HEALTH CARE AND WALL STREET
TRANSFORMATIVE THERAPIES

Transformative therapies provide drastic improvements over other treatments

- Curative therapy for Hepatitis C Virus (HCV) - 90% of infected individuals appear to be cured after 6 to 8 weeks
  ~$84,000
- Gene therapy (Glybera) for a very rare lipoprotein lipase deficiency disease - Benefits can last for patient’s remaining lifetime
  ~$1,000,000

Mitigators non curative drugs that require chronic

- Lower prices, paid incrementally
- Chronic illness can lead to additional medical problems
- Disease can be transmitted to others
HEALTHCARE LOANS

Healthcare Loans (HCL) spread the cost of cures over many years

• Financial institutions already offer standardized loan contracts that offer large amounts of credit that can cover medical expenses
  • Typically, large loans require some form of collateral
  • Credit-card borrowing possible for smaller loans
  • Payday loans are common among less affluent borrowers
• 62% of all personal bankruptcies in 2007 were related to medical expenses
SOLUTIONS

Short-term: using **diversification** and **securitization** reduce the risk and increase the efficiency of the market.

Long-term: health insurance companies cover the cost with the legal definition of “preexisting conditions” changed to include “**financial conditions**”
HCL FUNDS

Special purpose entity (SPE) funds expensive drug purchases and is funded by a pool of investors with various securities.
Patients make annual loan payments and the investors receive cash payments based on the seniority of their notes.

Payment continues until the debt is repaid, the patient or payer defaults, the benefit of the drug ends.
Simulating HCL Funds

Simulate financing HCV therapy payments for 12,500 patients

- Insurance pays $44,000, $40,000 is financed by the HCL
- Default rates were calibrated to typical values for consumer loans by borrower-income levels
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- Used general population mortality rates as a proxy for HCV patient mortality
- Individual HCLs have 9-year terms with a 9.1% annual interest
SIMULATION RESULTS

Risk-reward profiles across all three scenarios were within acceptable range to attract investors

• The average and median simulated internal rate of return (IRR) was 12.5% and 12.7% respectively
• The standard deviation of the IRR was 3.1%
• A similar compound annual return of the Standard & Poor’s 500 index was 7.0% with a standard deviation of 15.5%
ALIGNING INCENTIVES USING HCLS

Risk can be reduced by offering bondholders principal guarantees

- Possible guarantors are philanthropists, patient advocacy groups, government agencies, and pharmaceutical companies
- Cost to guarantee would be 0.006% (pessimistic scenario)

Acts as a natural hedge for pension funds and insurance companies

Disincentivizes release of ineffective drugs through value-based reimbursement

Patients are incentivized to adhere to prescribed regimens and avoid behaviors that undermine the treatment

Creates more options in countries with nationalized healthcare
SENSITIVITY ANALYSIS

Simulation results depend critically on default rate, interest rate, economic environment, and lending practice assumptions.

$27K $40K $50K

$20K
ROLE OF HEALTH INSURANCE

Long-term: Insurance companies cover the high costs of transformative therapies

Why don’t insurance companies do this now?

New regulations are needed to require insurance companies to assume the remaining amortized debt of new policyholders
QUALIFICATIONS AND LIMITATIONS

Patients with income <\$35K were excluded under the assumption that many have Medicaid coverage.

Results are, at best, suggestive because HCLs do not exist in the market, so the default characteristics may be different.

Securitization can be abused if the proper protections are not present.
CONCLUSION

Financing HCLs whose repayment is linked to ongoing value with portfolio theory and securitization techniques are viable under current practical conditions.

HCLs can improve access to the best health care for the less affluent.

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