

## **Stiglitz (AER, 2010), “Risk and Global Economic Architecture”**

Analogy between financial networks and electricity networks:

- integration of networks allows sharing of excess capacity (“risk-sharing”)
- unexpected surges can lead to blackouts (“contagion”) → circuit breakers are desirable

Benefits or risk-sharing depend crucially on assumption of concavity

## Simple Sample Model:

- two countries  $i \in \{1, 2\}$  subject to fundamental shock  $S_i$
- output is a function of the fundamental  $Y_i = \begin{cases} S_i & \text{if } S_i \geq 0 \\ -C & \text{if } S_i < 0 \end{cases}$   
( $-C$  indicates cost of system failure)
- agents value expected output
  
- assume  $S_i \in \{-\alpha_1, \alpha_2\}$  with probabilities  $\{p < 0.5, 1 - p\}$ ,  
with  $C < \alpha_1$ ,  $\alpha_2 < \alpha_1$  s.t.  $E[S_i] = 0$
- in autarky,  $E[Y_i]^{aut} = -pC + (1 - p)\alpha_2 = p(\alpha_1 - C)$
- under integration,  $\Pr(\Sigma S_i / 2 < 0) = 1 - (1 - p)^2$ ,  
 $E[Y_i]^{int} = (1 - p)^2 \alpha_2 - C [1 - (1 - p)^2] < E[Y_i]^{aut}$

## Implications of Sample Model:

- full integration unambiguously reduces welfare
- built-in circuit breaker may be desirable
- insight generalizes to  $N > 2$  countries
- more generally, it may be desirable to form small clubs rather than having full integration