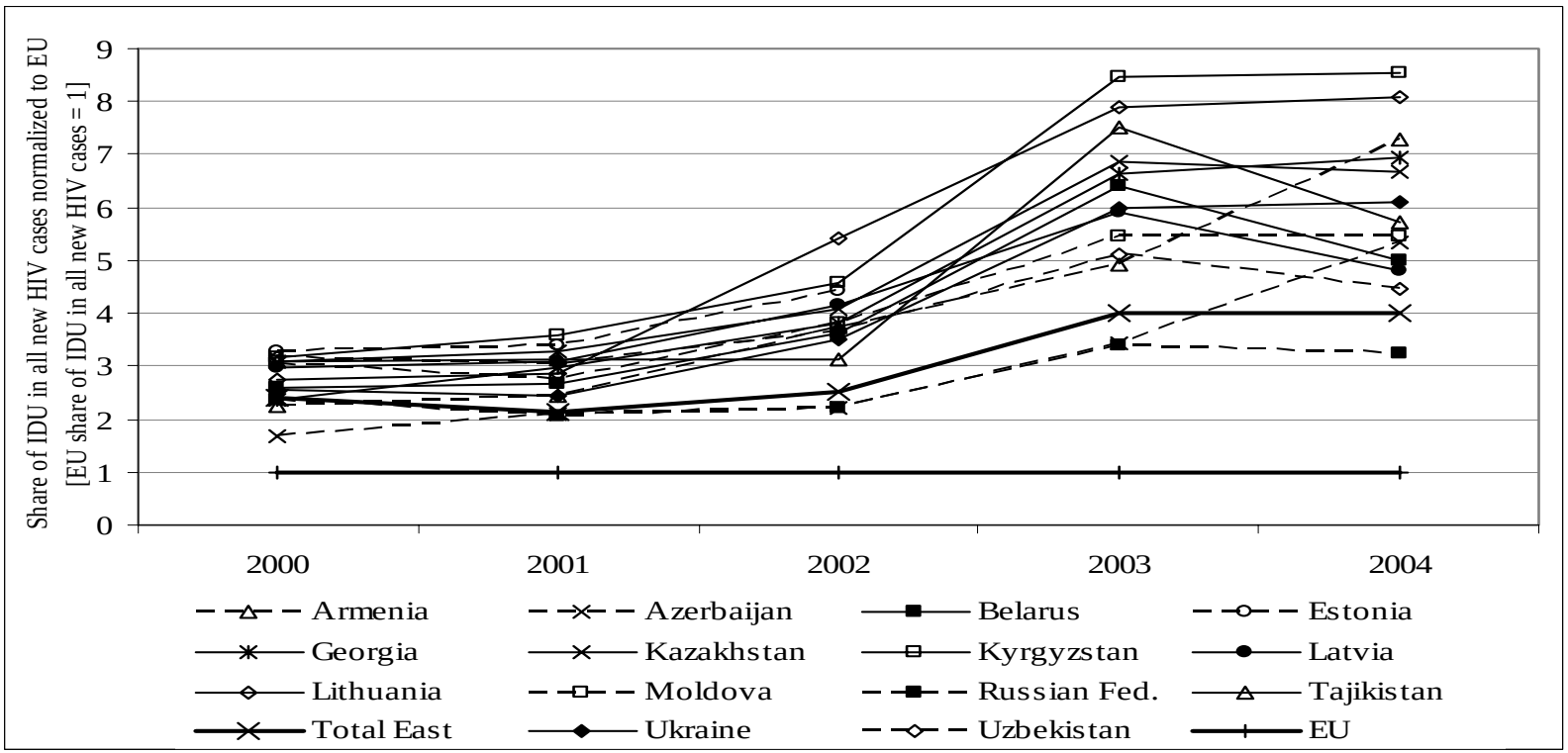


I. Means of Transmission

- Epidemics exhibited a different pattern than in most other epidemic centres in the world.
  - The first outbreak occurred among intravenous drug users (IDU).
- Predominant factors are:
  - Syringe and needle sharing among IDU;
  - Spill-over into general population through sexual intercourse and catalysed by migration and people trafficking.
- The spread has been abetted by the cheapness of heroin in the region of major trafficking net-works and social dislocations.
- Behavioural factors have risen from unstable environment and overall low welfare state of people.

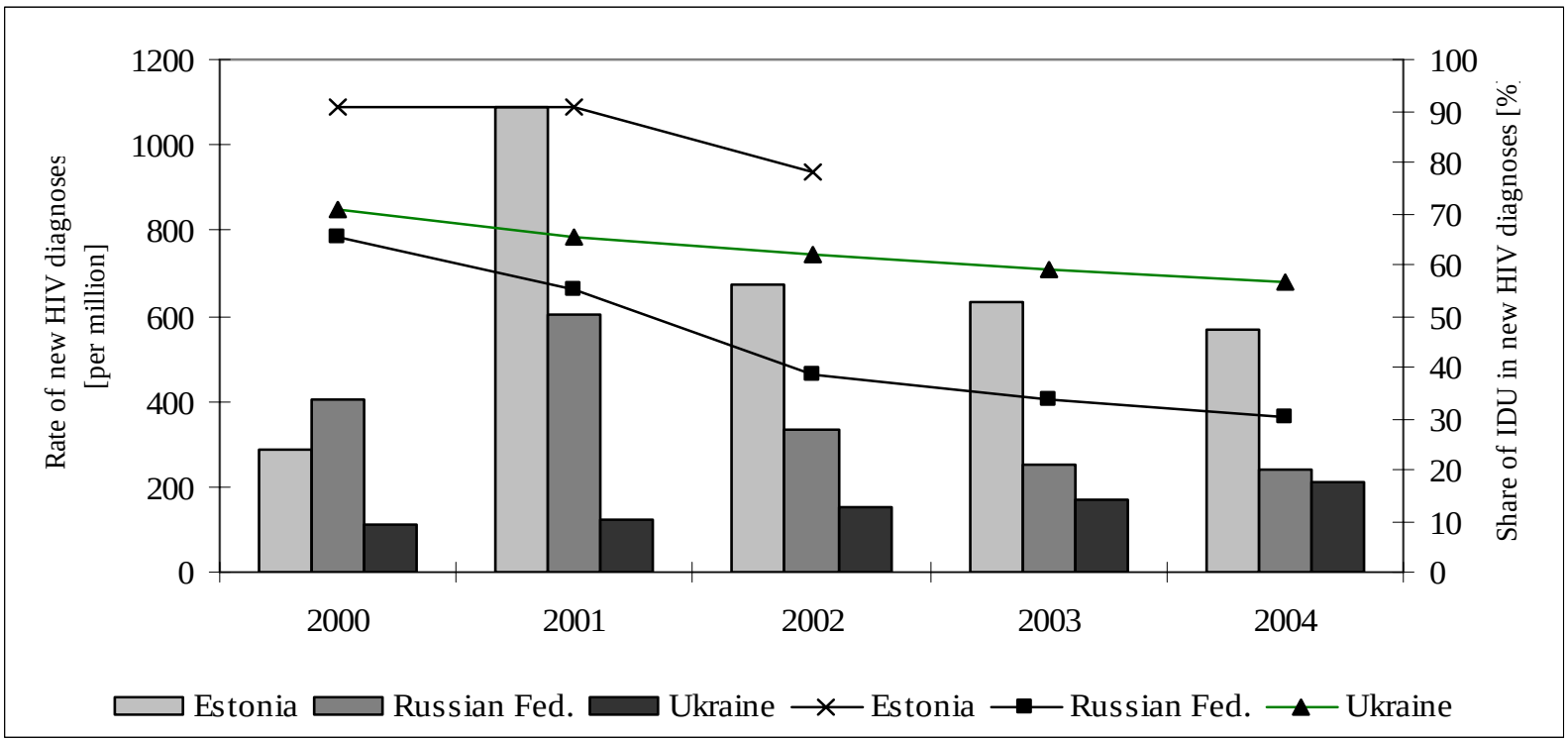
I. Means of Transmission

Figure 3: Share of HIV newly diagnosed cases associated with IDU



I. Means of Transmission

Figure 4: Rate of HIV newly diagnosed cases and percentage of intravenous drug users among them



II. The Model: Idea

- Idea:
  - To address the problem of needle sharing among IDU as a predominant transmission mechanism of HIV/AIDS spread.
  - Combining the implications of existing model of risky sexual behavior (Philipson and Posner, 1993) with the model of rational addiction (Becker and Murphy,1988; Orphanides and Zervos,1995).
  - In addition, to consider the model of excess demand for health services that explains the prevailing state of health services in EEC, characterized by the presence of significant informal payments for officially “free” or almost-free health services.
- Motivation:
  - Can the problem be solved through the state run health system or is it better to establish outreach centres? Informal payments play a role.
  - Opportunity costs incentives for needle sharing among risk-going IDU.
  - Since needle-sharing is a major transmission path for HIV/AIDS, the risk of drug addiction and HIV infection are interdependent.

II. The Model: Assumptions

- Underlying assumptions
  - lagged human capital improvement, namely in education of new physicians
  - distortions in wages of professionals in the private sector and public sector, namely health sector
  - insubstantial control in state-run health services
  - weak incentives for engagement of medical staff into the private sector

- Equilibria that are likely to exist:
  - an equilibrium, in which doctors operate at capacity supplying services at regulated prices, and
  - an equilibrium, in which doctors divert a significant part of their time to the services of “black-market patients”, driving out of the market patients who are unable or unwilling to make informal payments.

II. The Model

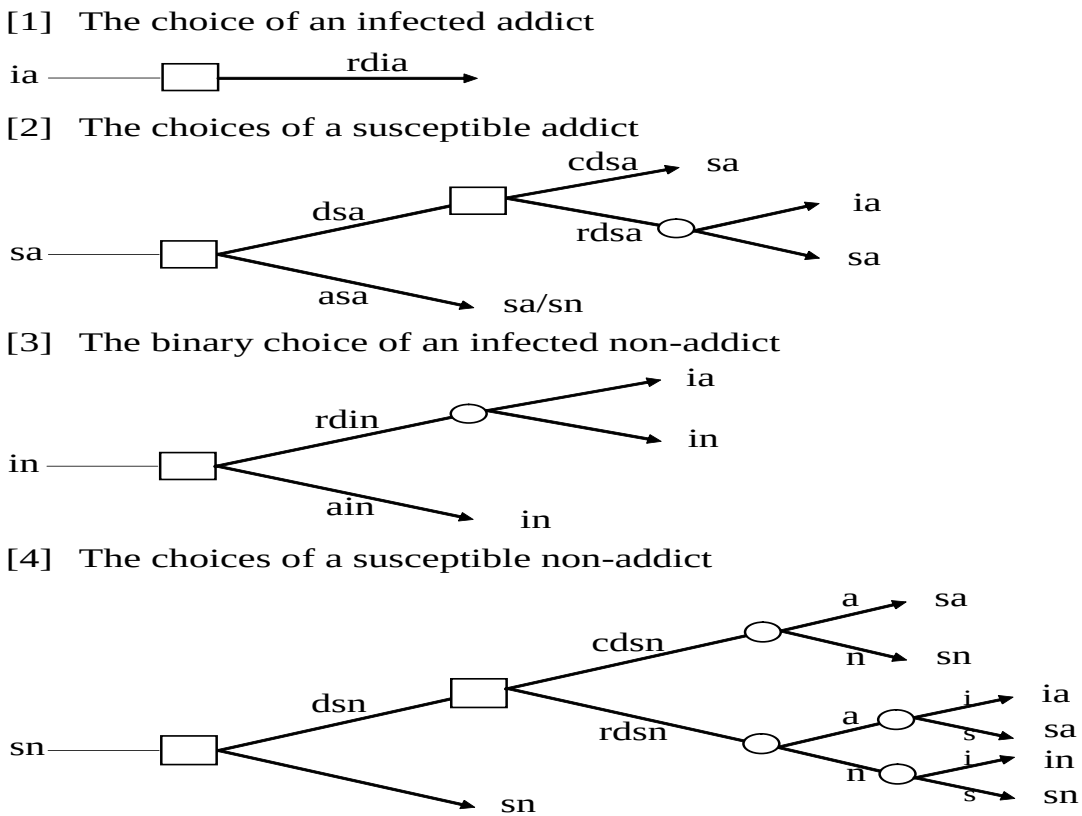
- A consumer of drugs faces 3 choices:
  1. abstinence,
  2. relatively “safe” drug-taking without needle sharing, and
  3. intravenous drug-taking with needle-sharing.
- Intuition
  - People who experiment with drugs are more likely to get both addicted and infected than people who abstain.
  - People who are already infected with HIV may have a greater propensity to experiment with drugs because they tend to discount the future more heavily than non-infected people do.
- Focus
  - We focus on behavioural incentives of people still at risk – consumers who are neither addicted nor infected.

II. The Model: HIV Implications

- HIV infection risk is endogenous to the form of drug injection and to the prevalence of sero-positive drug consumers in the population.
- How is then the incentive to experiment with drugs of a non-infected and non-addicted individual affected by the presence of HIV infection risk?
- Does the prospect of infection lead to a greater propensity to experiment "*safely*", i.e. without sharing needles with other drug consumers?
- Does the HIV prospect deter people from experimenting with drugs altogether?

II. The Model: Interdependence

Figure 5: The interdependence of drug addiction and HIV infection: Individual choice and consequence



II. The Model

- Demand for drugs
  - different demand curves represent different groups of individuals, e.g.
    - addicts vs. non-addicts
    - HIV-infected vs. non-infected

- Expected utility of drug consumption, *EU*, is described by:

$$EU = a_j + B_d - C \quad \text{where}$$

aj : idiosyncratic propensity to experiment with drugs

Bd : general benefits from drugs (immediate satisfaction)

C : general costs of drug consumption

II. The Model: (a) no needle sharing

$$EU\left(cd\middle|sn\right) = B_d - q_{a|d}C_a - C_{cd}$$

$q_{a|d}$: the probability of becoming addicted

C_{cd} : the pecuniary and non-pecuniary costs of obtaining and injecting the drug

- There exist consumers whose expected utility from drug experimentation without needle sharing is *negative*.
- *C.P.*, the price of the drug will drop if supply is less than perfectly price-elastic and if the threat of HIV-infection deters needle-sharing drug consumers from taking the drug in any form.
- There is no direct effect of HIV prevalence on the expected net benefit for those experimenting with drugs safely.
- There exist an indirect effect may rise from the market conditions determining the cost of obtaining the drug.

II. The Model: (b) with needle sharing

$$EU\left(rd \middle| sn\right) = B_d - q_{a|d} C_a - C_{rd}$$

C_{cd} : the pecuniary and non-pecuniary costs of obtaining and injecting the drug

- There exist consumers whose expected utility from risky experimentation with shared needles is *positive*.
- Reasoning: in the absence of an HIV infection risk, needle sharing lowers the cost of obtaining and injecting the drug, so that $C_{cd} > C_{rd}$

II. The Model: (c) HIV infection risk

$$EU\left(rd \middle| sn, i\right) = B_d - q_{a|d}C_a - q_{i|rd}C_i - C_{rd}$$

$q_{i|rd}C_i$: the cost of infection conditional on the probability that needle sharing leads to infection

- Unless the consumers' demand is perfectly price inelastic, the introduction of the HIV risk will reduce the demand for needle-sharing drug consumption.
- Overall demand is reduced as well because not all needle-sharing consumers will switch to safe drug taking, some will cease to experiment with drugs completely.

II. The Model: Implications

The net benefit from switching to safe drug taking is $(q_{i|rd}C_i - C_{cd} + C_{rd}) > 0$

- as long as the additional cost of obtaining and injecting drugs safely, $C_{cd} - C_{rd}$, lies below the cost of the infection risk for needle-sharing consumers.

This occurs, if the expected cost of infection in case of needle sharing is high relative to the consumer's idiosyncratic propensity to experiment with drugs.

II. The Model: Implications

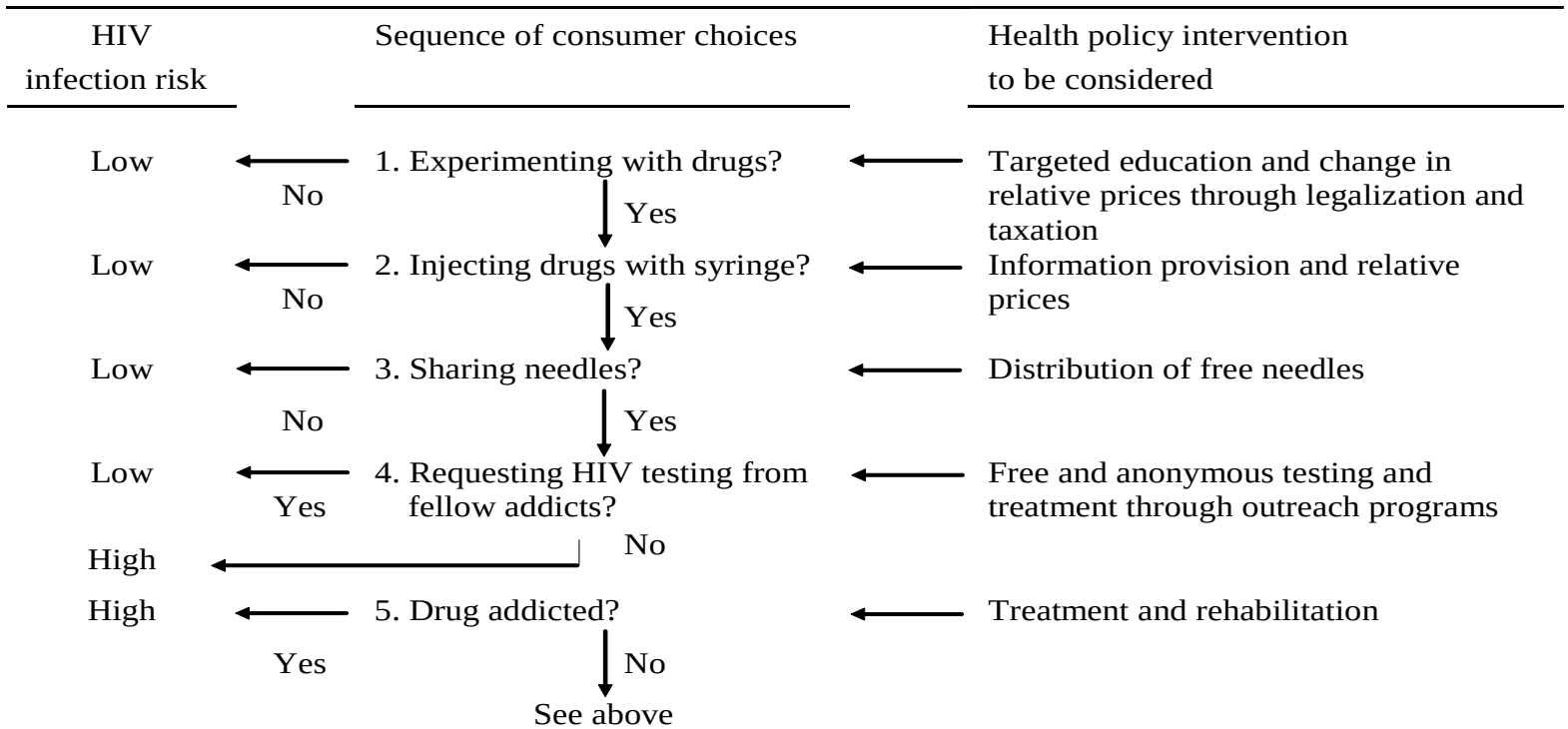
- The previous finding is important even if the sole objective of health policy were to prevent HIV infections.
  - The greater propensity of the infected to experiment with drugs puts them at greater risk of becoming addicted.
- A *positive feedback mechanism* at the population level:
  - The more drug users are already infected, the riskier is the sharing of needles.
  - The more people become infected, the greater will be the number of new addicts.
  - There is *self-reinforcing* spread of AIDS among IDU.
    - At least for so long as the positive feedback dominates the HIV-prevalence elasticity of the demand for risky drug experimentation by non-infected non-addicts.
    - When this elasticity is large enough, non-infected non-addicts will stop experimenting with risky drug-taking.
    - There may then be *divergent dynamics* for addicts and non-addicts because the HIV prevalence elasticity of the demand for needle-sharing by non-infected addicts is bound to be smaller than for non-addicts.

II. The Model: Implications

- The HIV prevalence elasticity describes the speed with which they switch to safe forms of drug-taking, or quit, when the HIV infection risk of needle sharing increases by a given amount.
- A greater infection risk raises the perceived relative price of this form of drug consumption so that some switching is likely to occur.
- However, the addict will choose a lower level of costly protection than he would (c.p.) without his addiction.
- Safe drug taking is costly because the costs of obtaining and injecting the drug are higher than for needle-sharing consumers.
- There exist limited incentives to abandon needle sharing, once infected.
- The net benefit from needle sharing is the difference between the drug's gross benefits and the cost of obtaining and injecting it, there are no costs of becoming addicted or of becoming infected to consider.
- The presence of infected addicts thus guarantees a persistent source of HIV infections in the population.

II. The Model: Implications

Figure 6: The interdependence of drug addiction and infection risk of HIV: Overview



III. Policy Choices

- The model *suggests* the adoption of aggressive outreach programs targeted at behavioural pattern of IDU in EEC.

  International reports see the diffusion of IDU mainly within urban settings. If this pattern is indeed prevailing across EEC, it would be cost-effective to establish outreach centers.

  It is less likely to be so if the diffusion is mainly rural, because the new centers would be thinly spread, and would therefore not be able to reap economies of scale.

- It would be *wrong* to wait for the established health sector to fully swing into action in response to the HIV crisis. That would take too much time and would allow the epidemic to grow unnecessarily in the meantime.

III. Policy Choices

- Foreign aid should be targeted at such outreach programs, including testing and treatment facilities, through financial support and experts in the field.
- Absorption capacity and coordination ability need to be assured.
- Testing and treatment should be seen as complements because treatment provides an important incentive for testing.
- Incentives for needle sharing are decreased by free distribution of needles and syringes.
- Accompanied by additional targeted education campaigns about the dangers of drug taking and the transmission paths of HIV to reduce incentives for first-time drug takers.

III. Policy Choices

How are the policies suggested by the model to be implemented at the national level?

The following developments have already taken place or are widely considered apt:

- Enhanced multi-sectoral involvement of key partnerships and strengthening of links among the National AIDS Prevention Centre, Ministry of Health, HIV/AIDS Program and NGOs to improve the credibility issues.
- National policies have to be developed and implemented in cooperation with international organizations in order to achieve transparency of actions and exchange of knowledge at the global level.
- The endogenously maintained improvement can be achieved if the critical mass of population possesses the knowledge to prevent the spread.
- Targeted and non-stigmatized prevention policies are useful in limiting the spread, if applied early enough.
- Instead of repressive policies that would isolate the afflicted sub-groups of society and leave the spread of drugs undetected, governments have to provide transparent interventions targeted at groups with a risky behavior, ensuring that target groups will not aquire stigma.

III. Policy Choices

- *Foreign donors* should provide financial resources, expertise, and credibility.
- Private *charities* can play an important role in the education process as well.

  Their flexibility allows them to address individual sub-groups of population, transmitting clear and accurate information about dangers of needle sharing listed by health authorities.

  They can raise the interest of the corporate sector by pointing out the threat to their economic activity – disability of workforce, increased health care costs, death benefits, pension costs, and a drop in demand for firms' products.

- The affordability of pharmaceuticals could be enhanced improving the education of medical personnel about generic products. A greater availability of pharmaceuticals increases incentives for testing and treatment.
- Multi-sectoral and multinational cooperation have begun to yield positive results. National authorities have agreed to integrate strategies for prevention, treatment, care and support into national programs.
- Several governments have acknowledged specifically that they should support the creation of outreach centers outside the established state-run health care systems.

IV. Conclusion

- Behavioral factors play an important role in facilitating HIV/AIDS spread into the population.
- Policy interventions must be targeted at reducing the risk of becoming infected. The following elements are widely agreed:
  - Cooperation with external experts;
  - Applying appropriate instruments like improved surveillance for effective interventions against HIV/AIDS, mass communication efforts to improve awareness of HIV/AIDS, and prevention programs among the general population;
  - Providing incentives for multi-sectoral cooperation.
- Since the spread of HIV/AIDS is largely catalyzed by IDU, an effective policy intervention needs to consider the implications of this behavior.
- The epidemic is conditioned by specific structural and behavioural factors that are not solely a medical problem, but also a social and economic decision making issue.
- To overcome the lack of responsiveness and credibility of the established health care systems, the support from the highest government level, foreign donors, and private charities can play an important role, helping to reach even the most vulnerable and marginalized groups of society that find the established health systems inaccessible when informal payments serve as an effective rationing mechanism of consumer demand, as they still do in many Eastern European countries.