Impact of (international) trade on institutions

Marianna Belloc

Sapienza University of Rome

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Economic integration and institutional change

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  2. Does trade openness improve institutional quality?
  3. How do social norms and institutions co-evolve as (international) trade expands? Does economic integration make cultural and institutional convergence more likely?

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- *"A free-trade regime is likely to reduce corruption and rent-seeking associated with trade interventions...tariff bindings under the WTO may generate greater predictability in incentives and solidify property rights, two important attributes of a high-quality institutional framework"*. Rodrik (2000)

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- "*International competition makes 'bad' institutions more costly*". Acemoglu et al. (2005) show that the rise of intern. trade in the Atlantic economies during the early modern period promoted demand for institutional reforms that were growth-enhancing

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- "*Expansion of trade may create profound changes in the distribution of economic power, with consequences for political power and, consequently, for institutions...If the returns from trade fall into the hands of small elite, they may actually lead to a concentration of power and, ultimately, worse institutions*" .
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- "*The effects of international competition on institutions depend on the nature of political and economic competition. In many cases of history, trade expansion in natural resource intensive products (oil, diamonds) has strengthened the political power of large exporters who then raised barriers to entry and promoted oligarchic institutions*".
  Bardhan (2007)

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- ...so there is some evidence on effects of trade on institutional quality but it is not very robust

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- But multiple institutions may be found to play a useful role even if markets are perfectly integrated, depending on the market size (Casella-Feinstein, 2002)
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   - Belloc-Bowles (2009): trade integration affects the cost of deviation from the equilibrium institutional and cultural convention

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1. Trade expansion and institutions

- Self-enforcing relational contracting incurs increasing marginal costs as the traders' community enlarges (Li, 2003). Thus, there exists a turning point where anonymous market transactions (supported by external enforcement institutions, e.g. courts) result to be more cost-effective and the transition from personal to impersonal exchange becomes possible (Dixit, 2003, 2004; Fafchamps, 2002)

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- These papers do not talk about integration between countries/communities with different institutions

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- In the front of the same commitment problem stemming from agency relations for overseas trade, two segregated societies set alternative strategies to make cooperation between merchants and their agents sustainable
- The two communities also responded in different ways to trade expansion

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- There is an exogenous probability that the agency relation breaks down because of reasons independent of the behaviour of the parties

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- The collectivist society was initially successful and provided an efficient solution to a principal-agent problem essential to the exchange process

$$w_b^* > w_m^*$$

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- The individualist society was less efficient in supporting intraeconomy agency relations, but was motivated to establish *institutional innovation*. To support cooperation and exchange, the indiv society needed to develop formal institutions (legal systems for registration and enforcement of contracts)

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- Greif's paper hints at but does not model institutional change induced by economic integration

How to model institutional change

Two alternative ways to model (endogenous) institutions

- Institutions are a historical datum that may be modified by a lobbying game: some parties to production earn rents. If those parties are endowed with political power they will lobby for imperfect institutions. When countries open up to trade, rent-seeking is affected by the way the specialization structure of the country changes rents' distributions

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- The idea is to study the effects of trade on institutions in a model where institutions themselves are the source of comparative advantage (cf. Arnaud's workshop)

2. Does trade openness improve institutional quality?

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- Imperfect institutions generate rents for some individuals involved into production. If these individuals are endowed with power, they lobby for imperfect institutions to capture rents
- "Better institutions" means "lower transaction costs between distinct self-interested parties" (lower ϕ)

2. Levchenko: production

2 factors: K (capital) and H (managers); 3 goods: A-, B-, M-good

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  - more imperfect institutions imply that, after production takes place, the owner of K can only recover a fraction $(1-\phi)$ of the investment and must be compensated with part of the surplus (revenue minus the ex post opportunity costs of the factors: $s = p_M y - w - r(1-\phi)x$)

$$p_M y \geq w + (1+\phi) r x$$

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$$p_K = \alpha \frac{C_A^{\alpha} C_B^{\beta} C_M^{\gamma}}{C_K}, \quad p_H = \beta \frac{C_A^{\alpha} C_B^{\beta} C_M^{\gamma}}{C_H}, \quad p_M = \gamma \frac{C_A^{\alpha} C_B^{\beta} C_M^{\gamma}}{C_M}$$

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- Good market clearing requires:

$$C_A = \alpha \left(\frac{K}{H} - xE \right) H, \quad C_B = b(1 - E) H, \quad C_M = yEH$$

where E is share of H in M

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  1. Rewards to H differ across sectors: factor H employed in the M sector gains rents
  $$w + \phi rx$$
  2. The outcome is inefficient: imperfect institutions imply under-investment of K in the M-sector (higher ϕ discourages entry of K in M): $E(\underline{\phi})$, $r(\underline{\phi})$ and $w(\underline{\phi})$

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- *"When countries open to trade and institutional differences are the source of comparative advantage, the country with inferior institutions loses the M-sector, and then rents associated with it"*

2. Levchenko: institutional change

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  - One policymaker which maximizes a weighted average of aggregate welfare and contribution:

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- The timing of the game is: 1. lobby makes contribution schedule known to the policymaker, $\Theta(\phi)$; 2. policymaker decides institutional quality; 3. agents make production and consumption decisions. Aggregate welfare is:

$$S(\phi) = r(\underline{\phi})K + \underbrace{[w(\underline{\phi}) + \phi x r(\underline{\phi})E(\underline{\phi})]H}_{S_H(\phi)} \rightarrow \max \text{ when } \phi = 0$$

2. Levchenko: equilibrium institutions

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- Maximizes the weighted sum of agents' welfare with higher weight to lobby's welfare ($\lambda < 1$) $\rightarrow$ if the lobby is influential enough there will be imperfect institutions ($\phi > 0$)

2. Levchenko: case 1

- Case 1: country N is more productive in producing the M-good, i.e. $y_N > y_S$ (Ricardian CA and institutional CA go in the same direction)

$$\underbrace{w + (1 + \phi_S) rx}_{\text{cost of } M \text{ in } S} > \underbrace{w + (1 + \phi_N) rx}_{\text{cost of } M \text{ in } N}$$

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- The race to the top results from the change in preferences of the lobby groups with regard to their desirable institutions (if they have no rents to extract they have no reason to lobby for imperfect institutions)

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  - it follows

$$\frac{w + (1 + \overset{=0}{\phi_N}) rx}{y_N} > \frac{w + (1 + \phi_S) rx}{y_S}$$

    only S will produce the M-good regardless N's institutions (even if $\phi_N = 0$), so country S has no incentive to improve its institutions, which can even deteriorate

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- Trade brings institutional deterioration when it increases, rather than decreases, rents

3. How do social norms and institutions co-evolve as international trade expands? Does economic integration make cultural and institutional convergence more likely?

Institutions and social norms

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- In the literature, sometimes, the definition of institutions is so broad to include that of norms

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- Identical institutions work in different ways in different societies because individuals follow different social norms. Francois (2008)

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- The mutual dependence of preferences and institutions supports multiplicity of equilibria

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- An experiment:
  - Kollock (1994) investigated the structural origins of trust in a system of exchange. Using an experimental design based on the exchange of goods of variable quality, Kollock found that trust in and commitment to trading partners as well as a concern for ones own and others' reputations emerges when quality is variable and non-contractible but not when it is contractible

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- Thus countries where social preferences are widespread are able to make cost-effective use of incomplete contracts and, as a result, are likely to have a CA in the production of those goods for which the impediments to complete contracts are especially great
- Whereas, where such social norms are absent, the costs of producing goods for which complete contracting is infeasible will be elevated

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- High quality effort cannot be contracted for due to information asymmetries

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  - high quality effort, which is difficult to verify and cannot be contracted for, is *relatively more* important in the production of the opaque goods (*services*) than in the production of the transparent ones (*rice*)

3. Belloc-Bowles: employers

The employer may offer the employee one of two contracts: complete or incomplete

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  - the extent of the subj. cost varies with the profits the employer would have made had the contract been accepted (exploitation). This is consistent with experimental play in the ultimatum game (Cameron 98) and experimental evidence (Falk-Kosfeld 06)

3. Belloc-Bowles: utility and consumption

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- The utility function is additive in consumption of the composite good and subjective utility associated with the contract and the effort quality provided
- We define

$$\rho^i = \frac{p^i}{p^o + p^t}$$

is the value of the i-good ($i = o, t$) in terms of the c-good (how many units of the c-good one can purchase with one unit of the i-good)

3. Belloc-Bowles: expected payoffs

- ϕ = fraction of employers offering I-contracts in the previous period

The expected payoffs to the employees are:

$$v_R = \phi\left[\frac{\rho^i Q^i(e_H)}{2} - \delta\right] + (1-\phi)(-\gamma)\left[\rho^i Q^i(e_L) - w - \mu\right]$$

$$v_S = \phi\left[\frac{\rho^i Q^i(e_L)}{2} - \eta\right] + (1-\phi) \times 0$$

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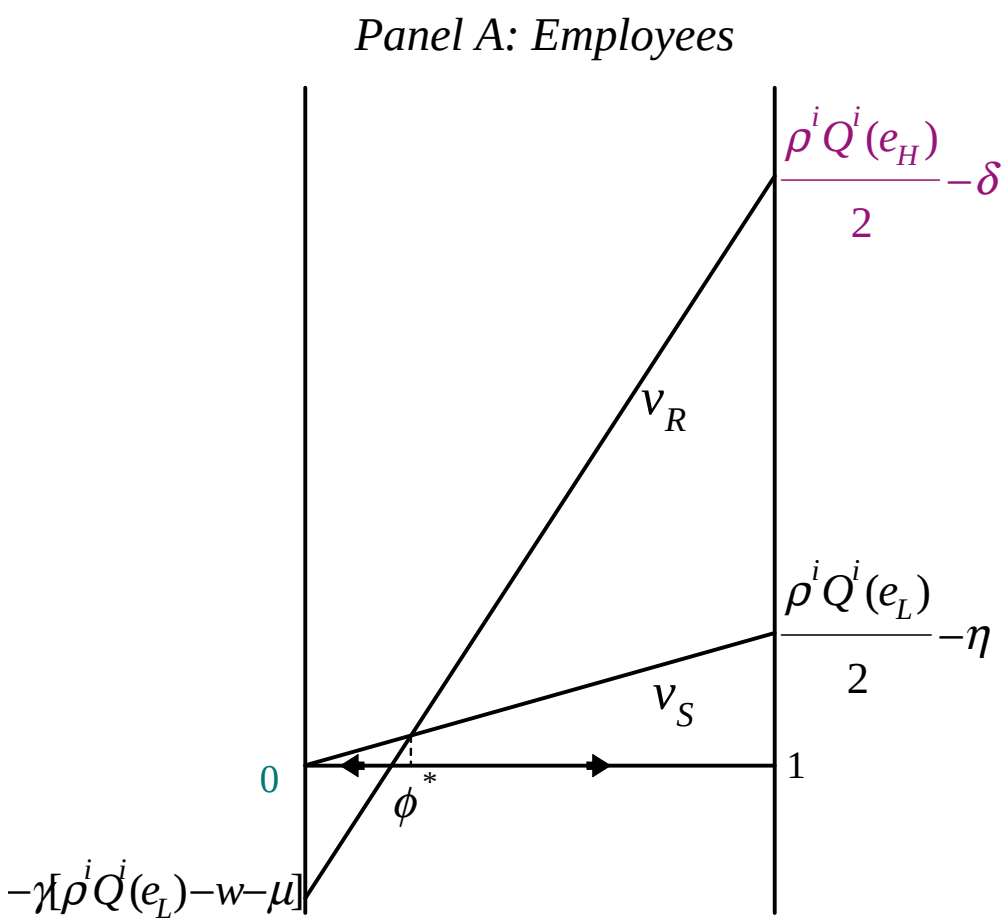
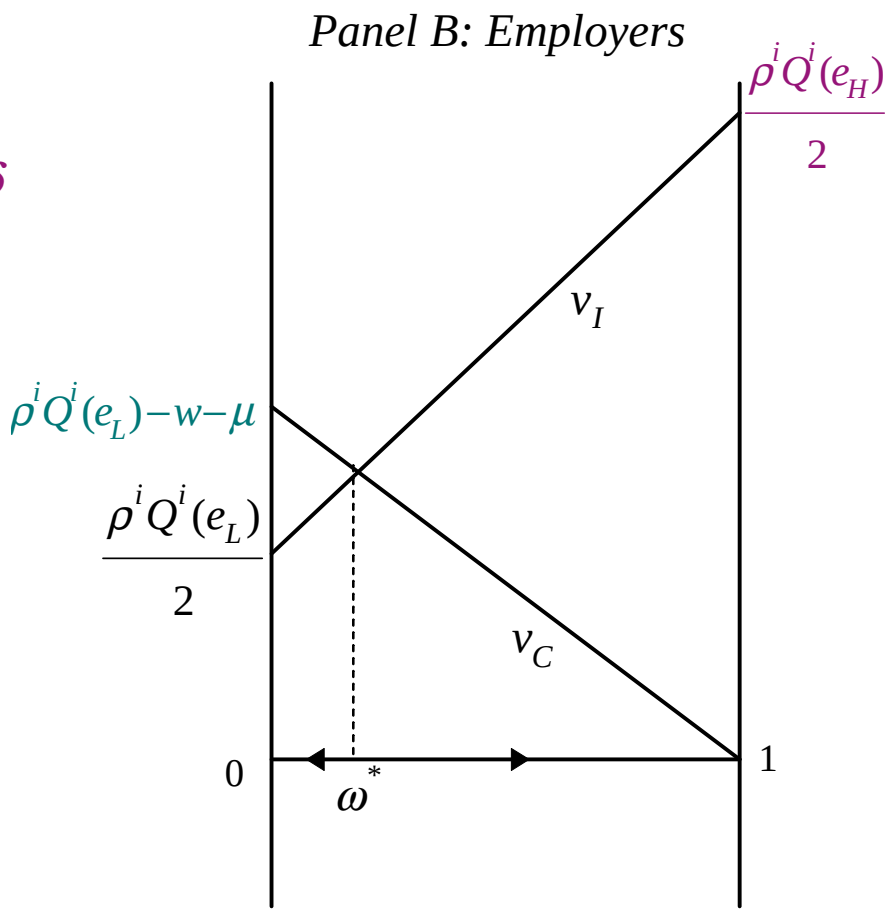
- $\omega =$ fraction of R-type employees in the previous period
  The expected payoffs to the employers are:

$$\begin{aligned} v_I &= \omega\frac{\rho^i Q^i(e_H)}{2} + (1-\omega)\frac{\rho^i Q^i(e_L)}{2} \\ v_C &= \omega\times 0 + (1-\omega)\left[\rho^i Q^i(e_L) - w - \mu\right] \end{aligned}$$

3. Belloc-Bowles: expected payoffs' lines



ϕ = % *I*-type employers



ω = % *R*-type employees

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- One intuition is that likely outcomes would include a high frequency of both *I*-contracts and *R*-employees or the opposite: a predominance of both *C*-contracts and *S*-employees

3. Belloc-Bowles: dynamics

- What kinds of contracts and behaviors would we expect to observe in this population?
- One intuition is that likely outcomes would include a high frequency of both *I*-contracts and *R*-employees or the opposite: a predominance of both *C*-contracts and *S*-employees
- These correct intuitions are readily formalized. The dynamical system we want to study concerns the state space defined by all possible combinations of contractual and behavioral strategies, $\phi \in [0, 1]$ and $\omega \in [0, 1]$. We wish to explore the movement of ϕ and ω over time

3. Belloc-Bowles: updating

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- At the beginning of each period, individuals are exposed to a cultural model randomly selected from their class: e.g. an employee, A, has the opportunity to observe the behavior of another employee, B, and to know her payoff
  - if B has the same strategy as A, A does not update
  - if B follows a different strategy, A compares the two payoffs: if B has higher payoff, A switches to B's strategy with a probability equal to β (> 0) times the payoff difference, whereas she retains her own strategy otherwise

3. Belloc-Bowles: replicator dynamic equations

- This process gives the replicator dynamic equations:

$$\frac{d\phi}{dtime} = \underbrace{\phi\,(1-\phi)}_{\substack{\% \text{ of employers} \\ \text{meeting a different type}}} \times \beta\ \underbrace{[v_I(\omega) - v_C(\omega)]}_{\text{incentive to switch}}$$

$$\frac{d\omega}{dtime} = \underbrace{\omega\,(1-\omega)}_{\substack{\% \text{ of employees} \\ \text{meeting a different type}}} \times \beta\ \underbrace{[v_R(\phi) - v_S(\phi)]}_{\text{incentive to switch}}$$

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- Direction and pace of updating depend on the frequency of both institutional and cultural traits in the population

3. Belloc-Bowles: stationary states

We are now interested in the stationary states, such that $\mathrm{d}\phi/\mathrm{d}time = 0$ and $\mathrm{d}\omega/\mathrm{d}time = 0$. It is easy to find that:

- $\dfrac{\mathrm{d}\phi}{\mathrm{d}time} = 0$ for

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- The points where $\mathrm{d}\phi/\mathrm{d}time = 0$ and $\mathrm{d}\omega/\mathrm{d}time = 0$ are *cultural-institutional equilibria*

3. Belloc-Bowles: cultural-institutional equilibria

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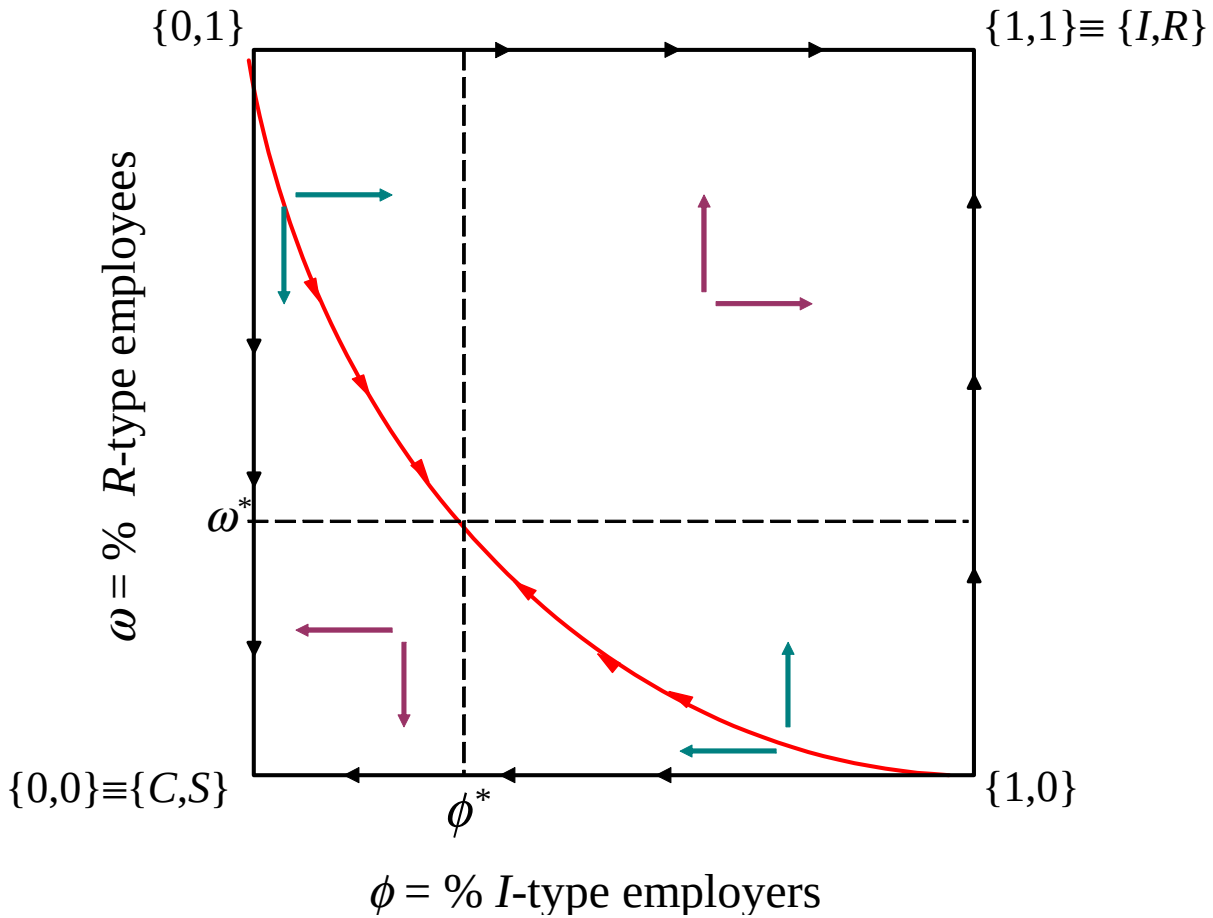

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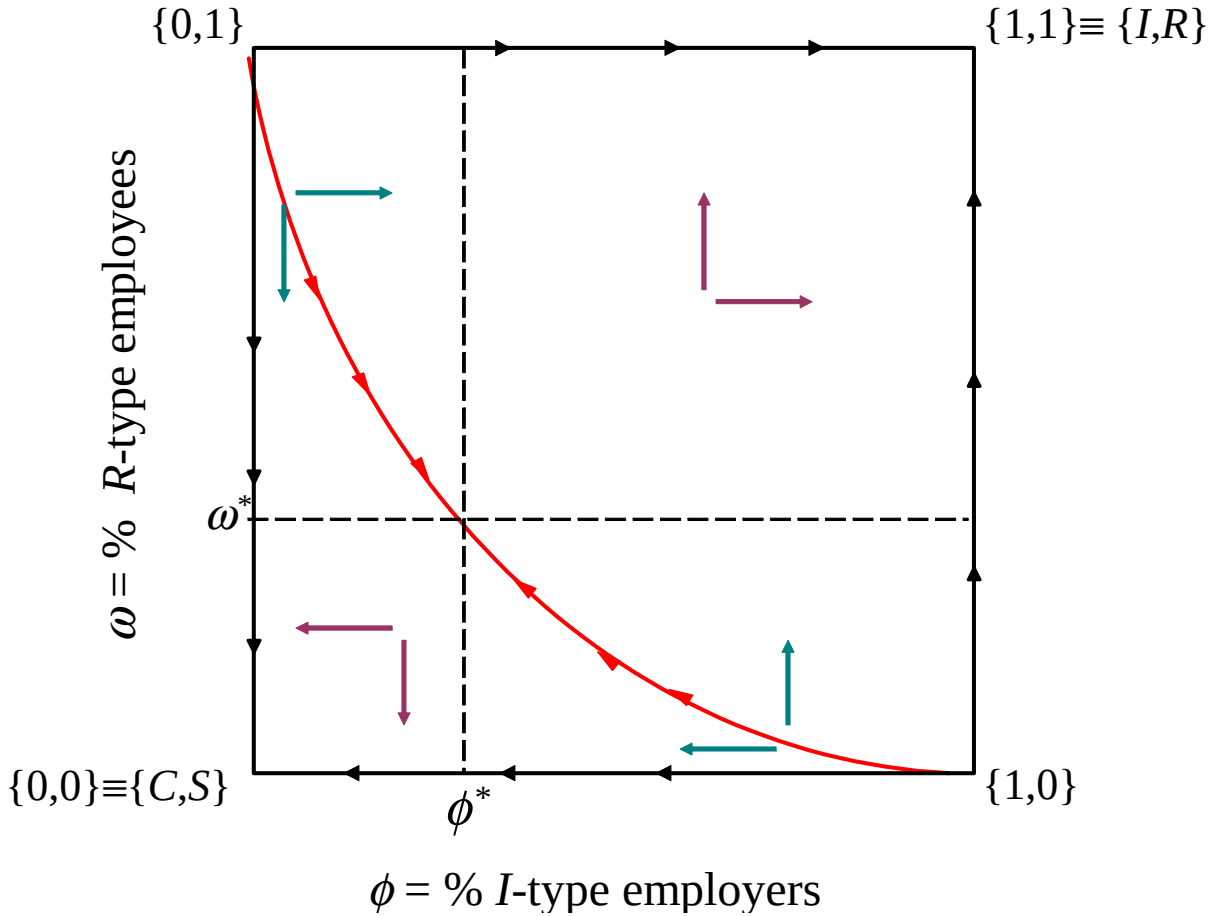

- point (ω^*, ϕ^*) is stationary but it is a saddle
- asymptotically stable states are $(0, 0)$ and $(1, 1)$

3. Belloc-Bowles: dynamics

- In a deterministic setting, the initial state determines which of these two asymptotically stable states occurs

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- In a deterministic setting, the initial state determines which of these two asymptotically stable states occurs
- But a more realistic dynamic includes occasional idiosyncratic updating of both preferences and contractual offers
  - idiosyncratic play may be due to deliberate experimentation, error, etc
- The likelihood of innovation (ε) is the smaller, the greater is the cost of deviating from the status quo best response

3. Belloc-Bowles: cost of deviation - employees

- $\phi = 1$ (all I-type employers): Best response $= R$

$$\text{Cost of deviation} = v_R(\phi = 1) - v_S(\phi = 1)$$

How much the employee loses from being S rather than R in a world where all the employers offer I-contracts

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How much the employee loses from being R rather than S in a world where all the employers offer C-contracts

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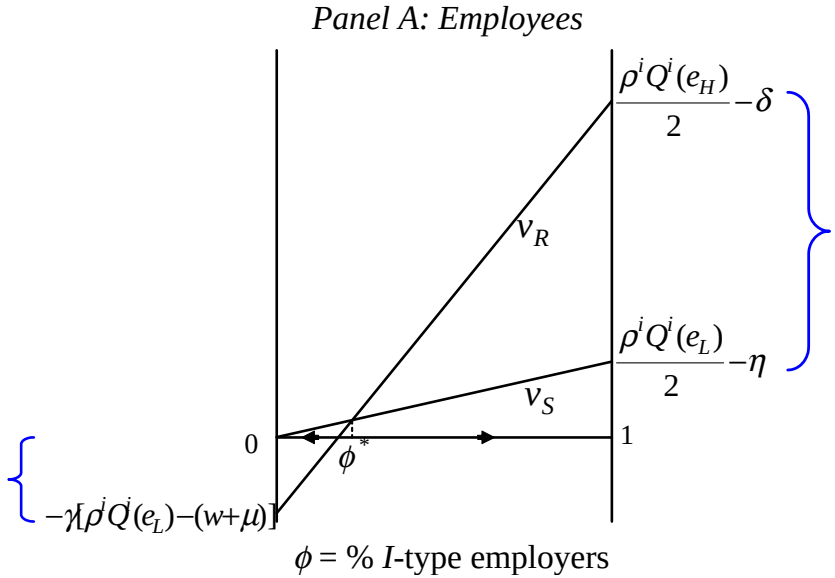
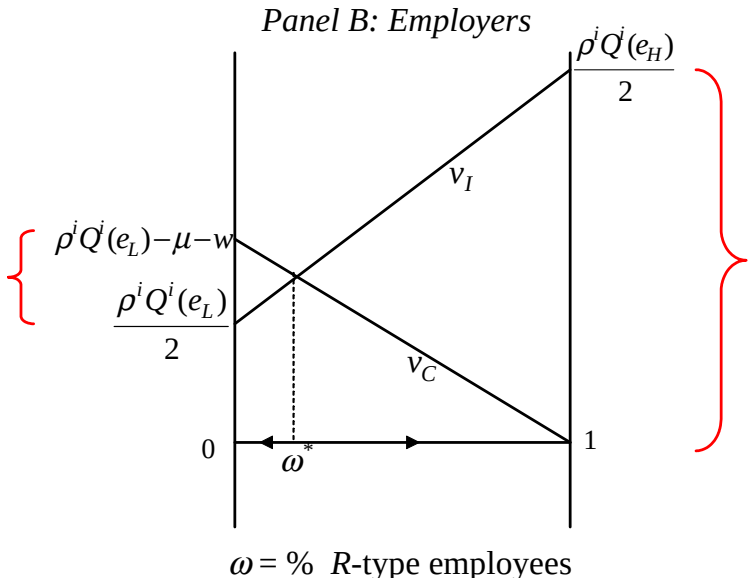


Cost of deviation for the employer:



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- Two countries (otherwise identical) with different cultural and institutional conventions
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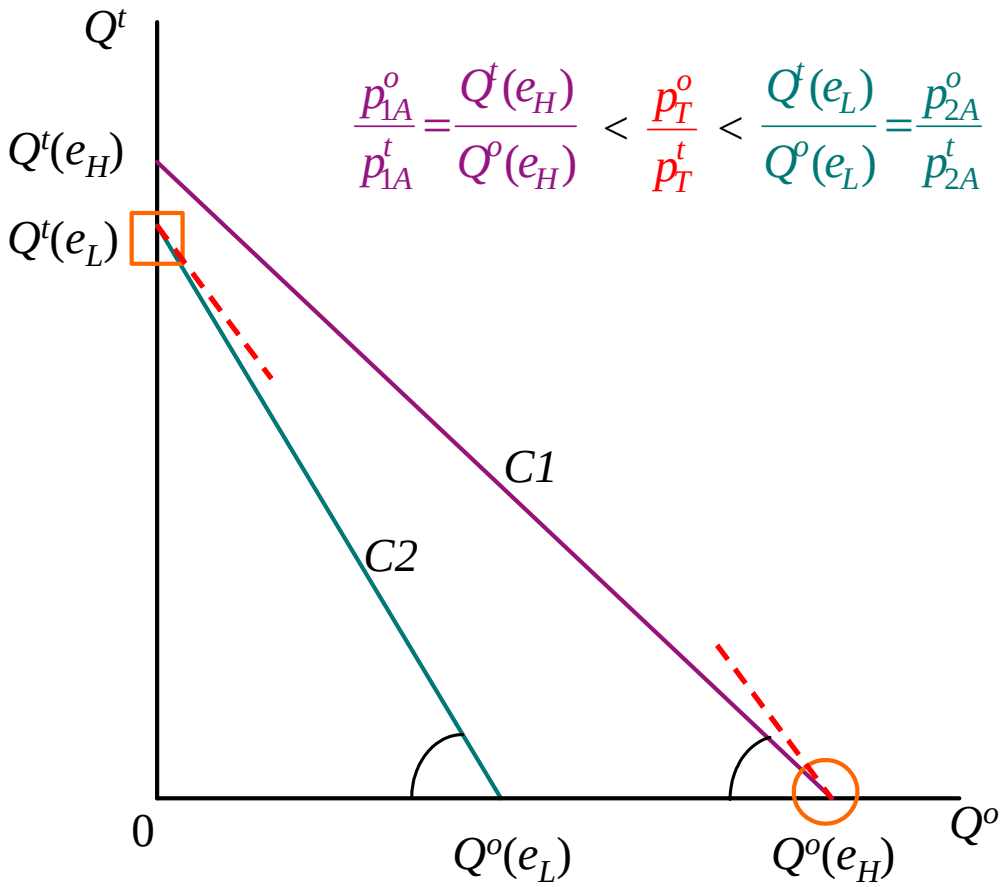
- $C2$ is near the (C,S) eq.: (other than idiosyncratic play) all employers will offer C-contracts, and self-regarding employees will provide always low quality effort

3. Belloc-Bowles: comparative advantage



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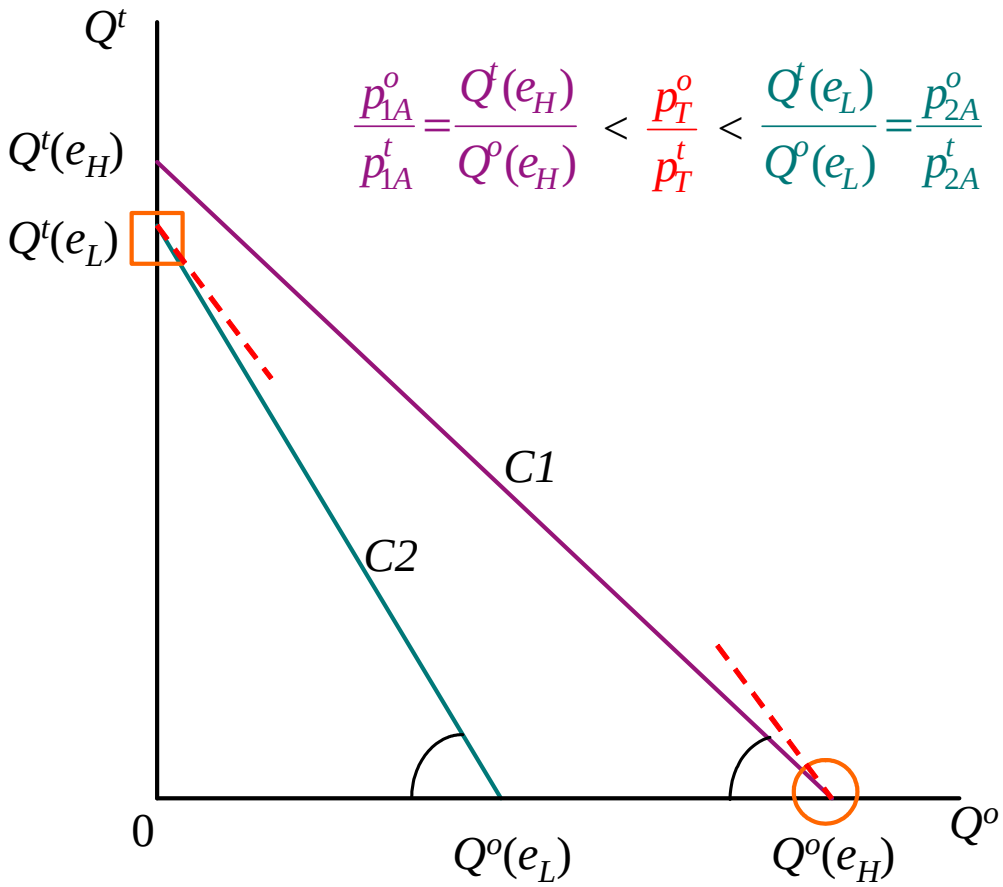

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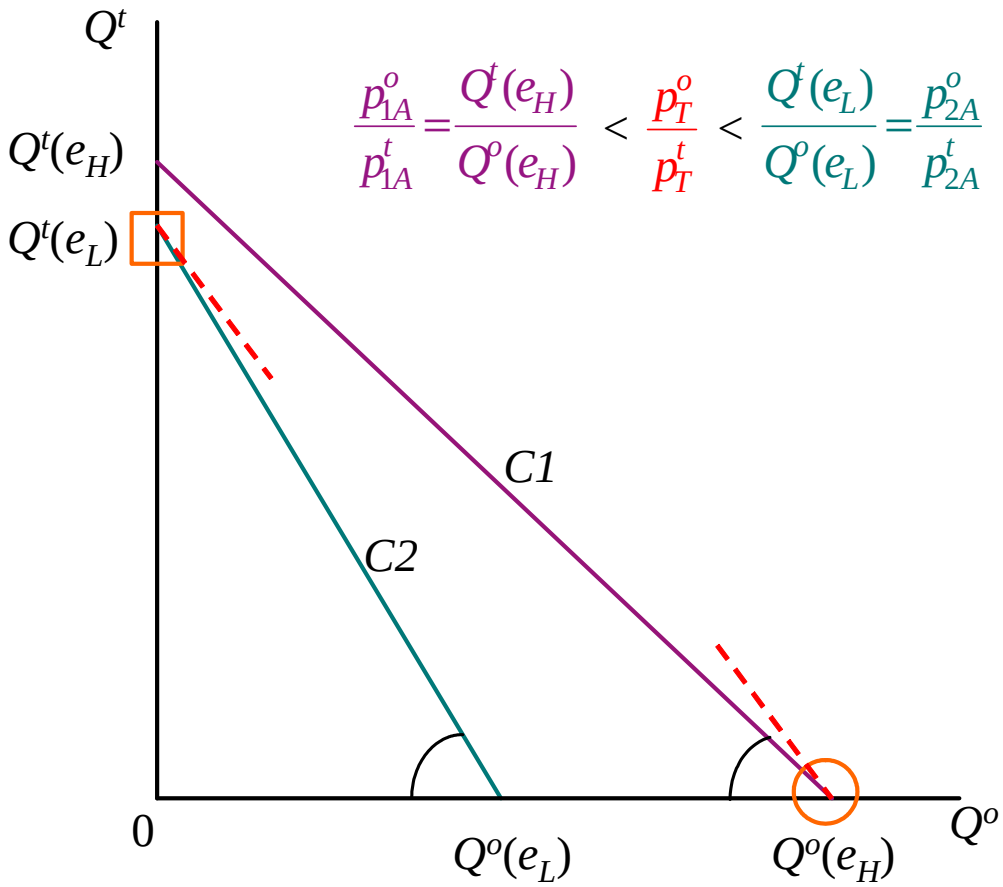

- $C1$ enjoys an absolute advantage in the production of both goods
- $C1$ has a CA in the o-good, $C2$ has a CA in the t-good
- The value of output in terms of the c-good increases in both countries

3. Belloc-Bowles: comparative advantage

- C1, where the established cultural-institutional eq. is able to generate high quality effort in all the employment relations, is superior in the production of both commodities, but has a relatively greater advantage in the production of the *o*-good where effort is more important

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  - international trade will take place and countries maximize the value of output by entirely specializing

3. Belloc-Bowles: effects of trade on cultural-inst. eq.

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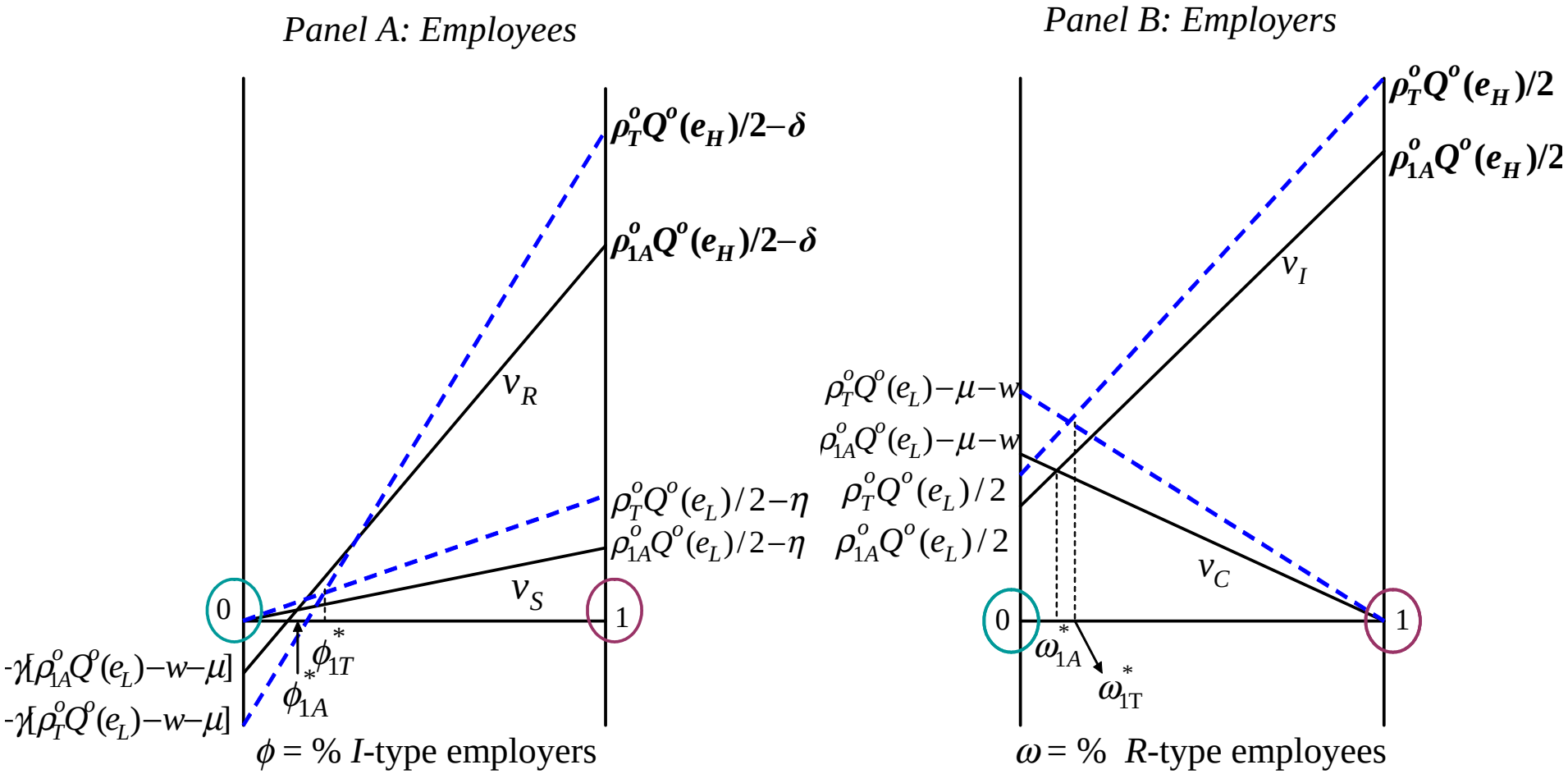

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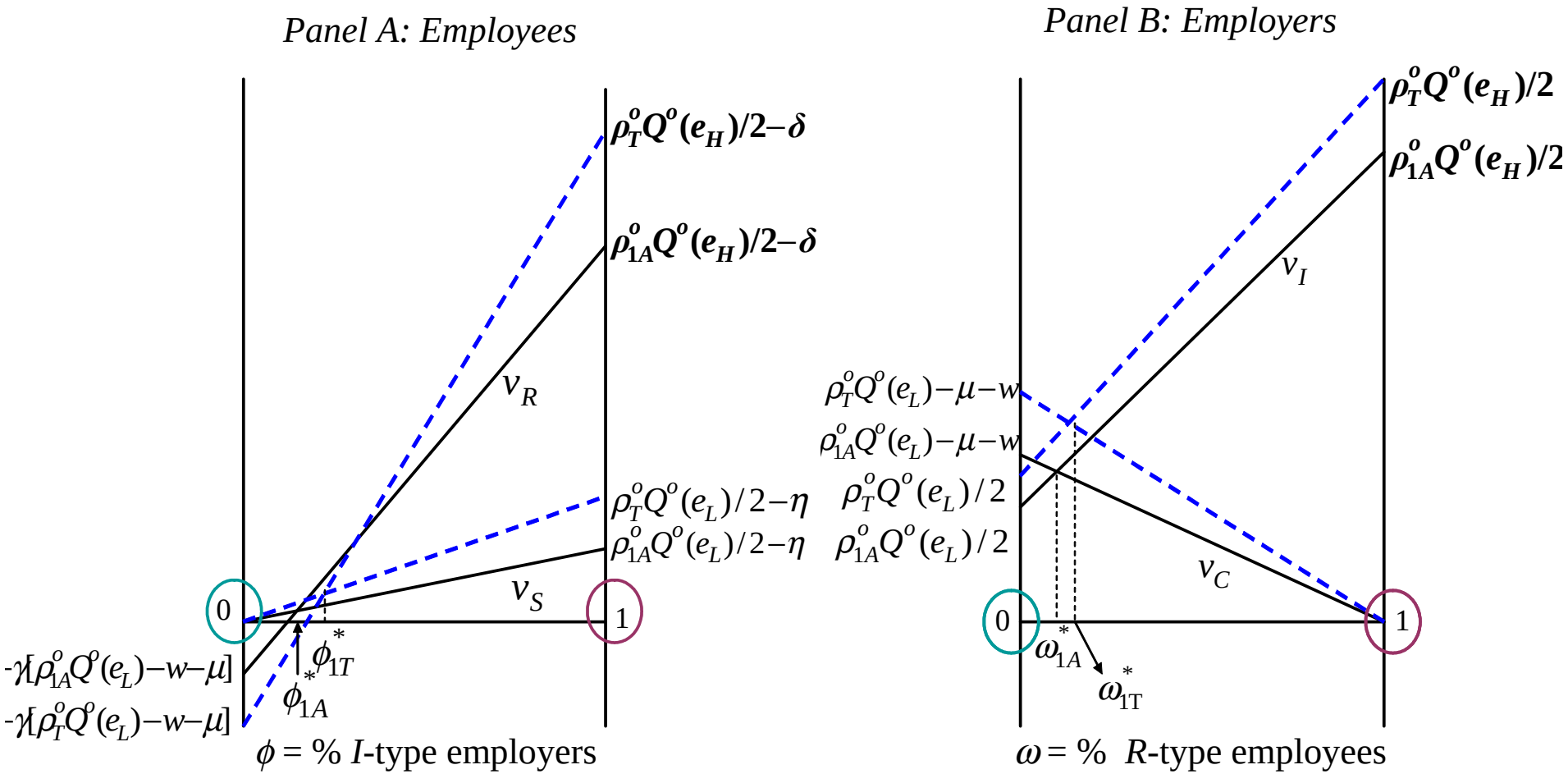

- The critical values of ϕ and ω remain internal in both countries: trade cannot destroy the BoA of the two equilibria
- Trade increases the cost of deviation for both groups in both countries: non-coordinated convergence is less likely

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- The movements of the vertical intercepts and the corresponding positive changes in the costs of deviation from the status quo in each situation ensure that
  - the payoff lines in each panel will be crossing within the $[0, 1]$ interval even after trade openness: implying that trade cannot destroy the BoA of the two equilibria
  - in both countries, the cost of deviation from the status quo for employers and employees increases after trade: implying that non-coordinated convergence from one equilibrium to the other is less likely in economic integration rather than in autarchy

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Why?

- Deviating almost always entails a mismatch resulting in forgoing some of or the entire surplus associated with production, the value of which is higher after trade integration ($\rho^i \uparrow$)

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- This implies that *non-coordinated* convergence from one equilibrium to the other is less likely in economic integration rather than in autarchy
- Trade lowers the cost of being in the (C, S) rather than in the (I, R) eq. Thus, increasing trade exposure *per se* can reduce the pressure for institutional and cultural convergence because these costs are lower under trade than under autarky

3. Belloc-Bowles model: conclusions

- Economic integration need not destabilize and, indeed, may fortify the preexisting cultural and institutional differences upon which *comparative advantage* is based, each country being specialized in the production which is relatively more efficient given the prevailing culture and institutions

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- This is true even if there exists an alternative cultural–institutional equilibrium that confers *absolute advantage* in all goods

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