Insurance Theory and Challenges Facing the Development of Microinsurance Markets

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Academic Interest in Microinsurance

- There is solid evidence that those at the base of the economic pyramid invest heavily in risk management activities
  - Tucker (2007) estimates that poor urbanites in El Salvador invest 9.2% of income to reduce disaster risk
  - IDB/MIF (various) show a major increase in remittances following natural disasters (quicker and more focused than official disaster aid)
  - Microcredit and insurance increase likelihood of seeking medical assistance (Nanda, 1999; Yip and Berman, 2001)

Main Focus of Prior Research

- The majority of academic and practitioner articles examine the challenges faced by successful programs. Their focus is to:
  - Draw lessons from past experiences
  - Attempt to establish best practices and guidelines for new experiments in microinsurance
  - Explore the use of technology in reducing costs
  - Limited discussion of regulatory challenges

Focus of Present Article

- Draw on the lessons of well established insurance theory to inform the analysis of microinsurance markets and instruments
- Suggest critical extensions to established insurance theory relating directly to challenges faced at the base of the economic pyramid
- Provide guidance to practitioners, regulators and development partners in taking a more strategic approach to microinsurance

Findings & Recommendations

- We conclude that while the basic elements of insurance theory have much to offer in the design of microinsurance products, the unique nature of the risks that exist at the based on the economic pyramid require a careful consideration of the multiple risks in order to most effectively target this market segment.
- We provide the four primary recommendations for practitioners (and academics alike)

Primary Recommendations 1

Adjustments to Standard Insurance Theory

- Standard insurance theory provides a strong starting point for the analysis of microinsurance market.
- However, since many of the potential losses faced by individuals operating at the base of the economic pyramid are often catastrophic in nature, microinsurers needs to look the institutional environment, including informal and community based solutions already in place and incorporate these into policy design.
- Constructive involvement with community based risk management systems with a focus on covering risks that exceed the capacity of the community to support will lead toward optimal policies.

Primary Recommendations 2

Focus on Interaction among Multiple Risks

- Careful attention needs to be focused on the multiple sources of risk, including the riskiness of both government and community based safety nets will be critical to the design of effective programs.

Primary Recommendation 3
Deal with Underinvestment Problem

- There is a strong public interest in the development of microinsurance programs to counteract the tendency of microentrepreneurs to underinvest in high net present value activities in the presence of background risk. This is especially the case for those projects that require investment in more concentrated assets which are likely to be projects that also generate higher incomes, higher employment and higher levels of growth.

Primary Recommendation 4
Promote Solvency; Role of Reinsurance

- Policymakers, regulators, donors and development agencies must collaborate to ensure the solvency and effectiveness of microinsurers to avoid undermining the ability of individuals operating at the base of the pyramid to effectively transfer risks and not create additional sources of uncertainty. Coordination with international reinsurers can be critical to provide market-based signals regarding microinsurer solvency as well as providing capital to support the underlying risk transfer.

Specific Research Focus

- *Utility Theory* and the *Willingness to Pay* for insurance at the Base of the Economic Pyramid (BEP). The impact of demand for insurance as related to:
  - Uncertainty in the level potential losses
  - Management and insurance against multiple sources of risk (individual and systemic risks)
  - Uncertainty in both public and community safety nets
  - The risk of adverse selection and difficulties associated with risk classification at the BEP
  - Microinsurance and a unique underinvestment problem

Literature Review

- Brau and Woller (2004) – Suggest focus on peer reviewed papers as hinging greatest interest to academics.
- Taken as a whole the extant literature suggests that microinsurance, when structured properly, adds value to the poor
- Our contribution is to look that the theoretical analysis of how microinsurance can be structured properly

Literature Review II

- Supply – Disagreement regarding MFIs offering microinsurance directly
  - Brown (2001); Churchill (2007); Lanto (2007) – need for large numbers of clients, ability to calculate premium, prevent probability of ruin, control moral hazard, use commercial insurers to underwrite the poor, regulatory barriers needed as nascent field, deal with traditional risk of moral hazard adverse selection etc.
  - Torkestania & Ahadi (2008) – Microinsurance as part of social network, offer flat payment, operate as not for profit; member participation is critical to success.

Literature Review III

- Demand:
  - Jutting (2004); Msuya, *et al* (2007) – there is demand by poor and insurance increases usage of health case.
  - Churchill (2002) – Various risk management products are used in portfolio (savings, credit and insurance.
  - Cohen & Sebstad (2005) – demand led analysis shows microinsurance had highest value added to poor

Literature Review IV

- Variety of articles on demand in specific markets:
  - Platteau (1997) – Farmers enter agrarian mutual insurance programs even when they do not understand concept
  - Mishra (1994) – Credit linked crop insurance improves access to credit
  - Roth (2001) – Poor families prefer informal burial insurance due to higher cost
  - Doro and Jaquire (1999), Wisemann & Jutting (2001) McCord (2001, 2007), McCord & Osinde (2005), Blanchard and Moran (2007), McCord & Rivers (2007). All examine health insurance, in many ways the most difficult as success depends on the availability of underlying health provision

Assumptions Underlying Insurance Equilibrium

- Individual/family at base of the economic pyramid makes decisions consistent with the maximization of expected utility
- Utility curve is normal U(W) is increasing at a decreasing rate
  - U'(W) >0
  - U"(W) <0
  - U()0 = -∞
- Insurer will provide insurance at expected loss plus a loading to cover expenses and profit
  - The challenge in microinsurance is to bring down the expected cost and other loading costs

Figure 1: Expected Utility Analysis

Initial Wealth = W; Loss = L; Probability = p;
Certainty Equivalent = CE; Risk Premium = π ; Loading = λ

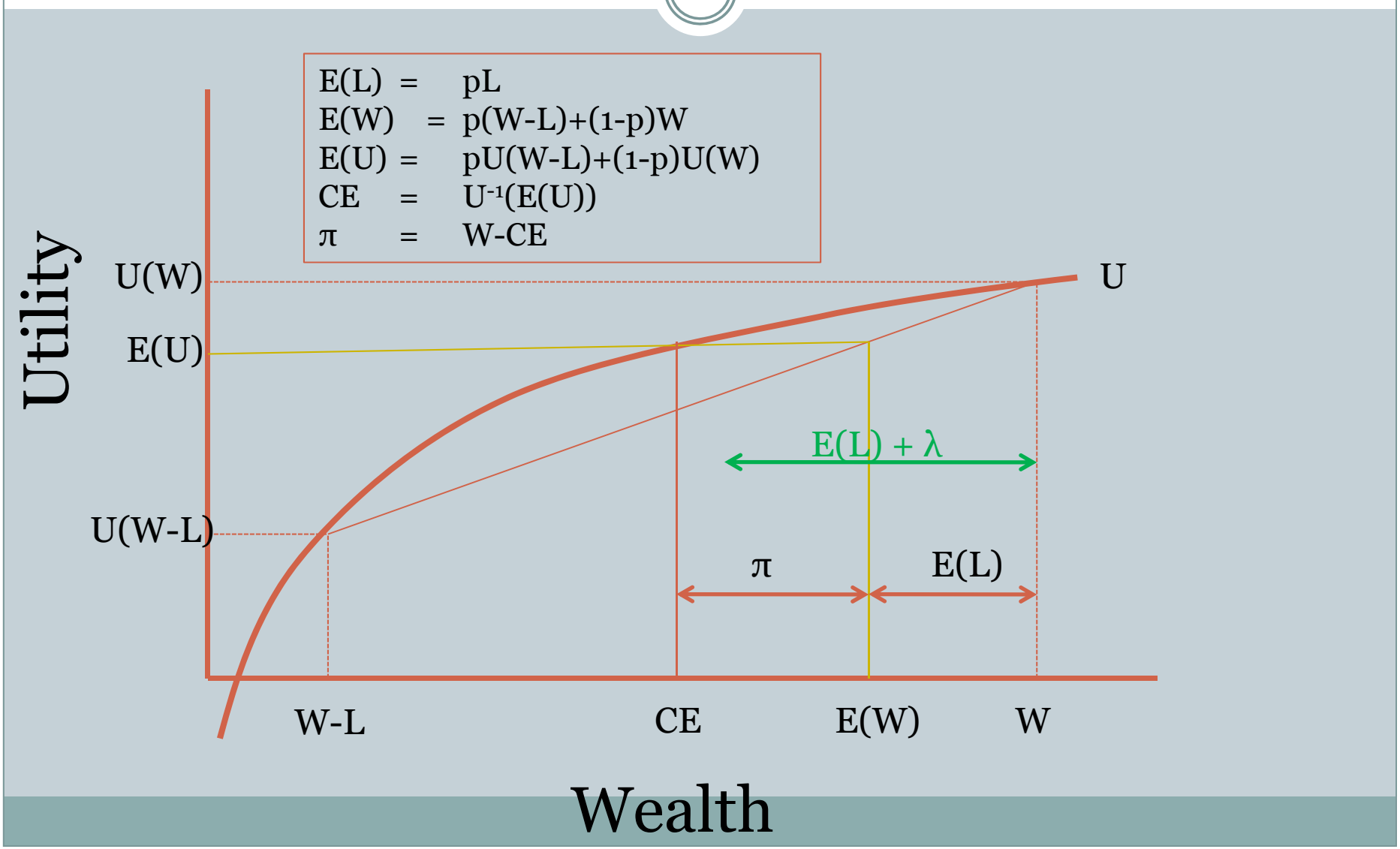


Figure 2: Exp. Utility with Risky Loss

Initial Wealth = W; Loss = ε(L-δ,L+δ); Probability = p;

Certainty Equivalent = $\tilde{}$; Risk Premium = $\tilde{\pi}$; Loading = λ

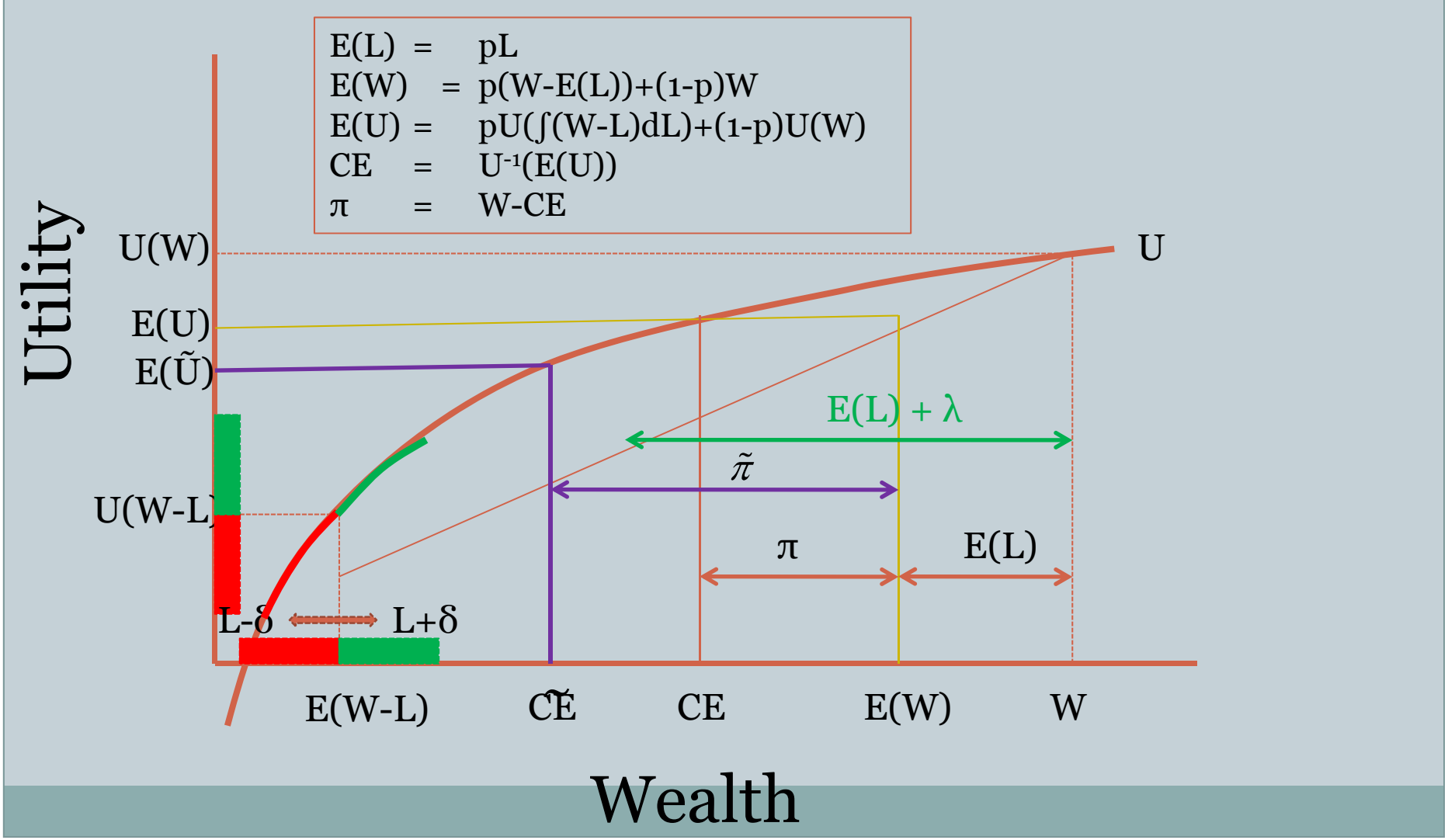


Figure 3: Expected Utility with Safety Net

Initial Wealth = W; Loss = L; Safety Net = SN, Probability = p;
Certainty Equivalent = CE; Risk Premium = π; SN > W-L; Loading = λ

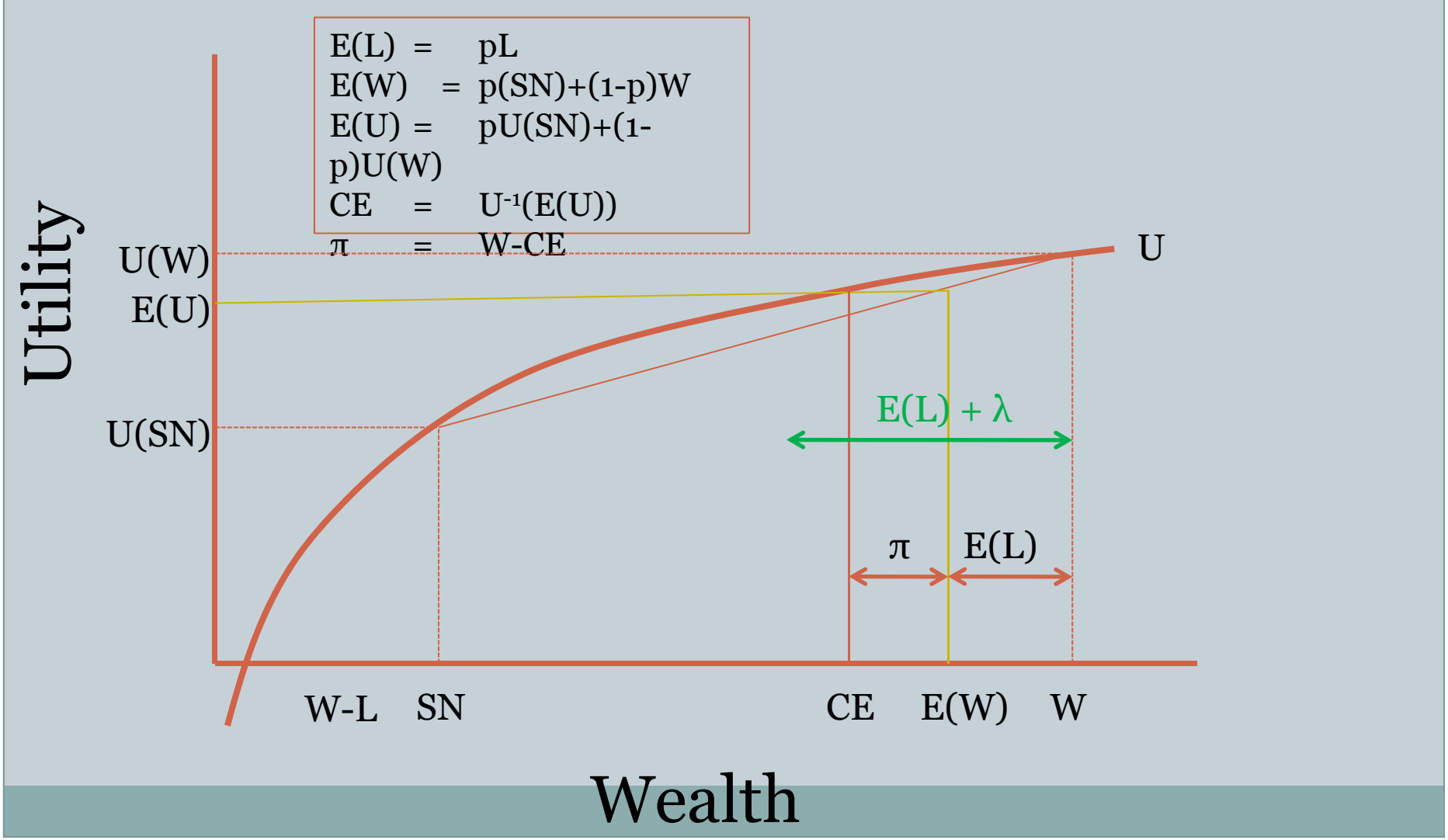


Figure 4: Exp. Utility with Risky Safety Net

Initial Wealth = W; Loss = L; Safety Net = SN, Probability = p;
Certainty Equivalent = CE; Risk Premium = π; SN > W-L; Loading = λ

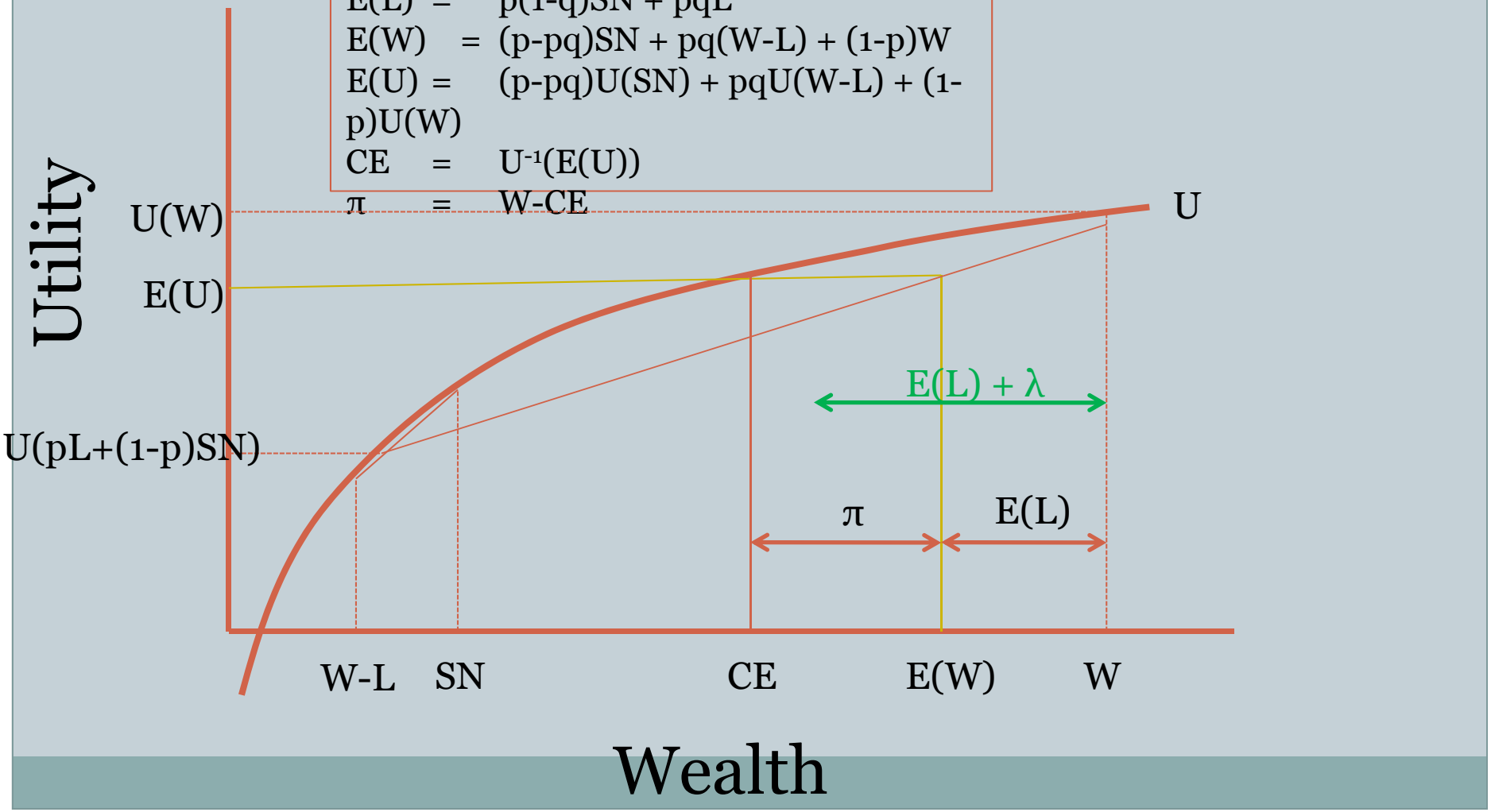


Figure 5: Insurance Equilibrium with Risk Classification

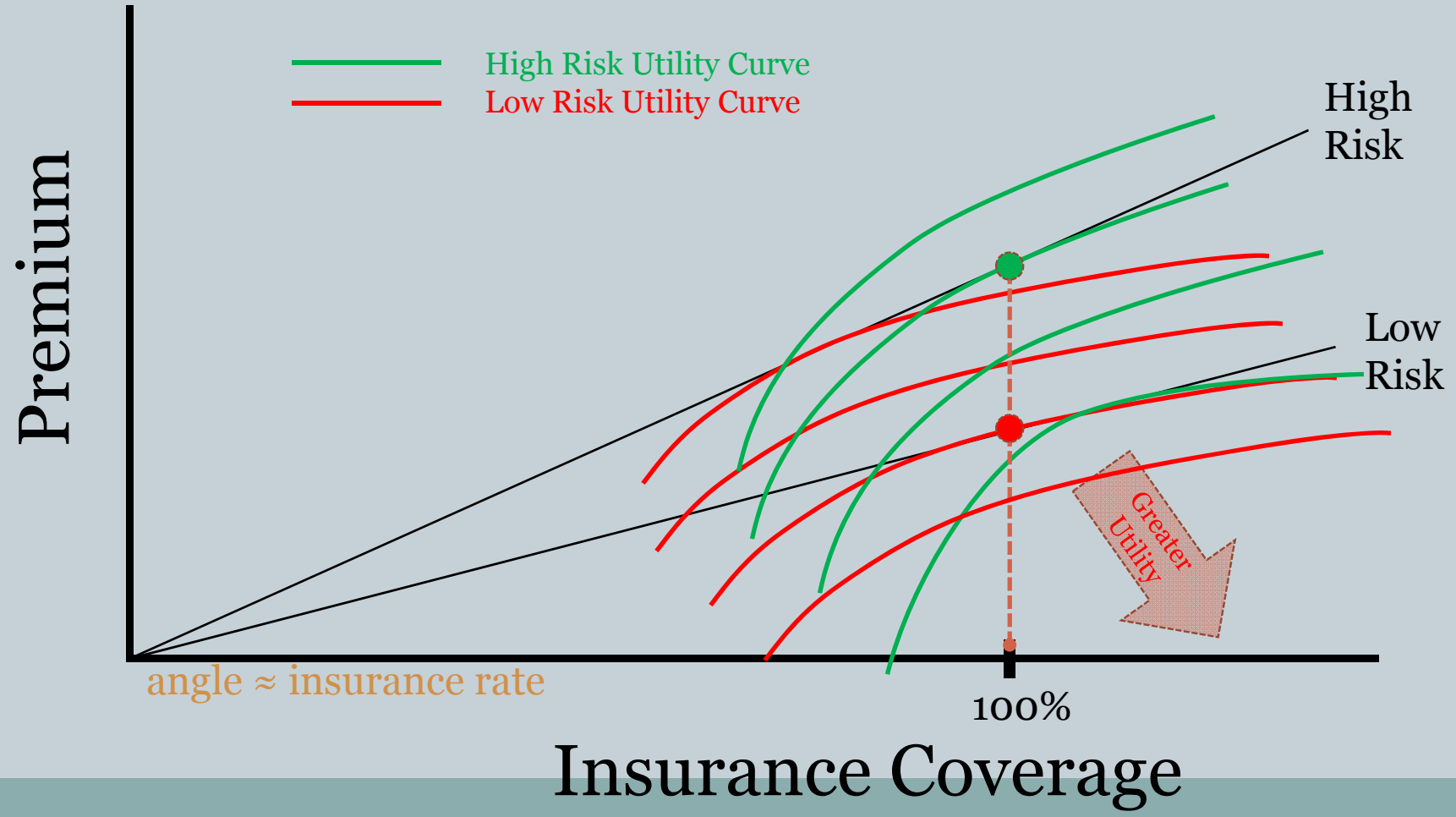


Figure 6: Insurance Equilibrium without Risk Classification

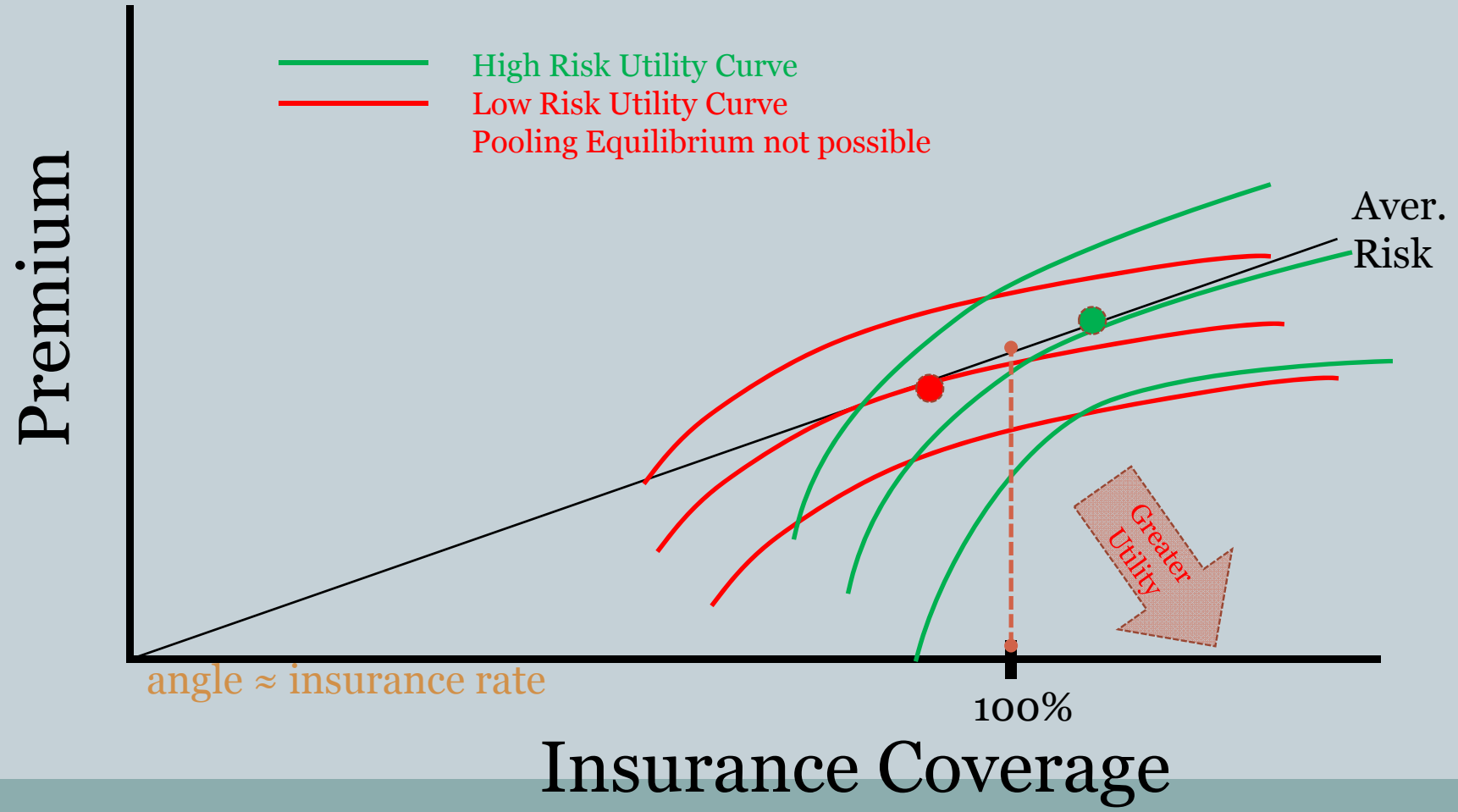
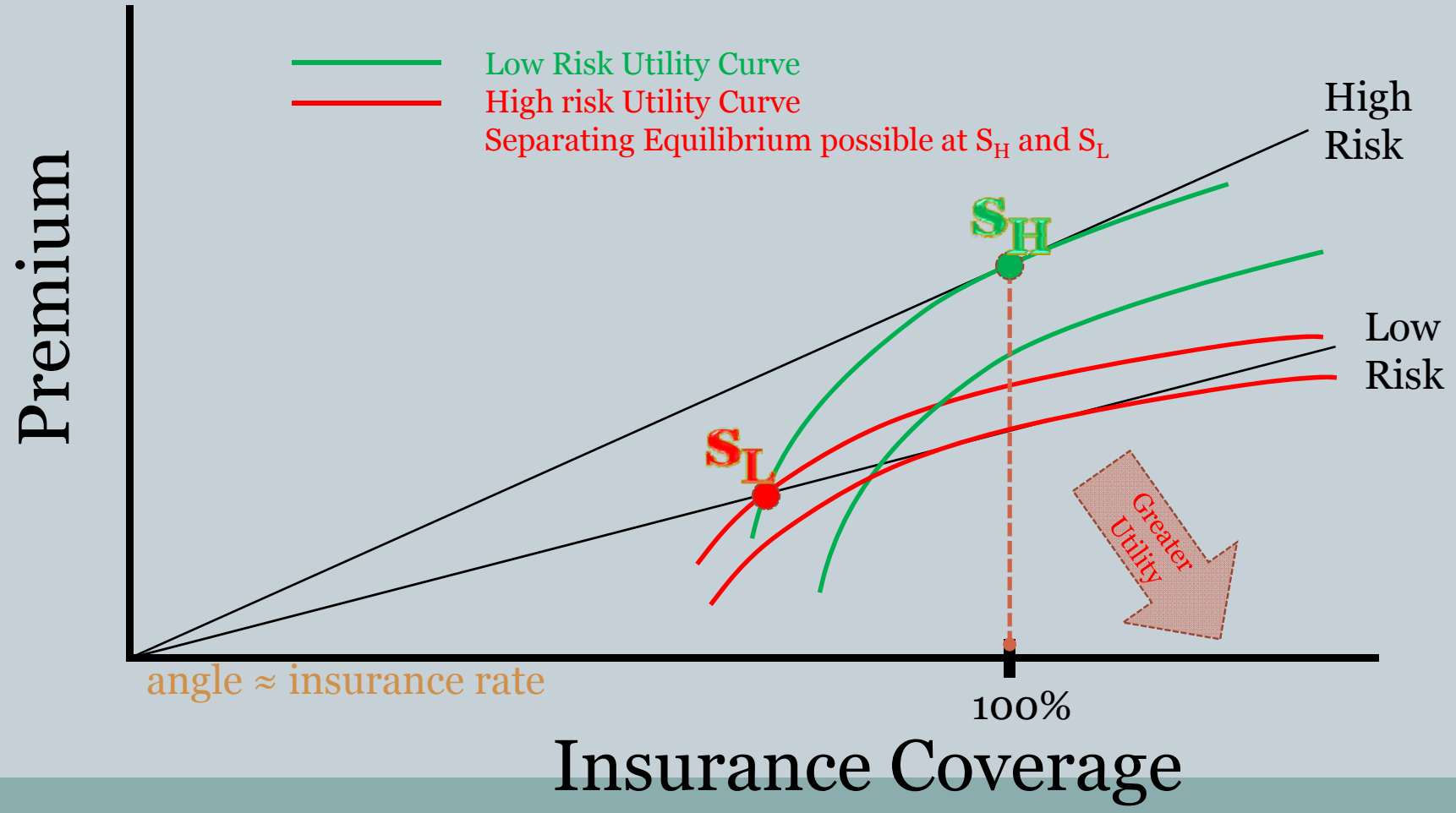


Figure 7: Insurance Equilibrium with Risk Classification



Microinsurance as a Solution to Underinvestment Problem

- Mayers and Smith (1987). Levered firms will not have the incentive to reinvest after loss as the benefit will go to bondholders.
- Corollary in microinsurance markets:
  - With scarce, expensive capital microentrepreneurs facing catastrophic risks will underinvest
  - Especially when investment requires reduction in diversification of assets and activities
  - This can prevent conversion for informal to higher value formal enterprise and impact overall economic growth.
  - The stochastic risks are barrier to credit market access.
- Microinsurance can ameliorate this underinvestment problem

Insurer Insolvency

- Microinsurance markets can be undermined by risk or delays in the repayment of losses
- This is a critical challenge for policymakers, regulators, donors and development institutions.
- There is a potentially important role for international reinsurers in sending market based price signals, assuring payments for covariate risk that cannot be handled within the local insurance industry.

Conclusion

- Traditional insurance theory has much to offer in understanding risk transfer decisions at the base of the economic pyramid.
- Notwithstanding, academics and practitioners need to pay particular attention to the risk environment and the institutional structures that exist for risk management outside of formal markets.
- Better alternatives can be developed by careful consideration and effective coordination with existing risk transfer programs.