

Development Economics

Slides 9

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Persistence and Development Traps

Too little convergence, unless we keep conditioning ...

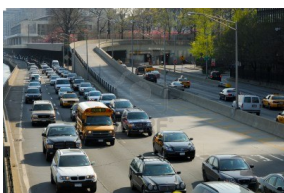
- ...savings rates, human capital
- political variables such as democracy
- cultural variables such as corruption or work ethic
- religious variables ...
- Insufficient emphasis on the **process:**
- endogenous variable → economics → endogenous variable

Divergence and Convergence

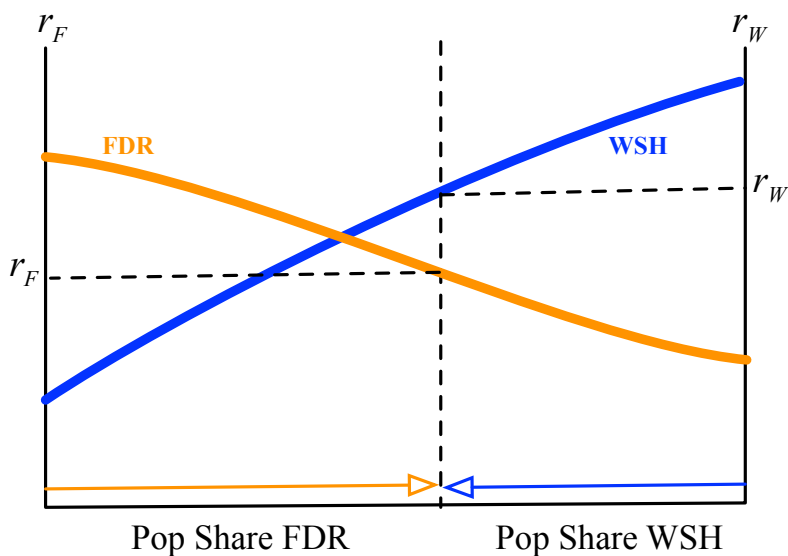
Divergence:

- Past history of actions influences future outcomes
- **As opposed to convergence**, where the influence of history vanishes
- Must be careful not to swing to either extreme
- e.g., Remember leapfrogging example in problem set
- Or recent signs of unconditional convergence

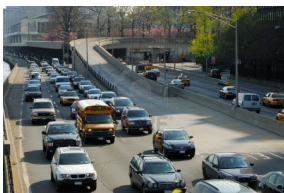
Congestion: An Example of Convergence



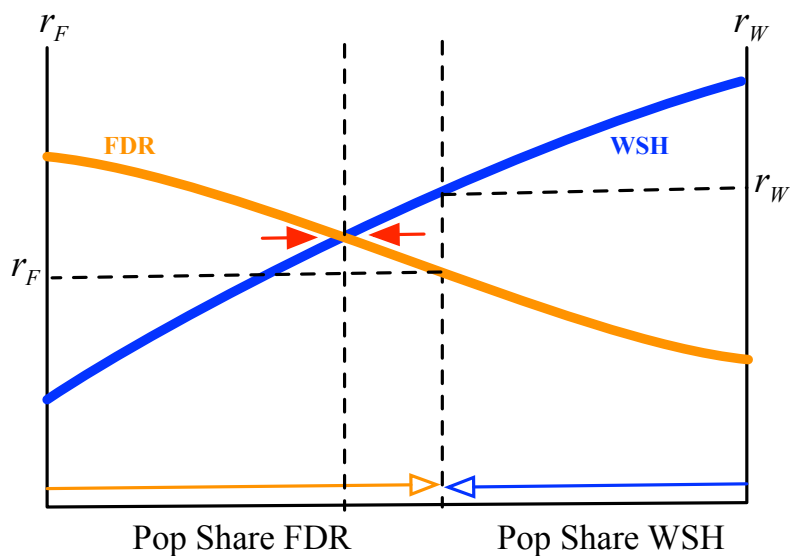
A Tale of Two Highways



Congestion: An Example of Convergence



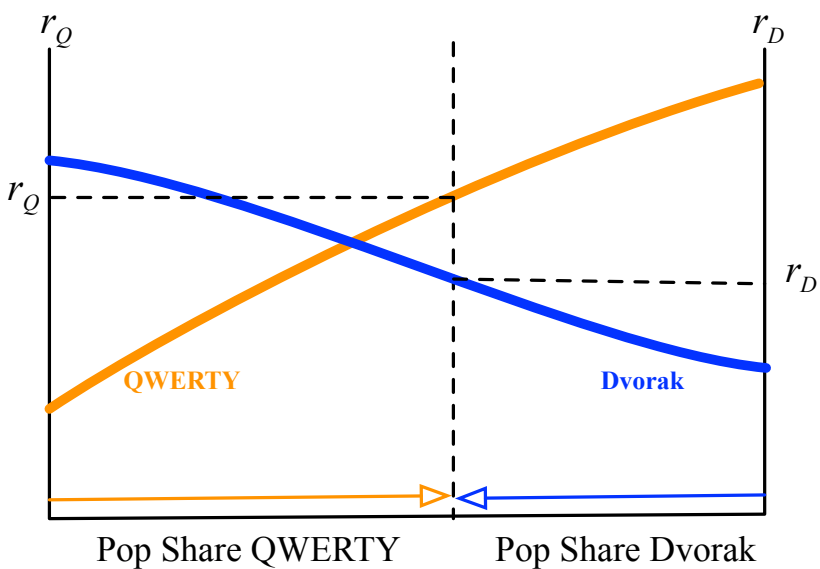
A Tale of Two Highways



QWERTY: An Example of Divergence



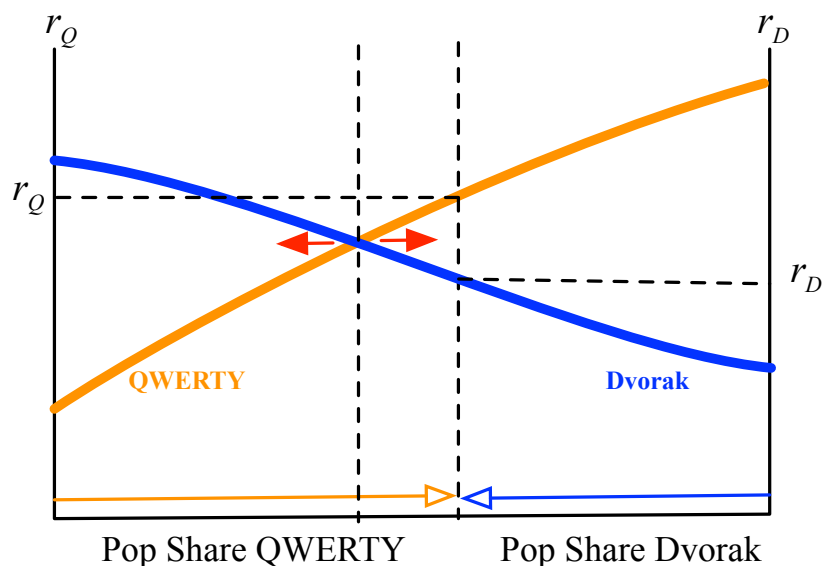
A Tale of Two Technologies



QWERTY: An Example of Divergence



A Tale of Two Technologies



Complementarities

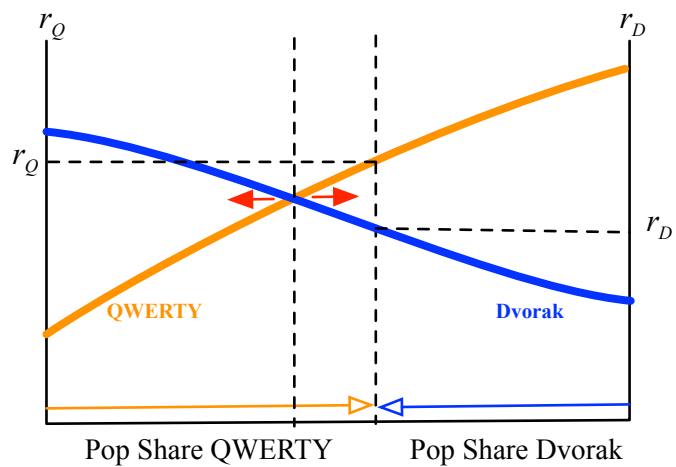
Basic Setup:

- Two actions: call them **Up** and **Down**.
- n = fraction of population **expected to choose Up**.
- $x(n)$ = fraction of population who **want to choose Up**, under the expectation that n will.

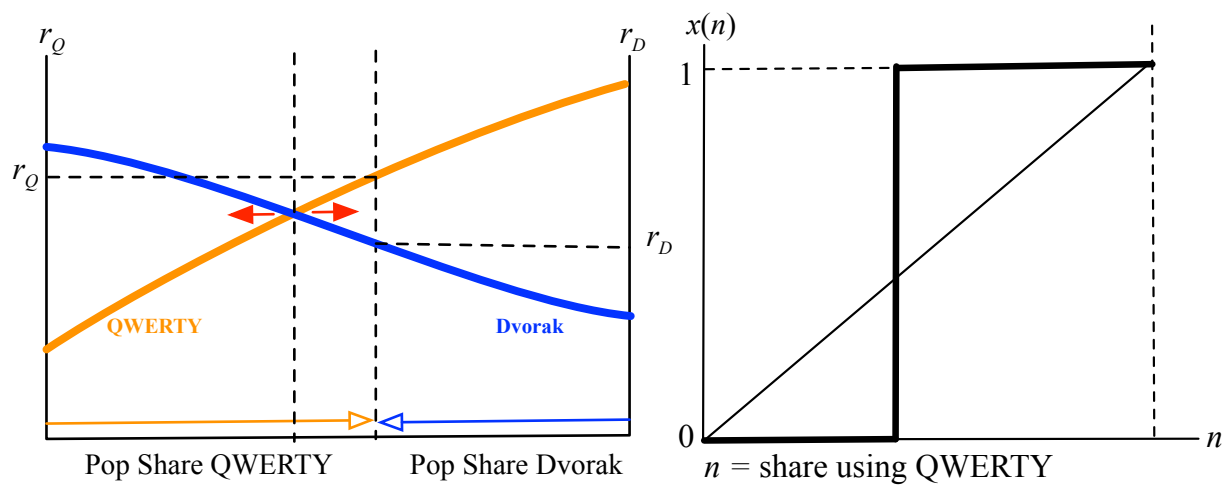
Complementarity: $x(n)$ is an increasing function.

- Can generalize this idea to intensity of actions, not just binary.

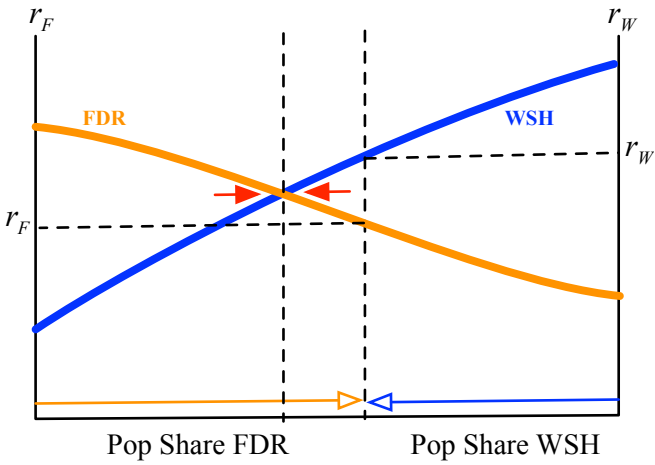
QWERTY Revisited



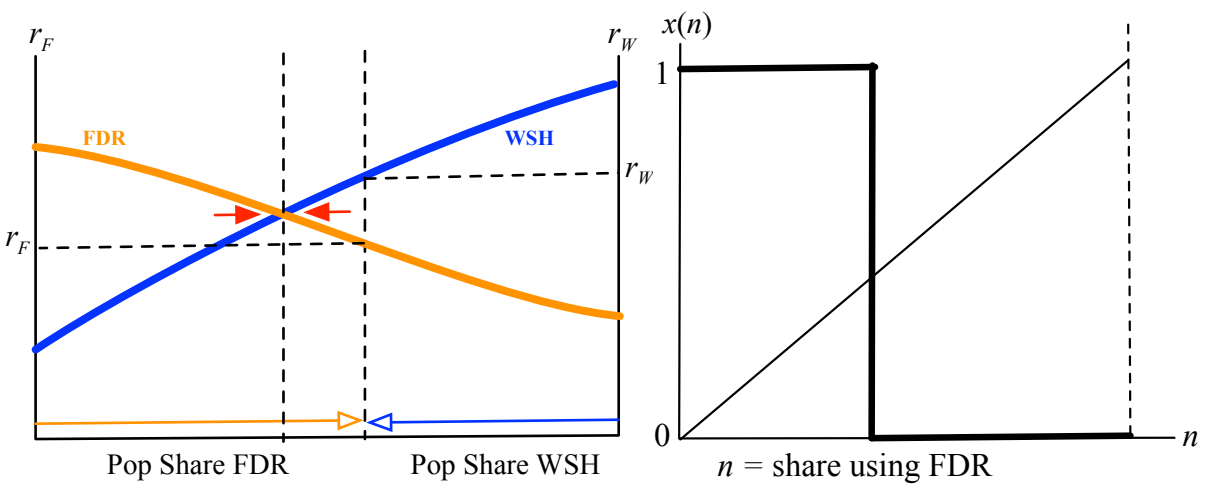
QWERTY Revisited



FDR Revisited



FDR Revisited



Examples

Technology. Macs vs PCs, iOS vs Android, dating platforms, social media ...

- Network externalities.

Infrastructure. Public sector covers fixed and variable cost:

- $p(n) = v + (F/n)$.

Finance. Thicker financial market $\Rightarrow$ higher diversification.

- $\Rightarrow$ Easier for individual to invest $\Rightarrow$ thicker market.

Social Capital. Migration destroys traditional social networks.

- Feeds back to increase migration.

Examples

Corruption.

- More corruption means an individual less likely to be caught.
- Or think about crime and looting during public riots.

Norms.

- Throwing garbage in public spaces
- Waiting one's turn, queueing, joining a revolution

Currency Crises.

- Sell because others are selling.

Statistical Discrimination.

- Discriminated groups don't "invest", discrimination continues.

History Versus Expectations

Recall our basic setup:

- Two actions: call them **Up** and **Down**.
- n = fraction of population **expected to choose** Up.
- $x(n)$ = fraction of population who **want to choose** Up, under the expectation that n will.
- Based on **expectations**.

History Versus Expectations

Recall our basic setup:

- Two actions: call them **Up** and **Down**.
- n = fraction of population ~~expected to choose~~ **who chose** Up.
- $x(n)$ = fraction of population who **want to choose** Up, under the expectation that n will **observation that n did so in the past**.
- Based on expectations **history**.

Examples:

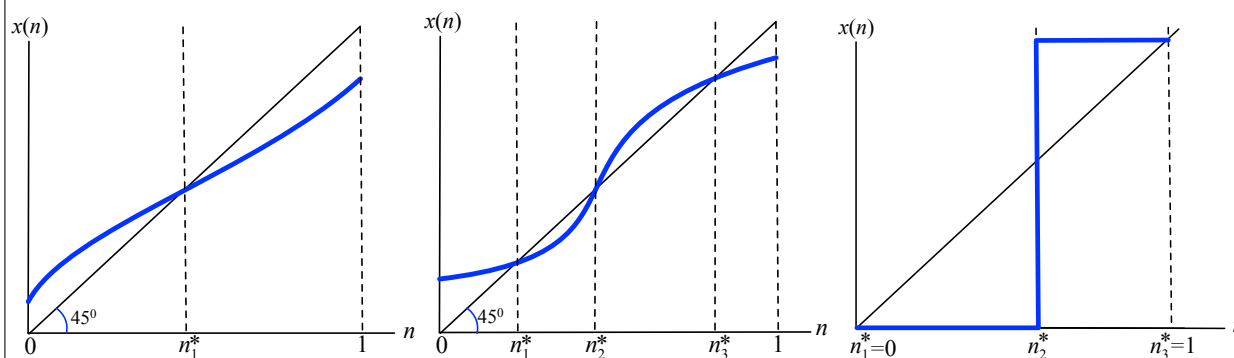
- **Expectations**: Currency crises, sudden looting, fashion....
- **History**: Social capital, network externalities, discrimination...

But generally a mix of history and expectations in all examples.

The Complementarity Map

- **Maps from** n — the fraction expected (or observed) to take an action —
- **To** $x(n)$ — the fraction then incentivized to take that action.
- Upward-sloping for complementarities:
 - As in all of our examples so far, except ...?

The Complementarity Map



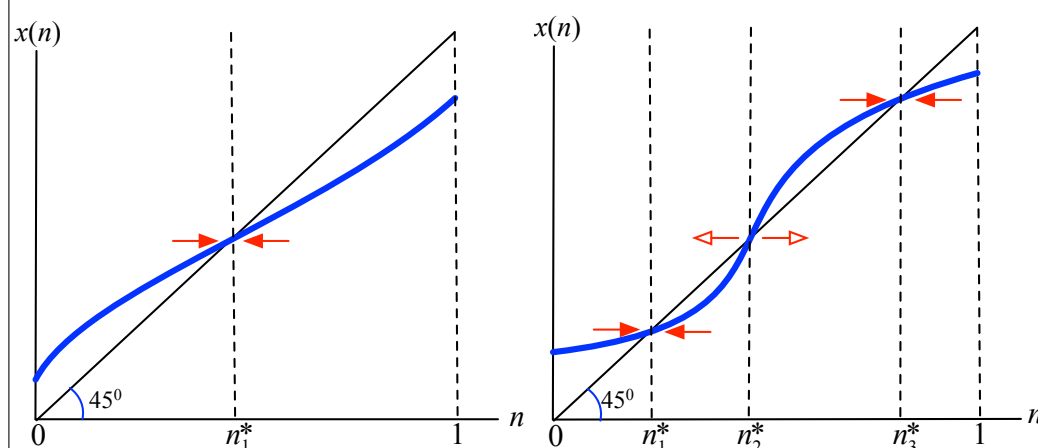
- **Equilibria** (expectations) or **steady states** (history):

Intersections of $x(n)$ with the 45° line.

- **Unique or multiple outcomes** possible:

How does this relate to convergence and divergence?

Stability and Instability



Stability: whether system moves away from steady state after perturbation:

- whether $x(n)$ crosses 45° from “above” (stable) or “below” (unstable).
- Notice how **temporary policies can have permanent effects**.

Another Example: Joining the Revolution

Tahrir Square

■ Benefits and costs:

- **Success:** B to each participant. **Failure:** L to each participant.
- Bystander gets 0 payoff no matter what happens.

■ Probability of success $p(n)$, where n is # joining revolution.

- $p(n)$ is increasing, with $p(0) = 0$ and $p(1) = 1$.

Another Example: Joining the Revolution

- If n people expected to join, how many **want** to join?

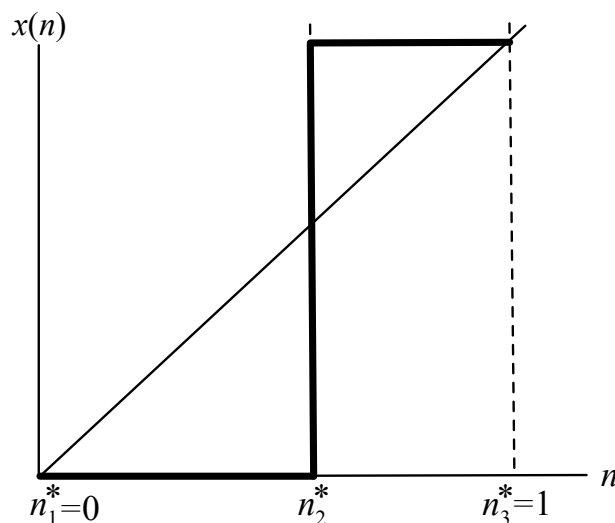
- **Join** if $p(n)B - [1 - p(n)]L > 0$, or

$$B > \frac{1 - p(n)}{p(n)} L.$$

- **Don't join** if the opposite inequality holds (indifferent if equality).
- **Generates a simple complementarity map.**

Another Example: Joining the Revolution

$$B > \frac{1 - p(n)}{p(n)} L.$$



- See book for more based on this model.