InterRegional Locations Equilibrium

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Extremely preliminary. *Do not quote!*

“(Inter)regional integration”?

- Multiple **locations** are **integrated** to form a unified **region** wherein people and their economic activities can *move*.
- In spite of “integration” these “locations” remain separate in that economic **externalities** remain local (i.e., do not overflow from one location to another).

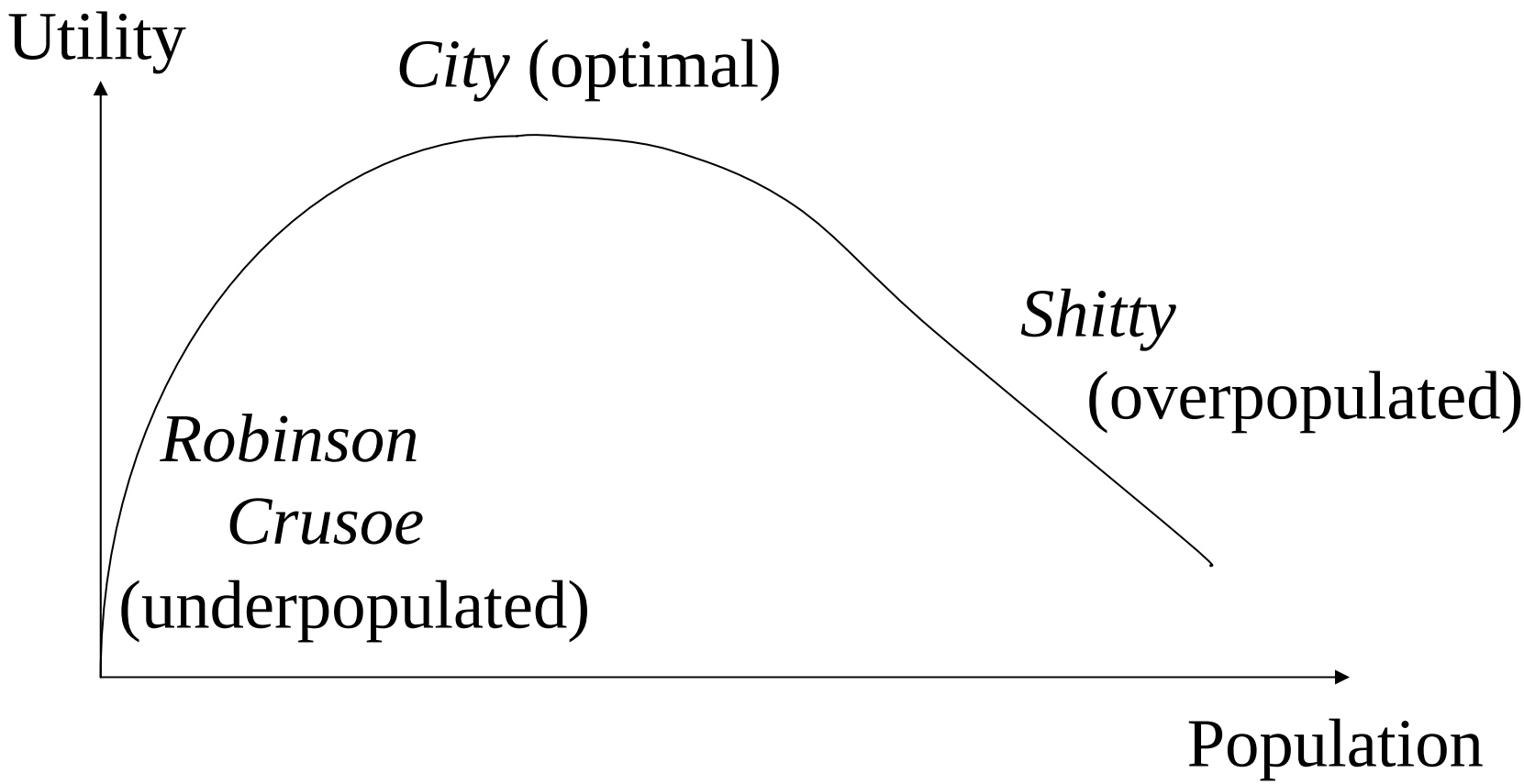
External (dis)economies

- Someone's economic decision or action may bring a side-effect that influences others' well-being.
- When such a decision-maker pays for the negative side-effect (**external diseconomy**) or is paid for the positive side-effect (**external economy**), the externality is said to be **internalised**.

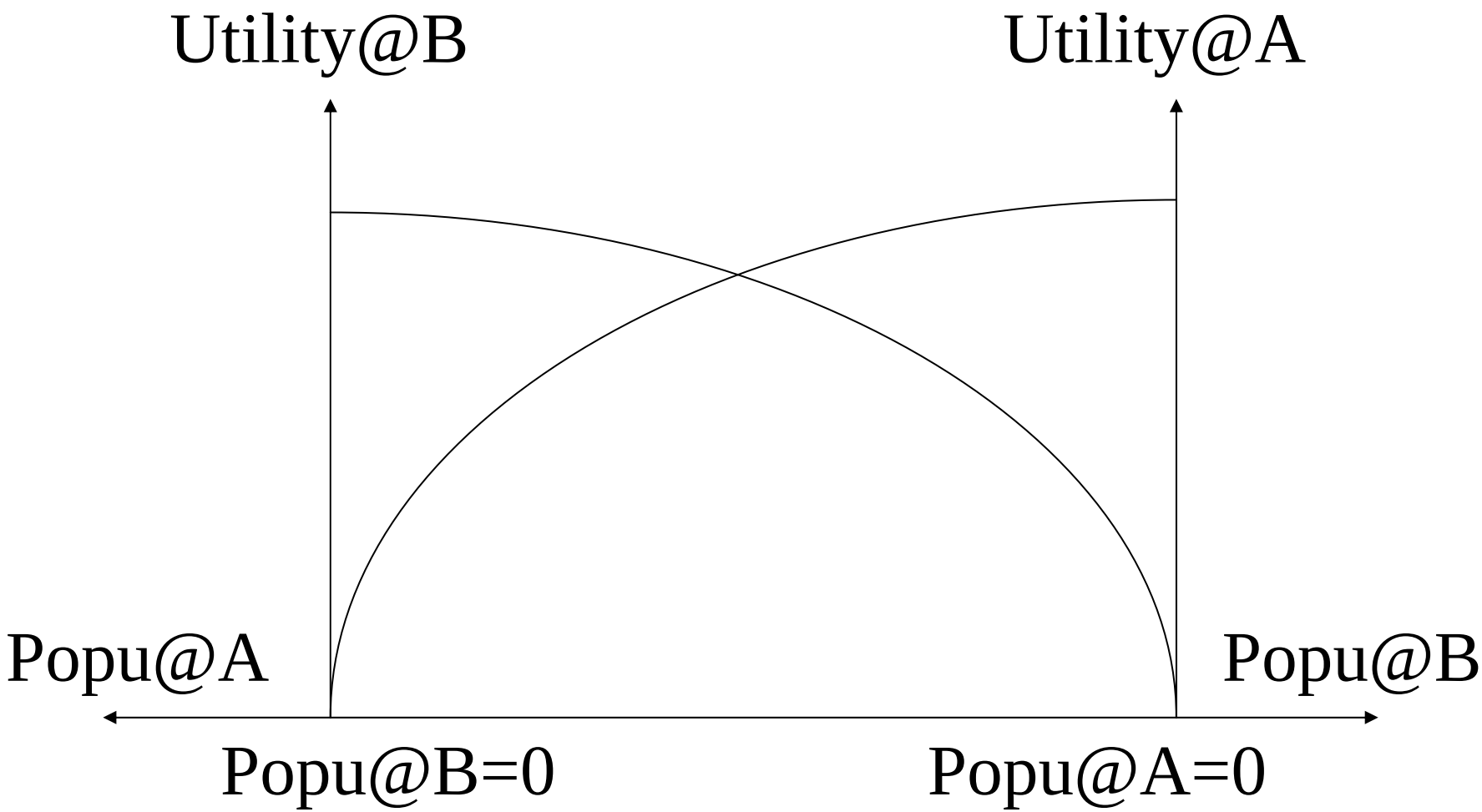
Local externalities

- Positive externalities: **city amenities**, **agglomeration**, **economies of scale** (with respect to the population of the location), **economies of scope** (diversity).
- Negative externalities: **congestion**, **pollution**, **diseconomies of scale**. Increasingly serious as the location grows populous.

Optimal local population



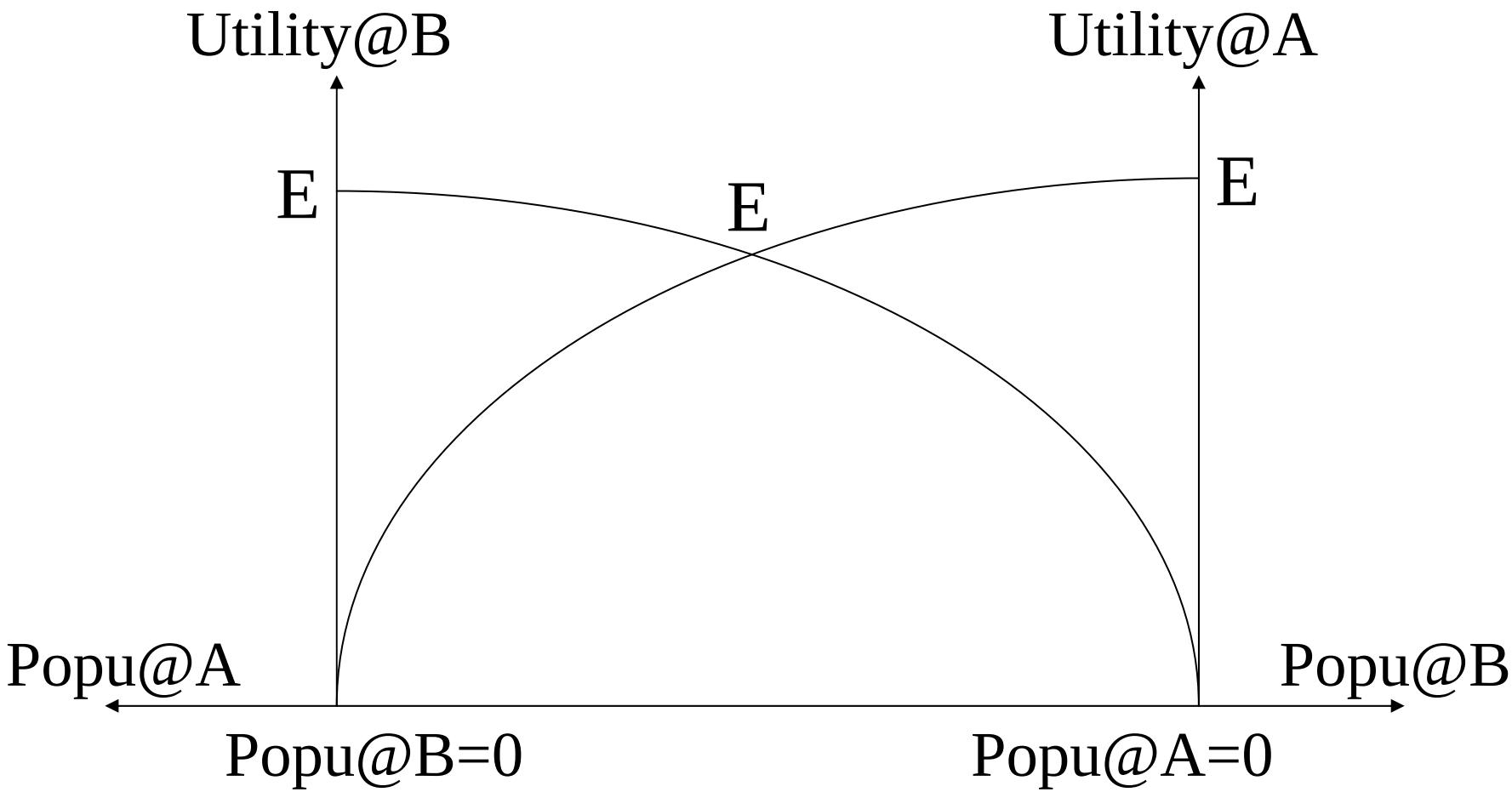
Bifocal model - underpopulation



Locations equilibrium

- Distribution of population across multiple locations such that no-one wants to migrate from one location to another.
- Utility of residents in all *inhabited* locations should equalise.
- **Interior equilibrium**: all locations inhabited.
- **Corner equilibrium**: some locations deserted.

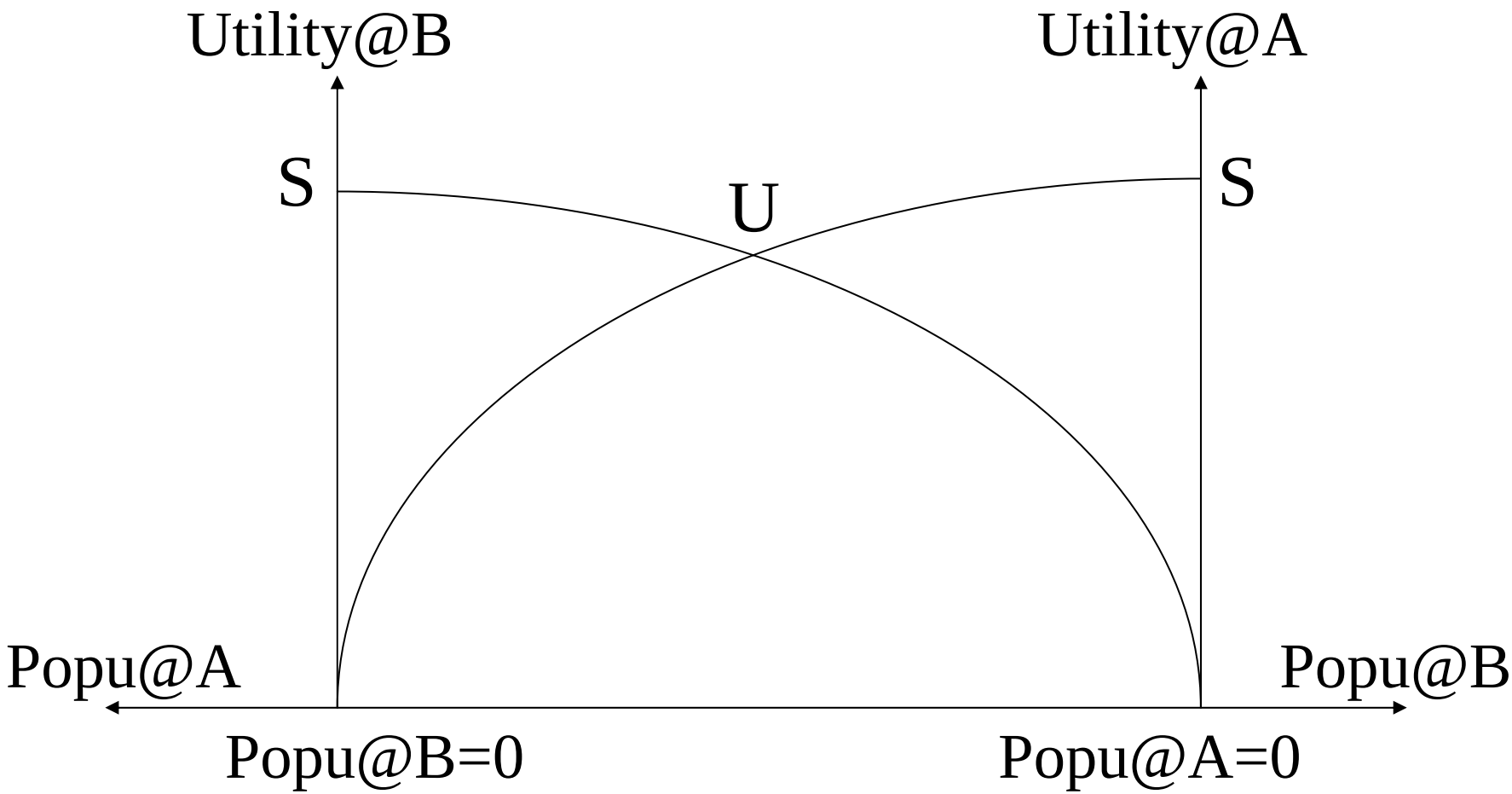
Bifocal model – underpopulation
Corner & Interior Equilibria



Stability (**perturbation proofness**)

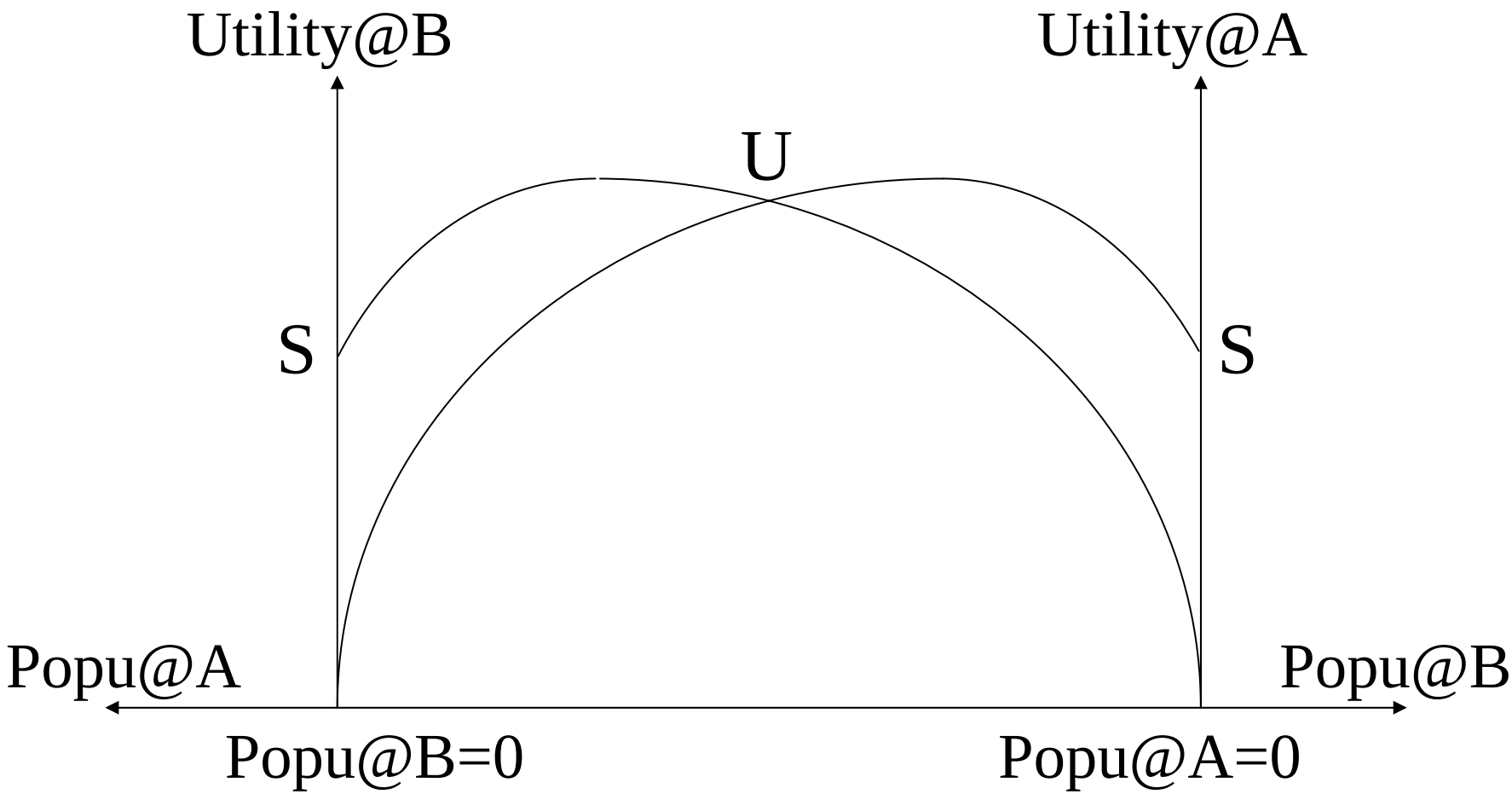
- If a small **perturbation** (give or take a few residents in one location) gravitates the system back to the original equilibrium, such an equilibrium is **stable**.
- Otherwise, if a small-scale migration entails a centrifugal force away from the status-quo equilibrium, then the equilibrium is **unstable**.

Bifocal model – underpopulation
Stable & Unstable Equilibria

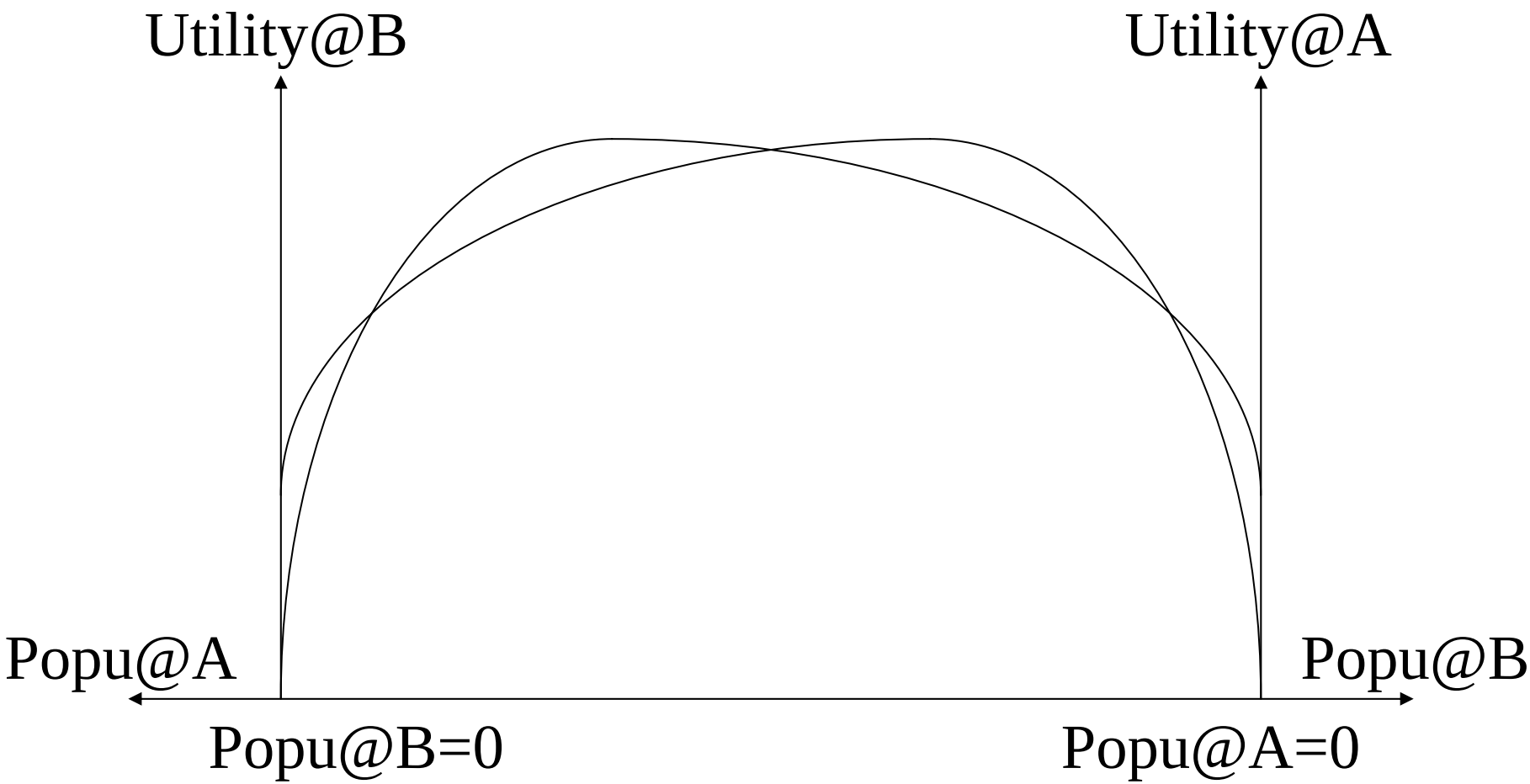


Bifocal model – underpopulation

Stable vs. Unstable Equilibria

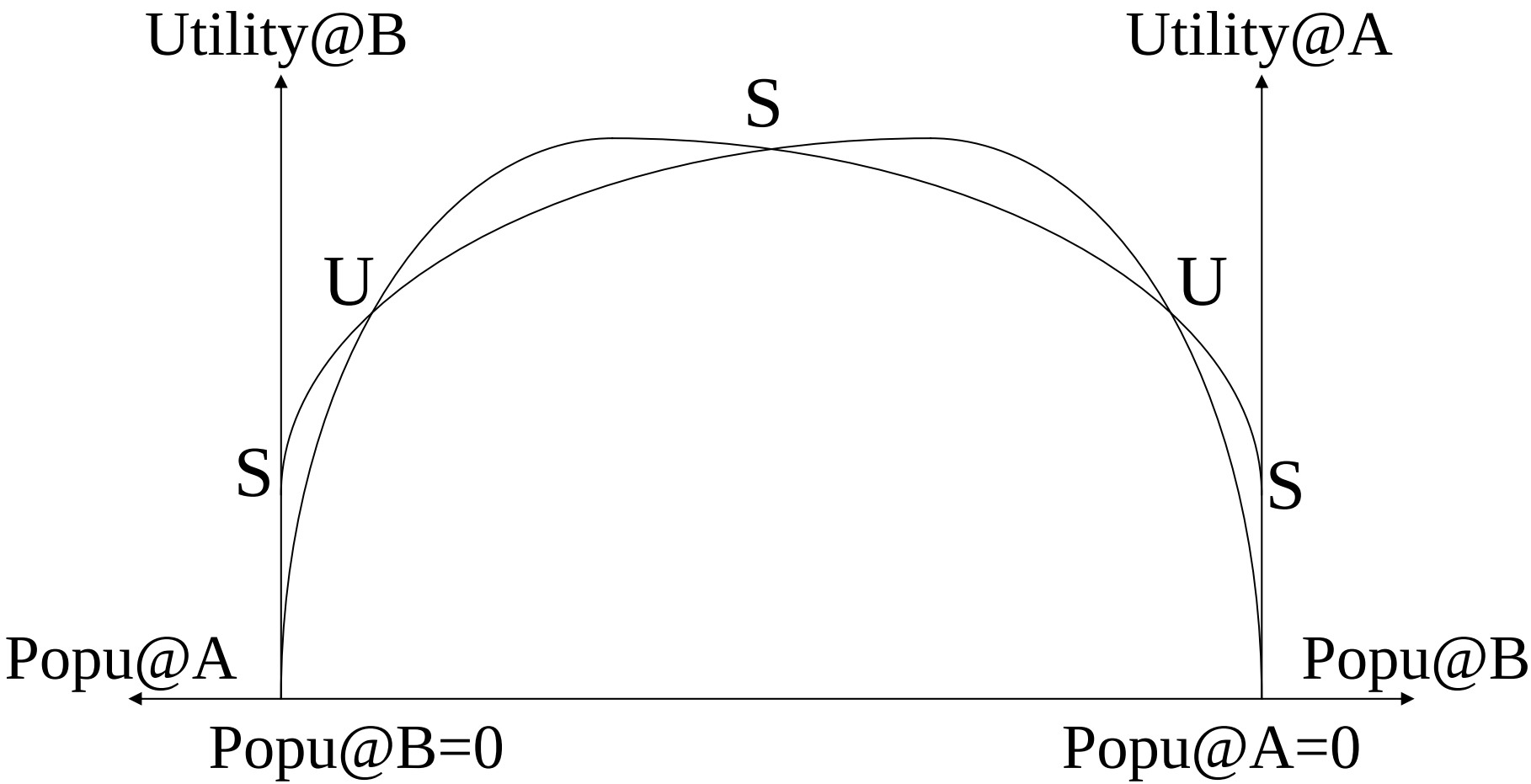


Bifocal model - overpopulation

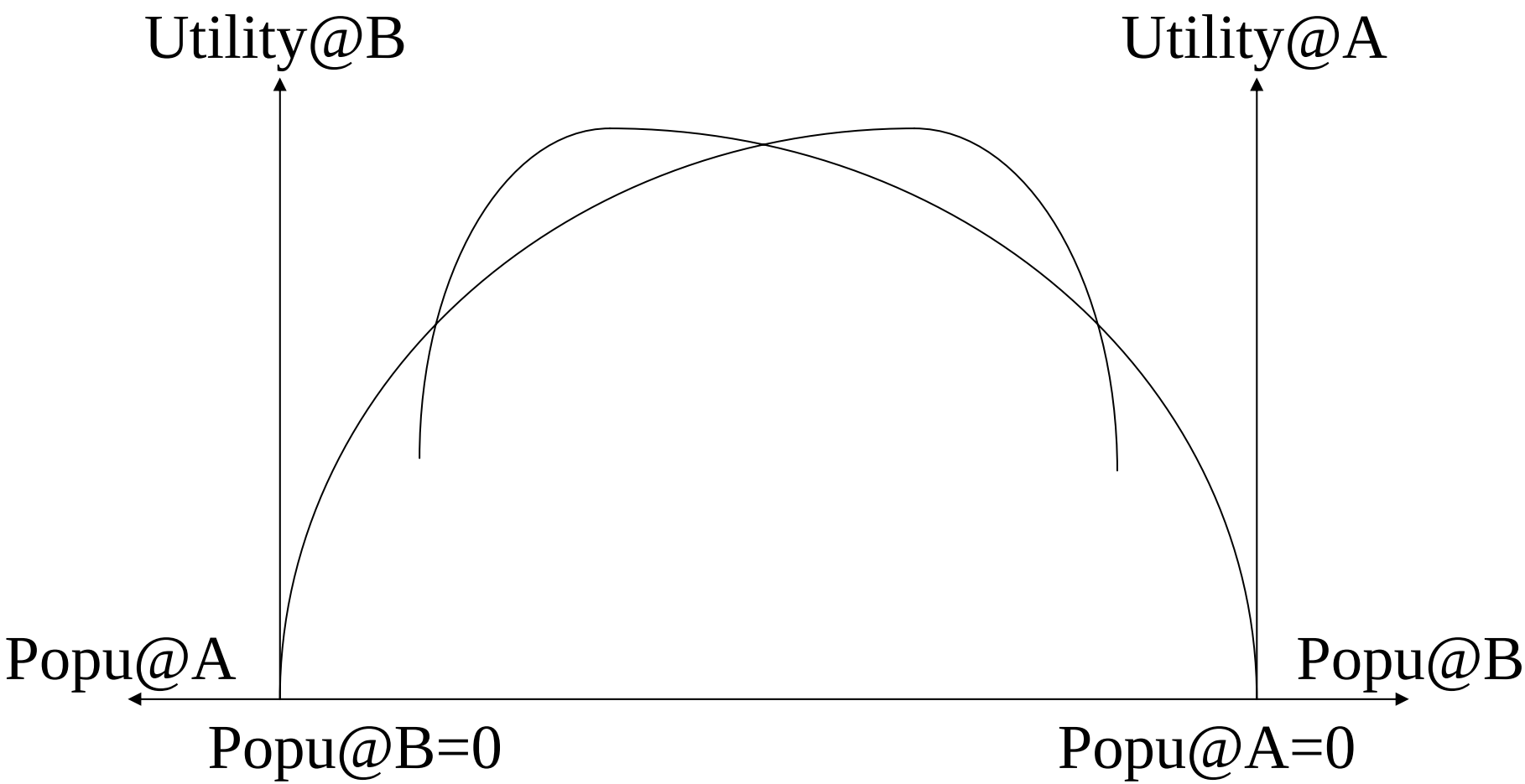


Bifocal model – overpopulation

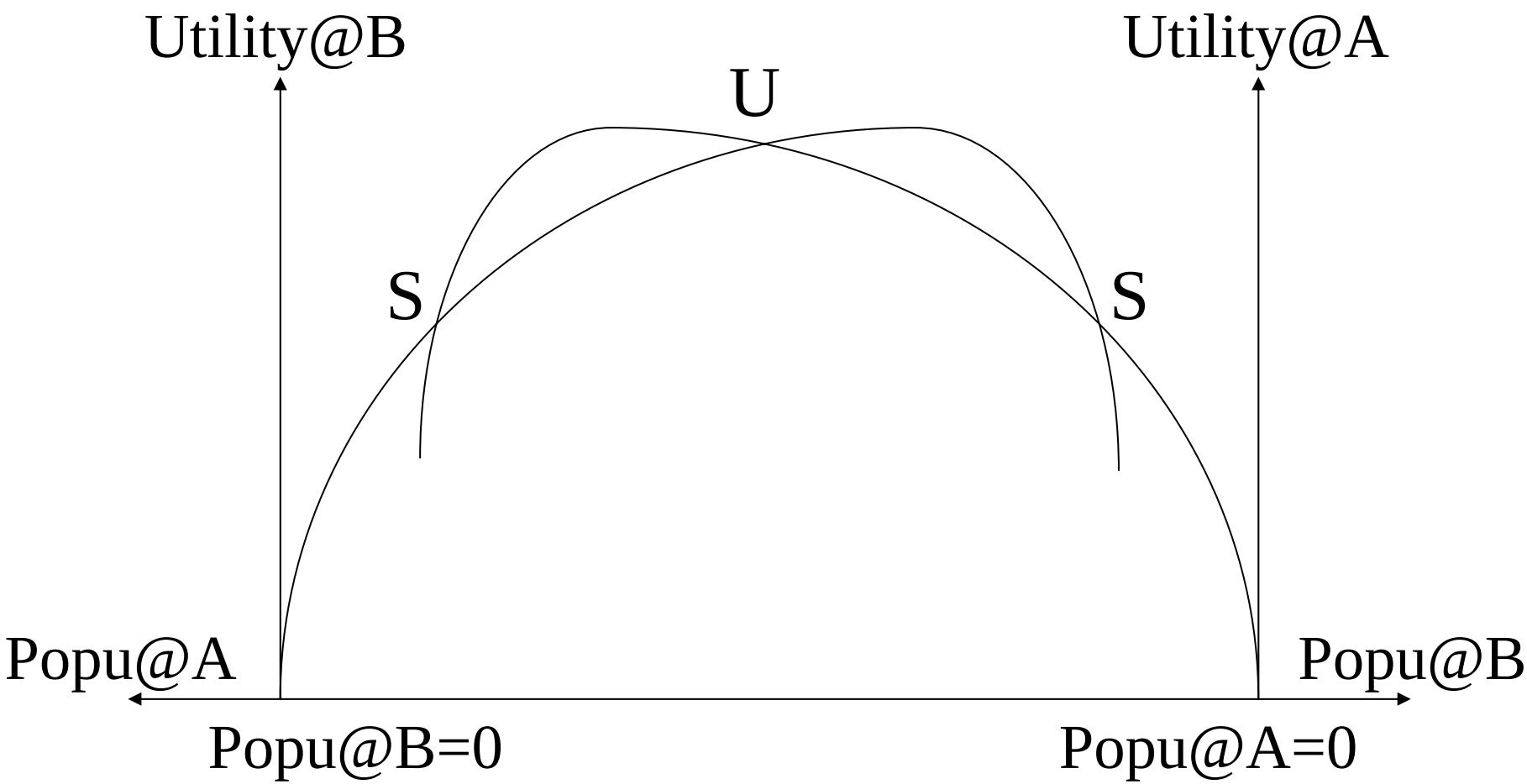
Stable interior equilibrium



Bifocal model - underpopulation overpopulation



Bifocal model – Coexistence of under- & over-populated locations



General multifocal model Proposition I

There can be *at most one underpopulated* (inhabited) *location* in any stable equilibrium.

This implies:

- Free mobility entails **overpopulation** in most (inhabited) locations.
- The *equilibrium* number of inhabited locations is *less than optimal*.

Proposition I (continued)

There can be only two kinds of stable equilibria:

- those where all inhabited locations are overpopulated, and
- those where all but one inhabited locations are overpopulated.

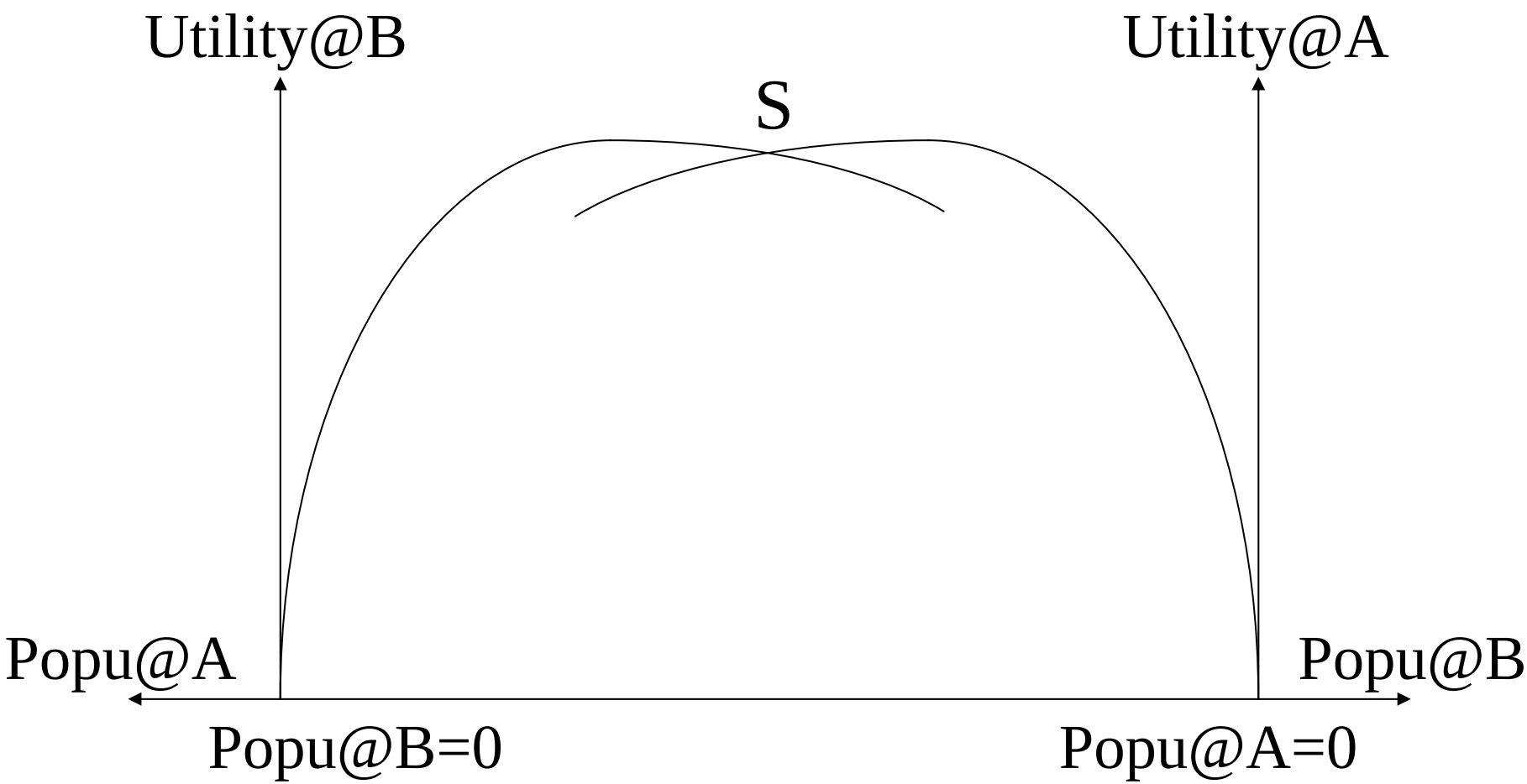
These two configurations lead to qualitatively distinct (almost opposite) implications.

Overpopulated system

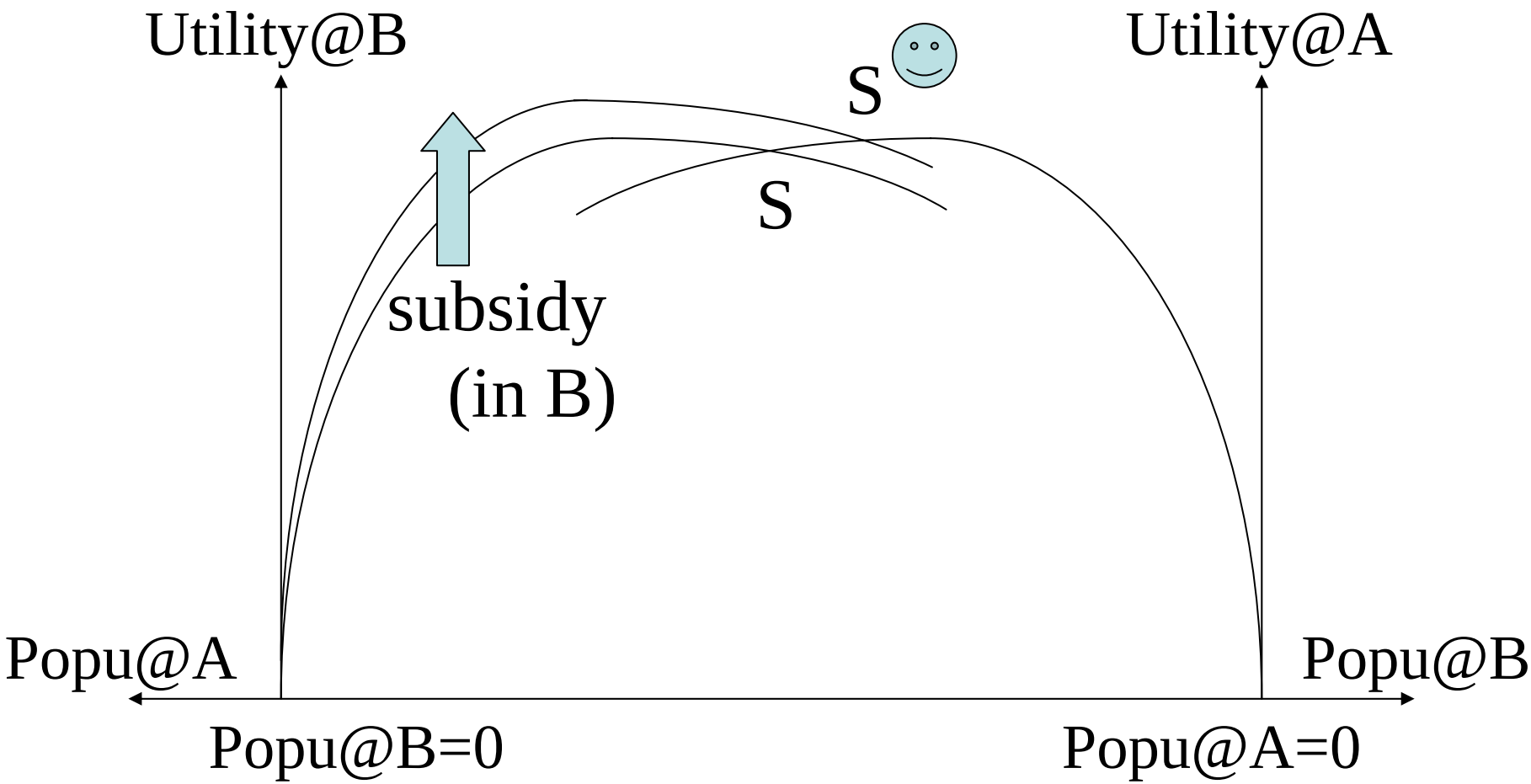
A stable equilibrium where *all* locations are overpopulated.

- Subsidising any of the overpopulated locations shall enhance welfare. (Proposition II)
- Additional immigration into the system is unwelcome. (Proposition III)

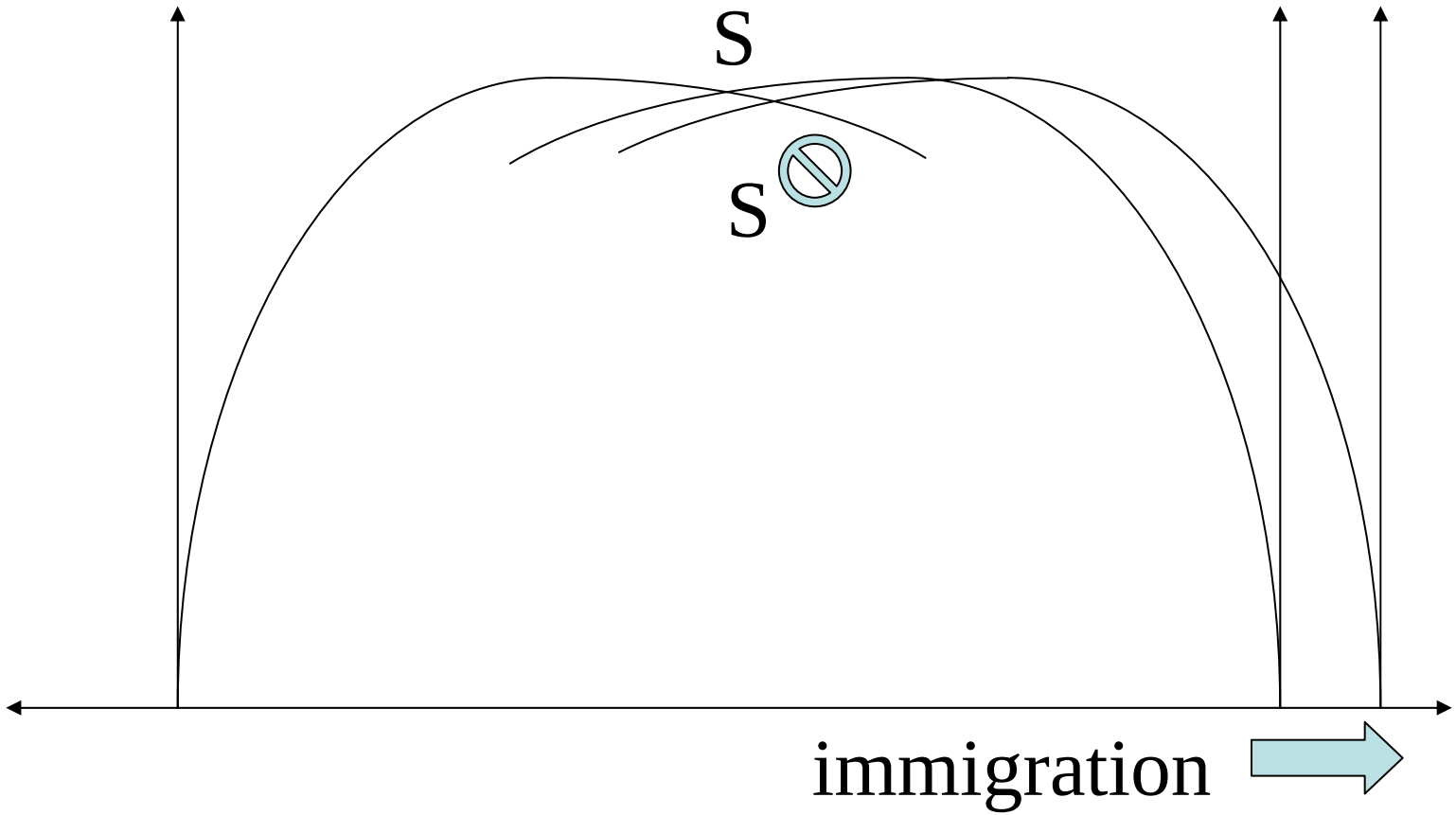
Overpopulated system
Stable (interior) equilibrium



Overpopulated system Proposition II



Overpopulated system Proposition III

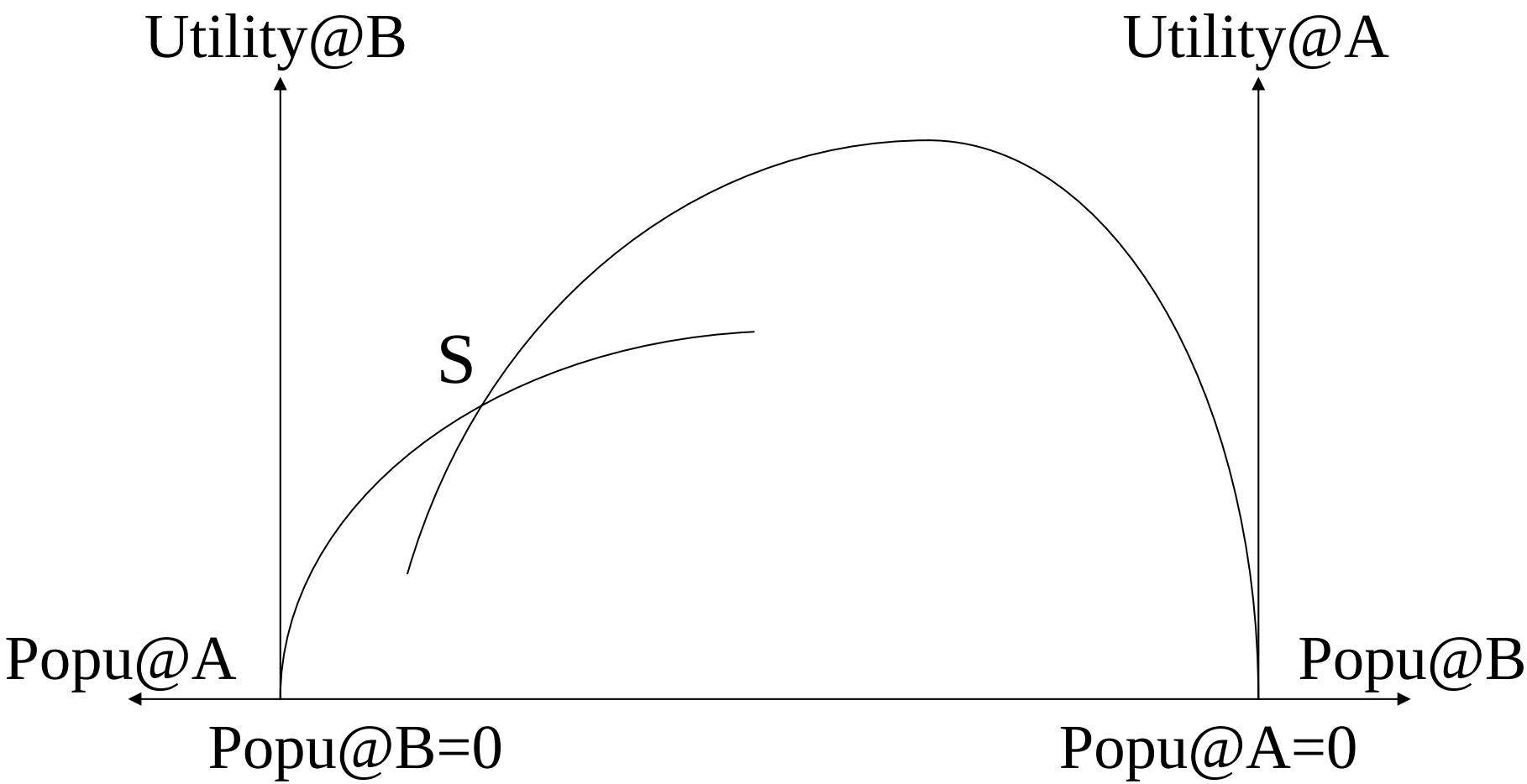


Underpopulated system

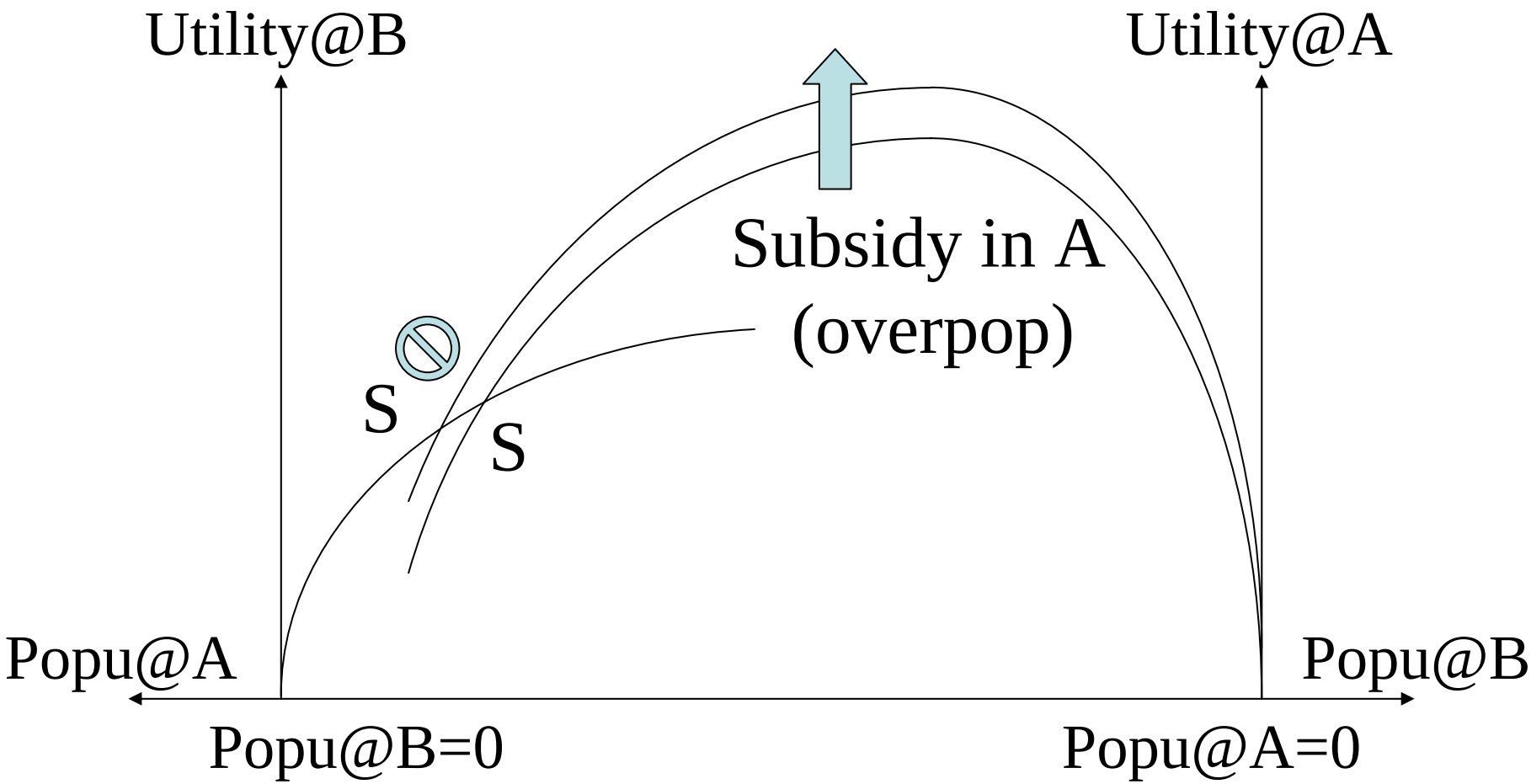
A stable equilibrium where *all but one* locations are overpopulated.

- Subsidising any of the *overpopulated* locations shall *reduce* welfare. (Proposition IV)
- Subsidy to the underpopulated location enhances welfare. (Proposition V)
- Additional immigration into the system is *welcome*. (Proposition VI)

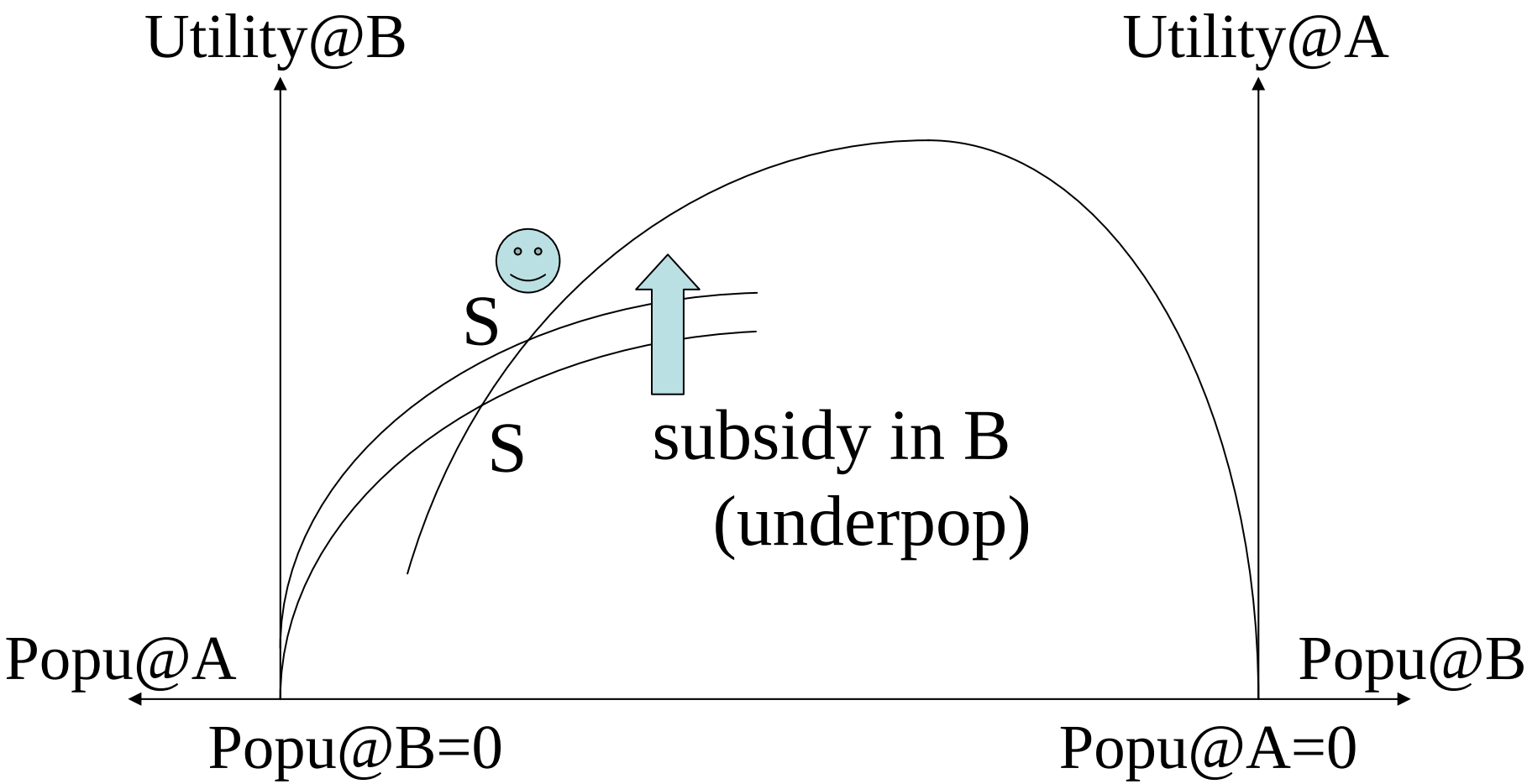
Underpopulated system
Stable (interior) equilibrium



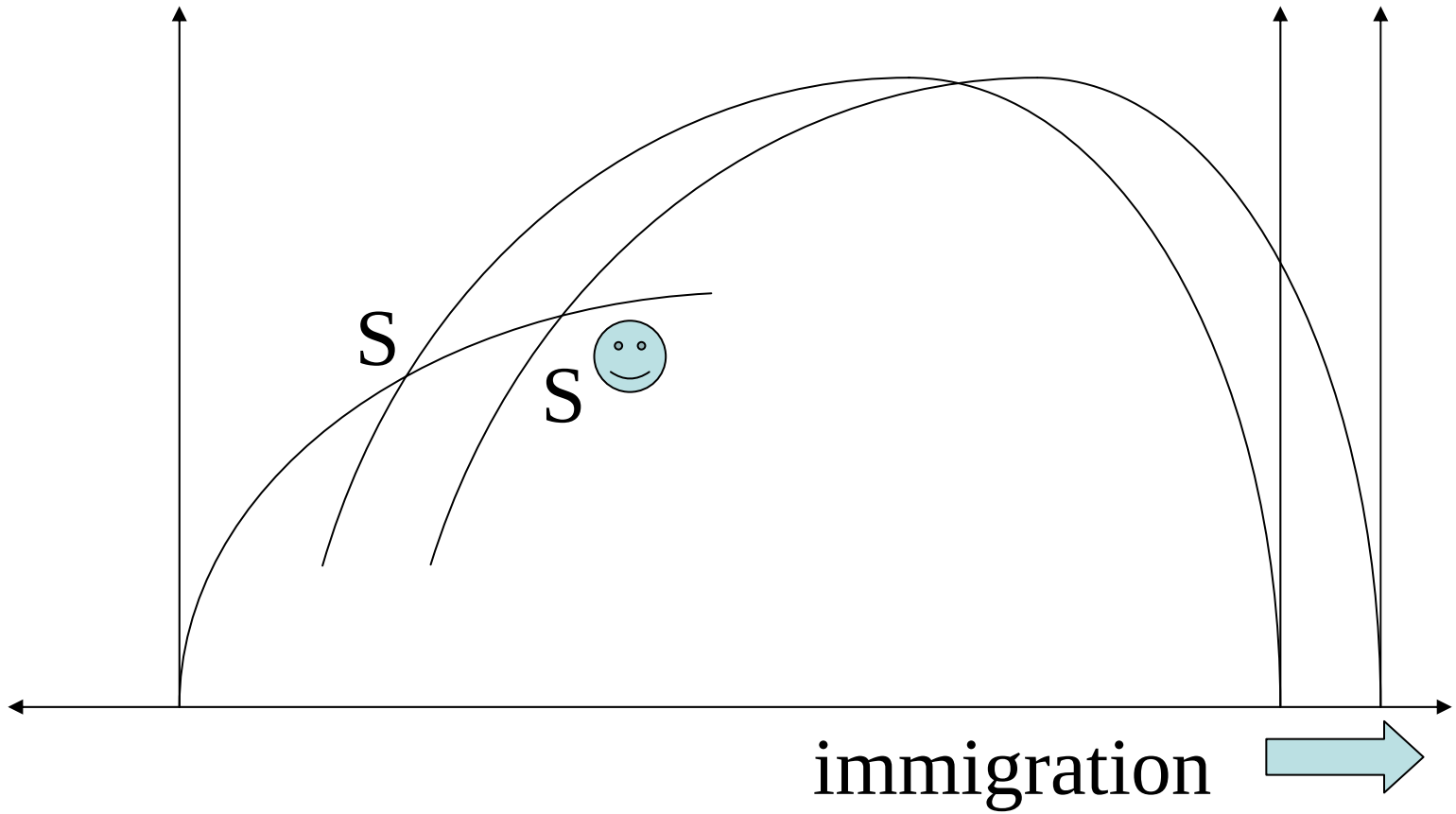
Underpopulated system Proposition IV



Underpopulated system Proposition V



Underpopulated system Proposition VI



Proposition VI (continued)

- In reality, there *are* underpopulated locations.
- Subsidise these locations! (Or, tax on overcrowded cities, pollute them, terrorise them, etc…)
- Welcome immigration!
- …But then, why so many (certainly more than one) underpopulated locations?

Migration costs (**friction**)

In the presence of:

- Logistical costs of relocation
- Location-specific preferences (“**home bias**”)
- Slow migration (**disequilibrium dynamics**)

the system may remain (at least in a short run) away from stable equilibria.

Realistic predictions & suggestions

- In a longer run, population distribution shall be gravitated to a stable equilibrium.
- Without policy intervention, fewer locations than optimal will be populated, and nearly all of these locations will be overcrowded.
- Public investment in underpopulated locations and immigration thereto should be encouraged through policy.

Uncensored truth

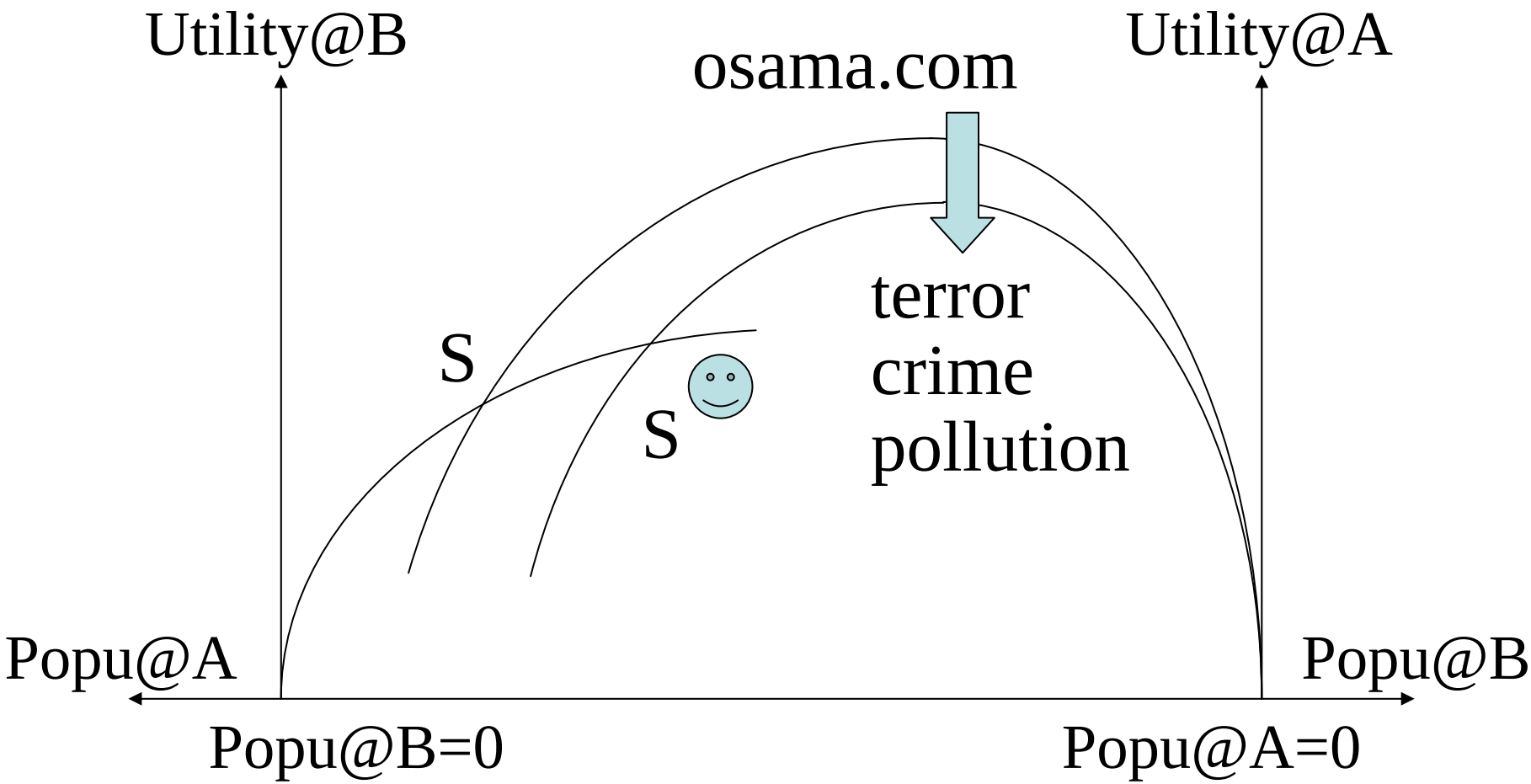
- Immigration from outside the system is beneficial *even when all but one locations* in the system *are already overpopulated*.
- Even better, these immigrants pay their own relocation costs – *they* pay for *our* frictional adjustment!
- Seemingly widespread anti-immigration sentiments (e.g., the “fortress Europe” crap) are nothin’ better than scientifically unfounded xenophobia, racism, & irrational fear.

Awful truth

In theory, *un*investing in overpopulated locations serve for the society. So, *make cities shitty!*

- Pollute big cities! Build chemical dumpsites, sewers, and nuclear plants in urban areas!!
- Destroy some of those attractive city amenities such as art museums, concert halls, schools, WTC, Pentagon, and Tubes!!!
- Not only the <u>policy</u> but also the <u>police</u> can help by shooting innocent Tube passengers and arresting Muslim-looking citizens!!!!

War *for* terrorism!



Summary

- The integrated region as a whole is overpopulated only if *all* inhabited locations therein are overpopulated.
- Otherwise, if there is at least one inhabited underpopulated location involved, then the whole integrated region is underpopulated.

…then, what about integration?

- The utility of inhabitants is equalised across integrated locations.
- This does not necessarily imply that previously high-utility locations shall deteriorate whilst previously low-utility locations shall improve.
- Immigration is almost always welcome (ditto) – why not integrate then?

Why fear integration?

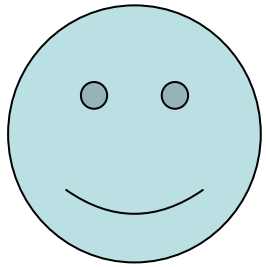
- Seemingly prevalent fear of immigration ("fortress Europe").
- In fact, *e*migration is more problematic than *im*migration. (Insight: a stable equilibrium can accommodate no more than one underpopulated agglomeration, gravitating all other locations with below-the-critical-mass of inhabitants towards desertion.

Policy objectives

- Protect sovereignty “against integration”?
- Underpopulated location may be destined to desertion by emigration if integrated with other locations.
- However, these emigrants will benefit from integration – and, they currently do form the constituency of that location which they will eventually abandon. Should local policy represent their interest, or not?

Regulatory implications

- Stable equilibria may not always attain efficient allocations.
- Trade-off between benefits of free mobility (relocation cost reductions, self-revelation of preference types) and liabilities (externalities not fully internalised).
- …
- (Add your own list here!)



k you!

- Comments most welcome!
- Most comments welcome!