Unequal Gains, Prolonged Pain

Dynamic Adjustment Costs and Protectionist Overshooting

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Adjustment Costs Matter... Especially in Politics

- Structural change is slow and costly – growing evidence that workers face large and long-lasting adjustment costs:
  e.g. Artuc, Chaudhuri, Mclaren (‘10); Autor, Dorn, Hansen, (Song) (‘13,‘13)

- Sticky labor adjustment $\Rightarrow$ even potential “winners” from change can be losers in the short run.

$\Rightarrow$ Dynamics are key; we need political economy models that take time seriously.

- Most political economy models are static, steady state, or rigged to ensure “smooth” adjustments, and thus miss a key feature of dynamic adjustment

Predicting a Protectionist Surge and Ebb

- Suppose workers make lifelong (or at least long term) decisions over education, training, and accumulated skills
- If expectations are correct, these human capital investments are ex-post optimal $\Rightarrow$ steady state policy
- Now suppose there is an unanticipated global shock – "offshorability", currency, TOT, business cycle, etc.
- Skills are stuck, at least for a while, but policy can change. If median voter becomes more protectionist given her skills:

$\Rightarrow$ "Protectionist Overshooting": protectionism spikes immediately,* declines over time as skills gradually adjust...

$\star$ ...even if new steady state trade policy is *more* liberal!

Key Implication

Unequal Gains ⇒ Prolonged Pain

- Overshooting arises when the median bears a disproportionate burden of the shock – causing her to become more protectionist
- Overshooting distortion is costly–
  - *Static*: well understood efficiency cost of democracy when median voter is not "representative"
  - *Dynamic* : spike in tariff at time of shock delays future adjustments – self-perpetuating distortion long outlives the "shocked" generation
- ◇ Unequal gains ⇒ prolonged pain

Related Literature

Trade Liberalization and Labor Adjustment Costs; e.g.

Artuc, Chaudhuri, and McLaren (AER 10); Autor, Dorn, and Hanson (AER 13); Autor, Dorn, Hanson, and Song (NBER Wp 13); Matsuyama (1992); many others

Dynamic Trade Policy; e.g.

Staiger and Tabellini (AER 87); Fernandez and Rodrik (AER 91); Brainard and Verdier (JIE 97); Blanchard and Willmann (JIE 11); many others

Economic-Political Feedback

Acemoglu and Robinson (2013); Hassler, Rodríguez-Mora, Storesletten, & Zilibotti (AER 03); etc.

Sketch of the Model

Individuals and Education

- Continuum of heterogenous agents live for 2 periods
- Agents born with innate ability, $a \in [0, 1]$
- When young, choose optimal educational investment, e.
- Cost of education is foregone wages as a young, unskilled worker. Time constraint:

$$l + e = 1$$

- In second stage of life, education and ability $\rightarrow$ human capital, $h \equiv h(a, e)$ s.t.:

$$h_a > 0 \qquad h_e > 0$$
$$h_{ee} < 0 \qquad h_{ae} > 0$$

Sketch of Model, cont.

Production and Trade

- Small open economy, *Home*
- Two goods: U, the numeraire and S, a skill-based good
  - U: one-for-one in unskilled labor $\rightarrow$ unskilled wage $=1$
  - S: $x(h) \equiv bh$ where $b > 0$ ($\uparrow b \approx$ SBTC)
- Return to acquiring h: bhp, where $p \equiv \frac{p^S}{p^U}$ is rel. price of S
- Home has comparative advantage in S.

$\Rightarrow$ Liberalization increases relative price of skill-based good; protectionism decreases it

Educational Investment

- Optimal educational attainment maximizes lifetime indirect utility. For the young voter at time t:

$$\max_{e} \quad V(p_t, I_t^y(e; p_t)) + \beta V(p_{t+1}, I_{t+1}^o(h(a, e); p_{t+1})$$

where $V(p, I) \equiv v(p)I$.

$\Rightarrow$ Optimal education level, $e(a; p_t, p_{t+1})$ is

- increasing in ability level (single crossing)
- increasing in current & future price of S
  - decreasing in current and future tariff, all else equal

Politics

Median Voter Model

- Majority voting. Median voter is decisive.
- Only the old vote.
- Individual tariff preference depends on a and education

Individually optimal tariff given by the FOC:

$$V_\tau(a) = v_I \Big\{ \underbrace{\underbrace{[E_t^s(a) - \bar{E}_t^s]}_{\equiv \Delta_t(a)} \underbrace{\frac{\partial p_t}{\partial \tau_t}}_{(-)}}_{\text{individual bias}} + \underbrace{tp \frac{dE_t^s}{d\tau_t}}_{\text{= 0 @ t=0}} \Big\}_{\text{std optimal tariff}} = 0. \qquad (1)$$

Lower (higher) ability/education $\Leftrightarrow \Delta(a) < 0$ ($\Delta(a) > 0$)

Politics

Equilibrium Trade Policy, $\tau_t = \tau(a^M; e^M_{t-1}(a^M), \bar{e}_{t-1})$

- Determined by education of median voter born in *previous* generation
- Tariff is *decreasing* in median voter education level (holding average education fixed)
- Tariff depends critically on $\Delta(a^M)$; i.e. the median relative to the mean human capital level

▸ Individually Optimal Tariff Derivation

Solving the Model

Solution Strategy

1. Define political equilibrium using median voter rule and rational expectations.
2. Steady state defined by $\tau(e^M)$, $e^M(\tau)$.
3. Adopt 'nice' case conditions: unique, interior steady state
4. Shock the economy with a TOT improvement; study dynamics

Political Equilibrium

Definition

A rational expectations *political equilibrium* is defined by a sequence of tariff and education rule pairs, $(\tau_t, e_t(a))_{t\in\mathbb{N}}$ such that the following hold for all $t \in \mathbb{N}$:

1. τ_t maximizes indirect utility of the median voter at time t;
2. $e_t(a)$ is optimal for every agent given rational expectations.

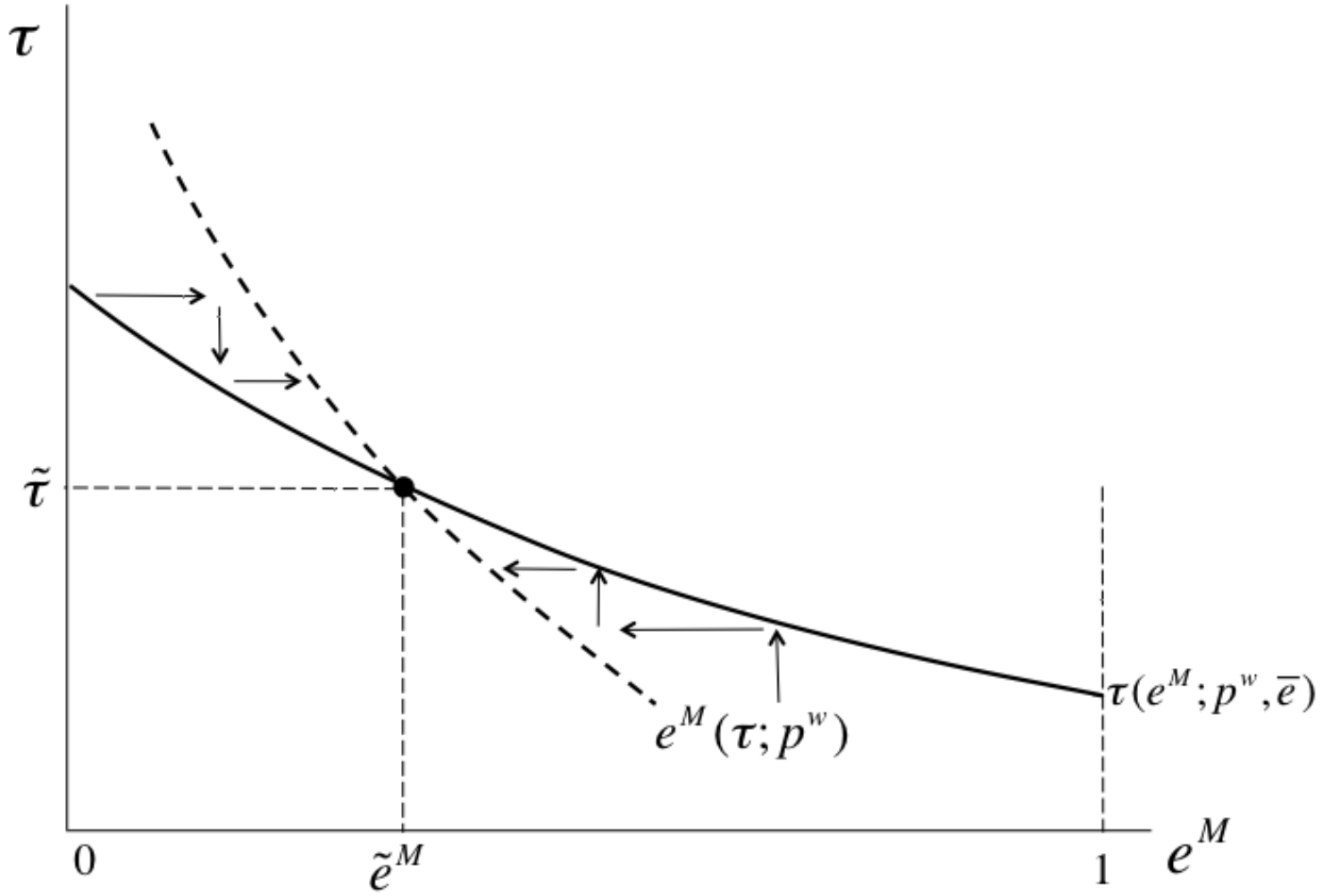
Political Steady State

Definition

Political Steady State. A political steady state is reached when $\tau_t \equiv T(e^M_{t-1}) = \tau_{t-1}\ \forall t$. A political steady state can be summarized by the steady state education level of the median voter and concomitant policy outcome pair, $\{\tilde{e}^M, \tilde{\tau}\}$:

$$\begin{aligned} \tilde{e}^M &= e^M(\tilde{\tau}) = h_e^{-1}\left(a^M, \frac{\tilde{\tau}}{\beta b p^w}\right) \\ \tilde{\tau} &= T(\tilde{e}^M) = \arg\max_{\tau} V^o(\tau; a^M, \tilde{e}^M). \end{aligned}$$

Unique Stable Steady State



Conditions for Uniqueness and Stability

Assumption 2

Sufficient Conditions for e locus to cross τ locus once and only once from below:

$$\lim_{e \to 0} h_e(a^M, e) = \infty, \qquad \lim_{e \to 1} h_e(a^M, e) = 0$$

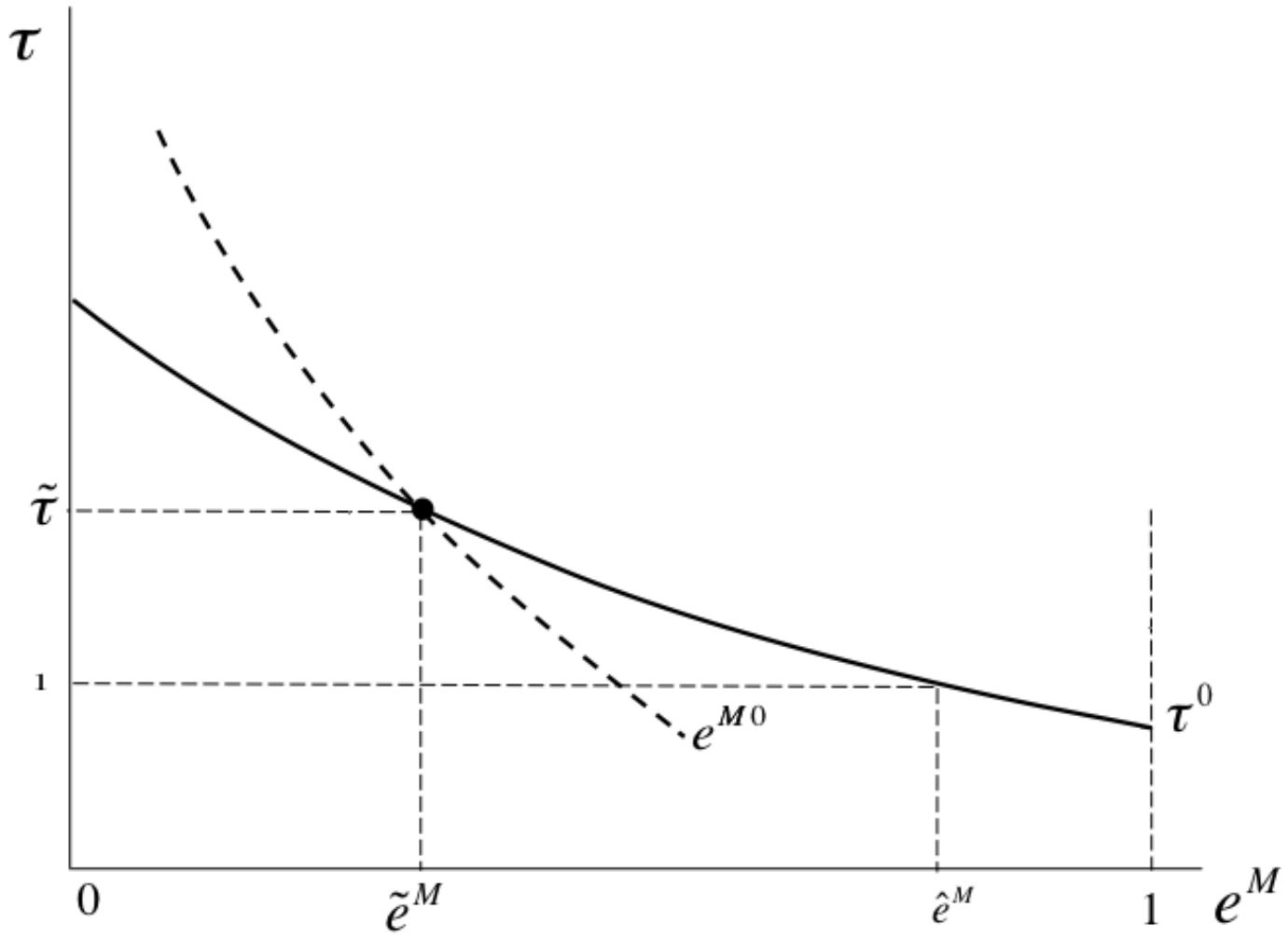
$$\underbrace{-\left.\frac{V^o_{\tau e}}{V^o_{\tau \tau}}\right|_{a^M}}_{\frac{d\tau^o}{de}} < \underbrace{\beta b h_{ee} p^w|_{a^M}}_{\frac{d\tau}{de^M}}$$

Permanent Terms of Trade Shock

Motivation

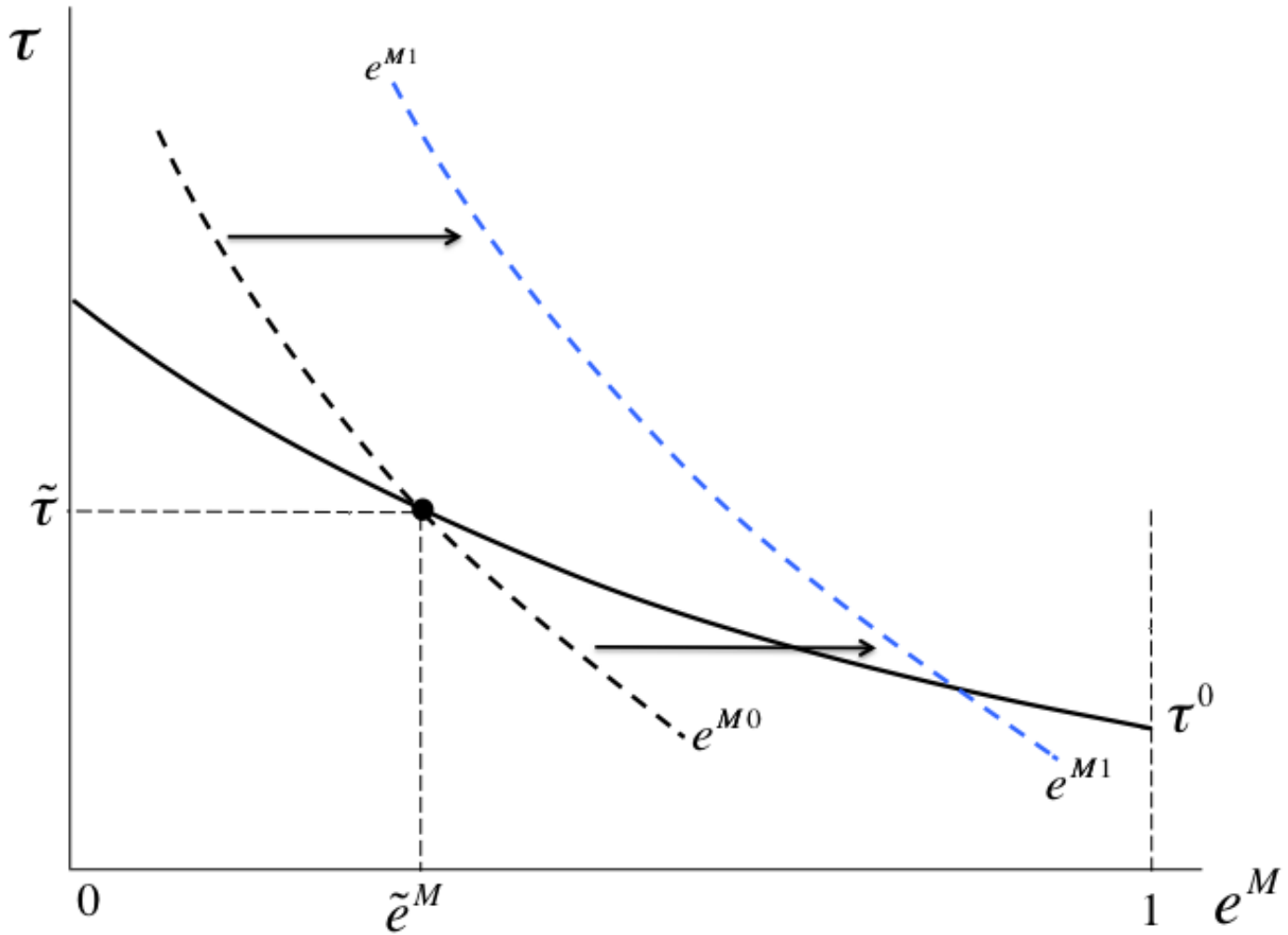
- We consider a permanent TOT improvement,
- The price of the skilled good *rises*, thus
- increasing the the incentive to acquire education.
- We analyze how both skill acquisition and political decisions react to the shock,
- in particular, the time path of trade policy.

Steady state response to $\uparrow p^w$



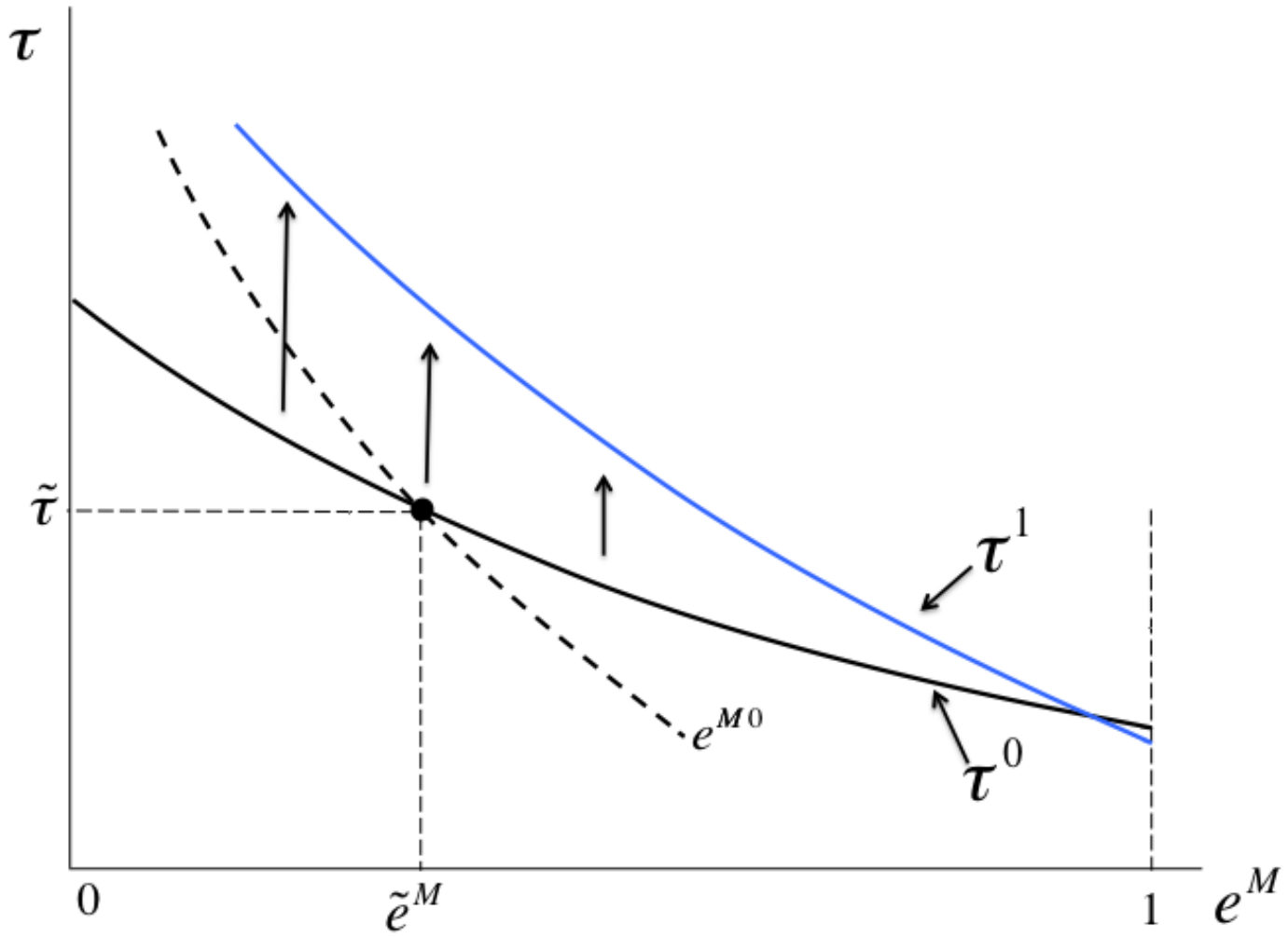
Steady state response to $\uparrow p^w$

$e(\tau)$ shifts right/up



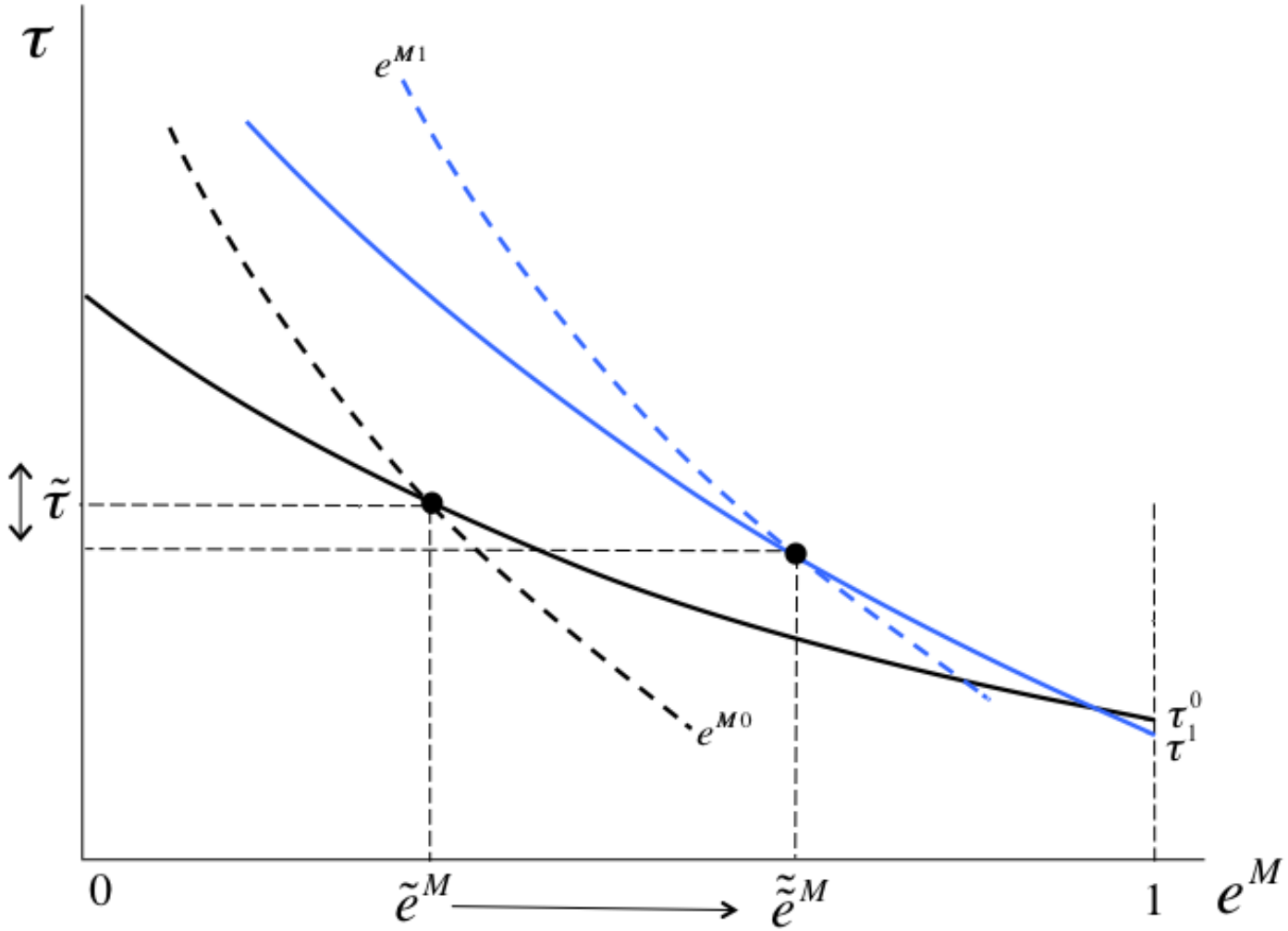
Steady state response to $\uparrow p^w$

$\tau(e^M)$ shifts up if median voter relatively import-competing



Steady state response to $\uparrow p^w$

$\tilde{e}^M \uparrow$; Net effect on $\tilde{\tau}$ ambiguous – focus on case in which $\tilde{\tau} \downarrow$



Time Path of Adjustment: $p^w \uparrow\uparrow$ at time T

$\star$ Policy rule adjusts immediately – Education takes time

Immediate jump in τ

- Tariff locus shifts up: $\tau(e^M; p^{w\prime}) > \tau(e^M; p^{wo})$
- Because e^M fixed at T $\Rightarrow \tau_T >> \tau_{T-1}$: tariff jumps at T
- Thereafter, $\tau_{t+1} = \tau(e^M_t; p^{w\prime})$.

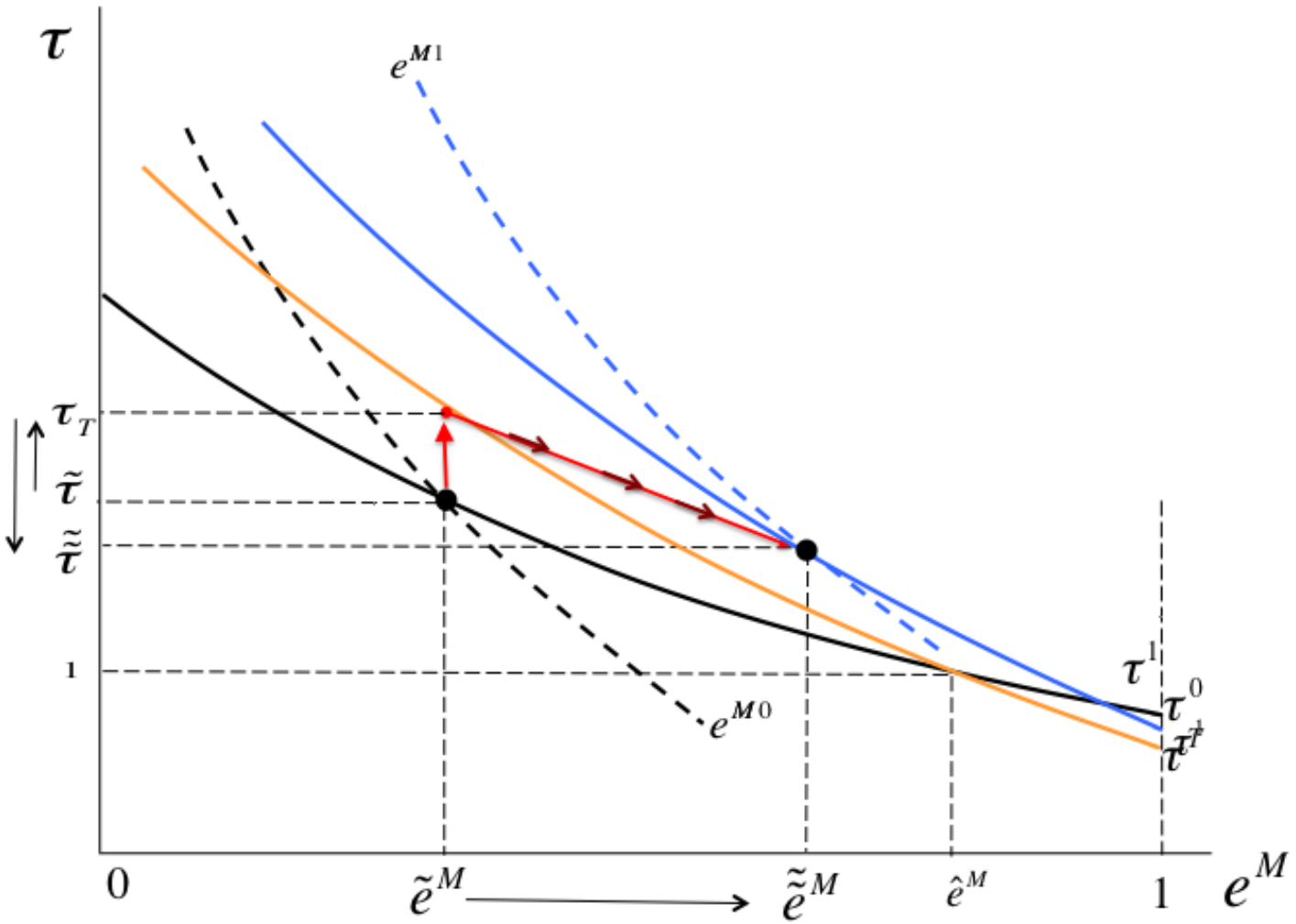
Median voter's education stuck at T, then gradually rises

- Education Rule $e_t = e(a^M; p_t, p_{t+1})$
- If tariff spike offers *partial protection*, i.e. $p_T > p_{T-1}$, then $e_{T+1}(a) > e_T(a)\ \forall a$.

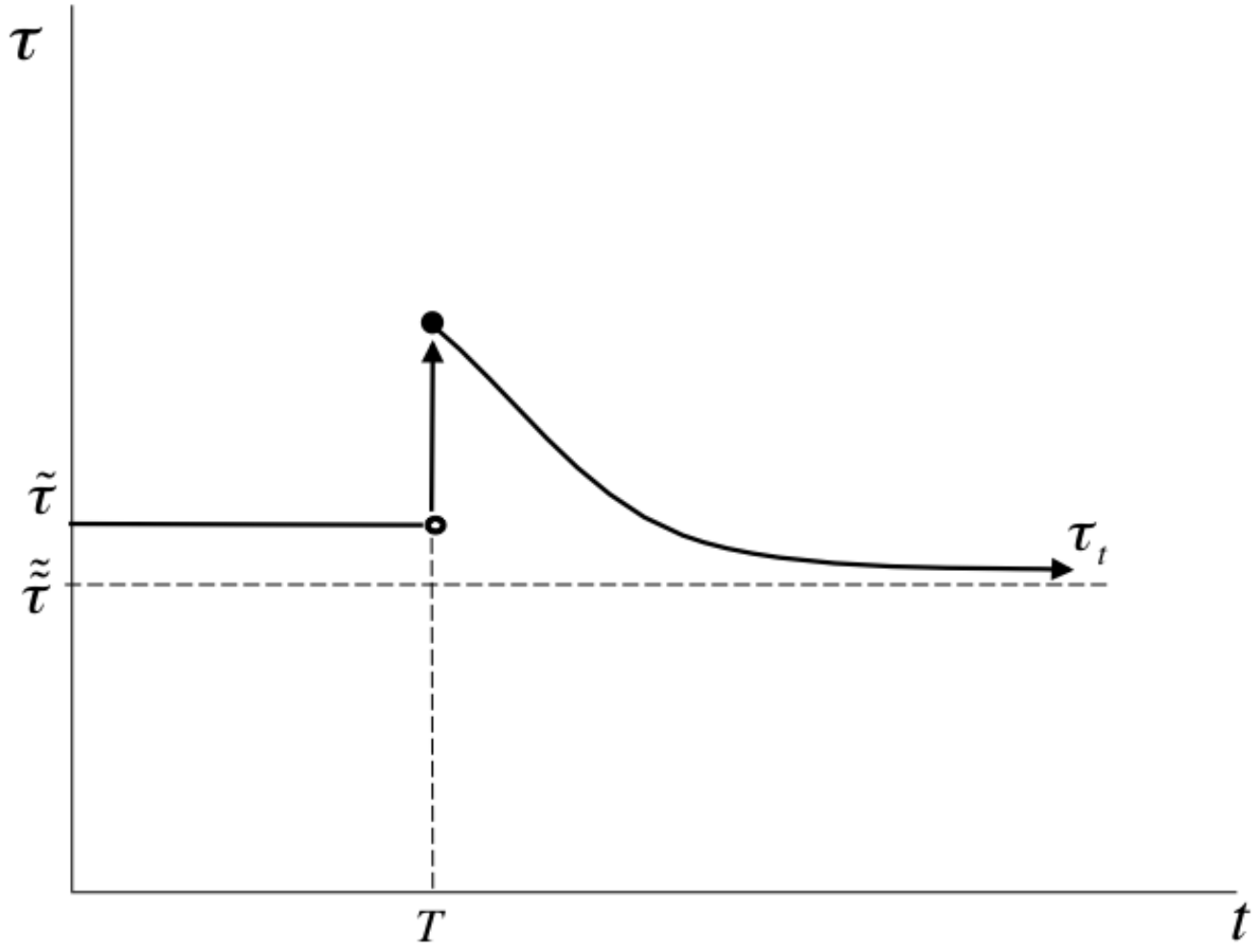
$\Rightarrow$ $\tau_{t+1} < \tau_t\ \forall t \geq T$: tariff gradually diminishes over time

Time Path of Adjustment

- Formalization

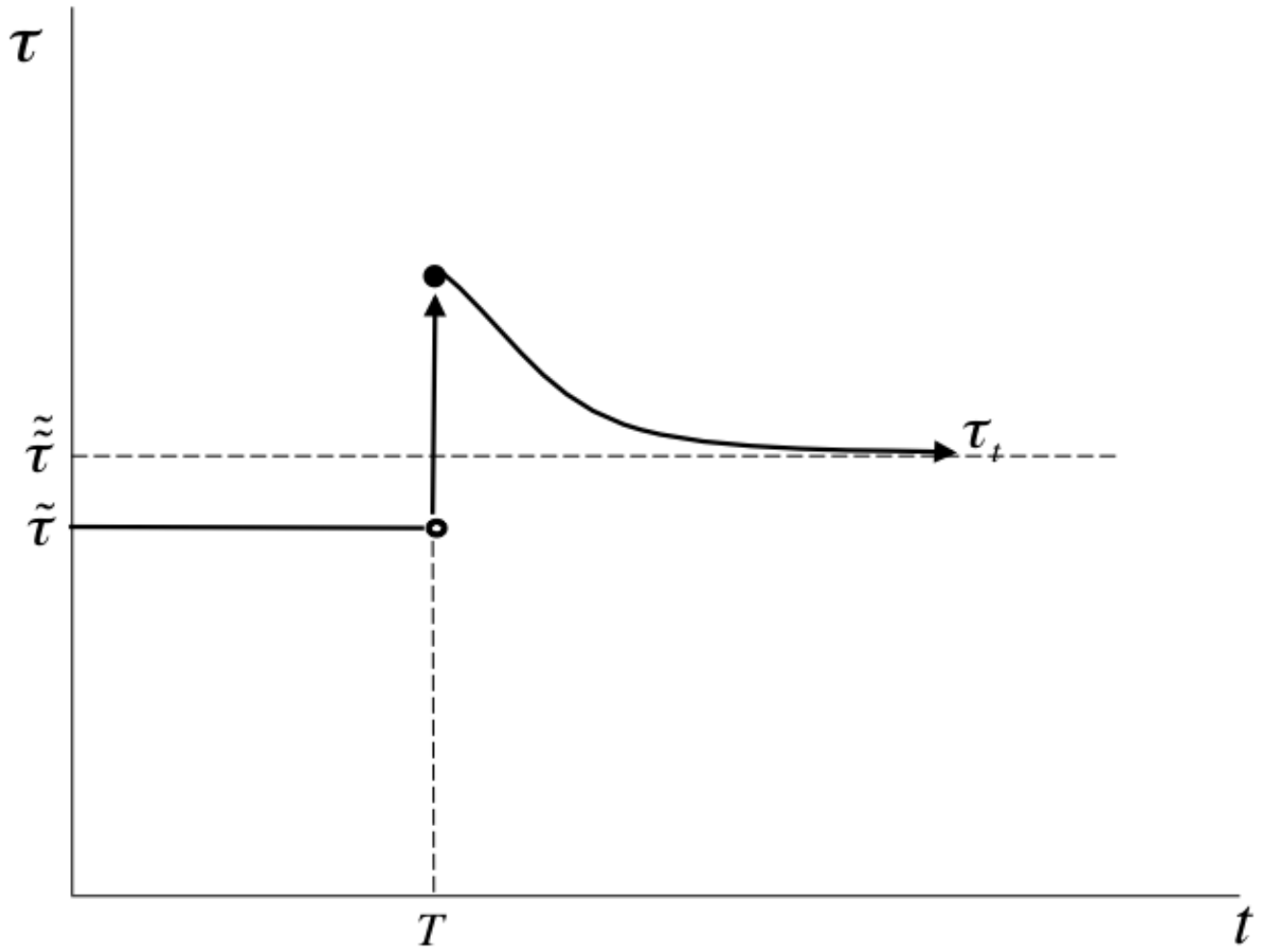


Time Path of Trade Policy Adjustment



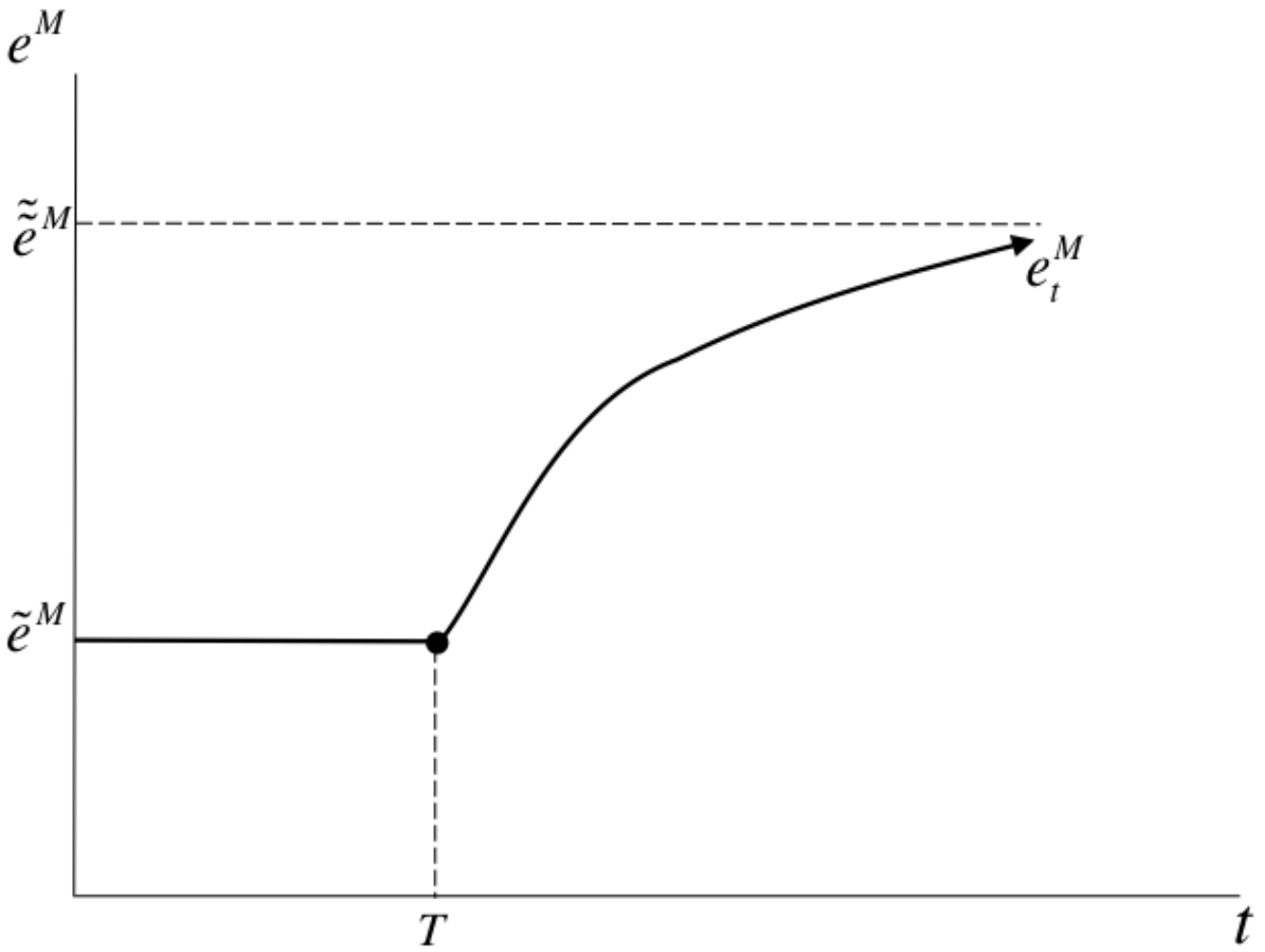
Time Path of Trade Policy Adjustment

Note: "Overshooting" can occur with new SS tariff above or below old SS



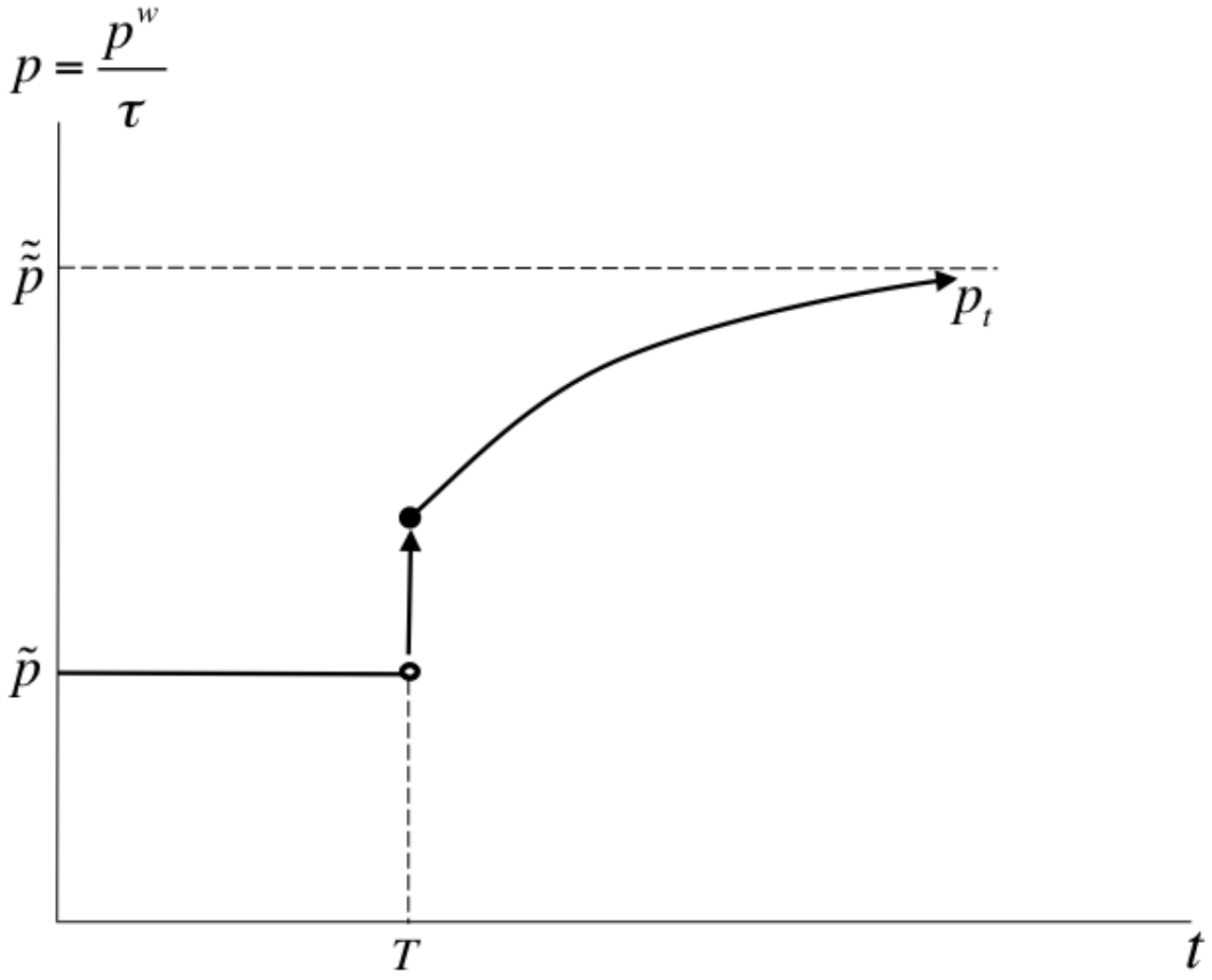
Time Path of Human Capital Adjustment

Gradual Skill Upgrading



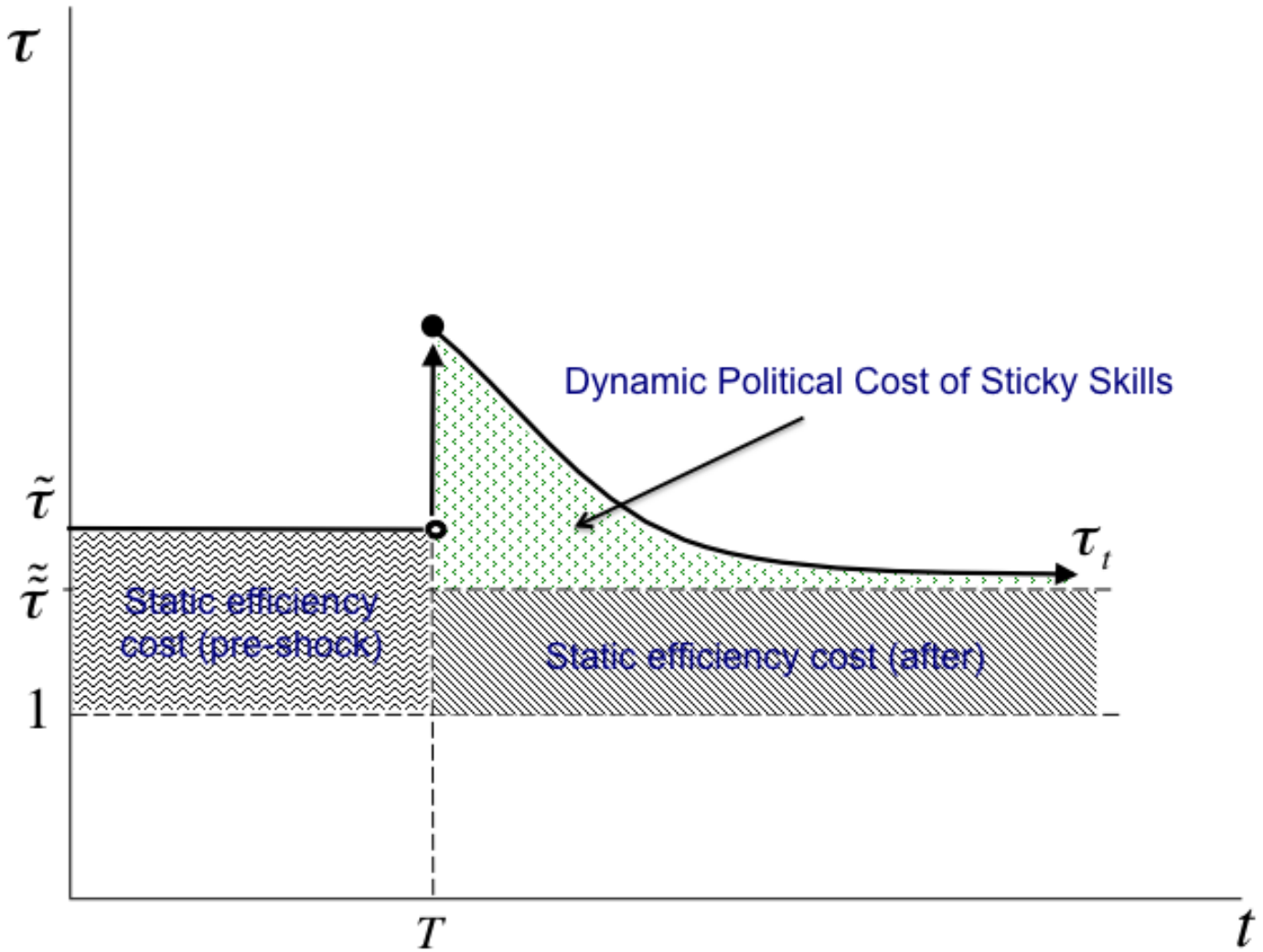
Time Path of Price Adjustment

Policy as Shock Absorber

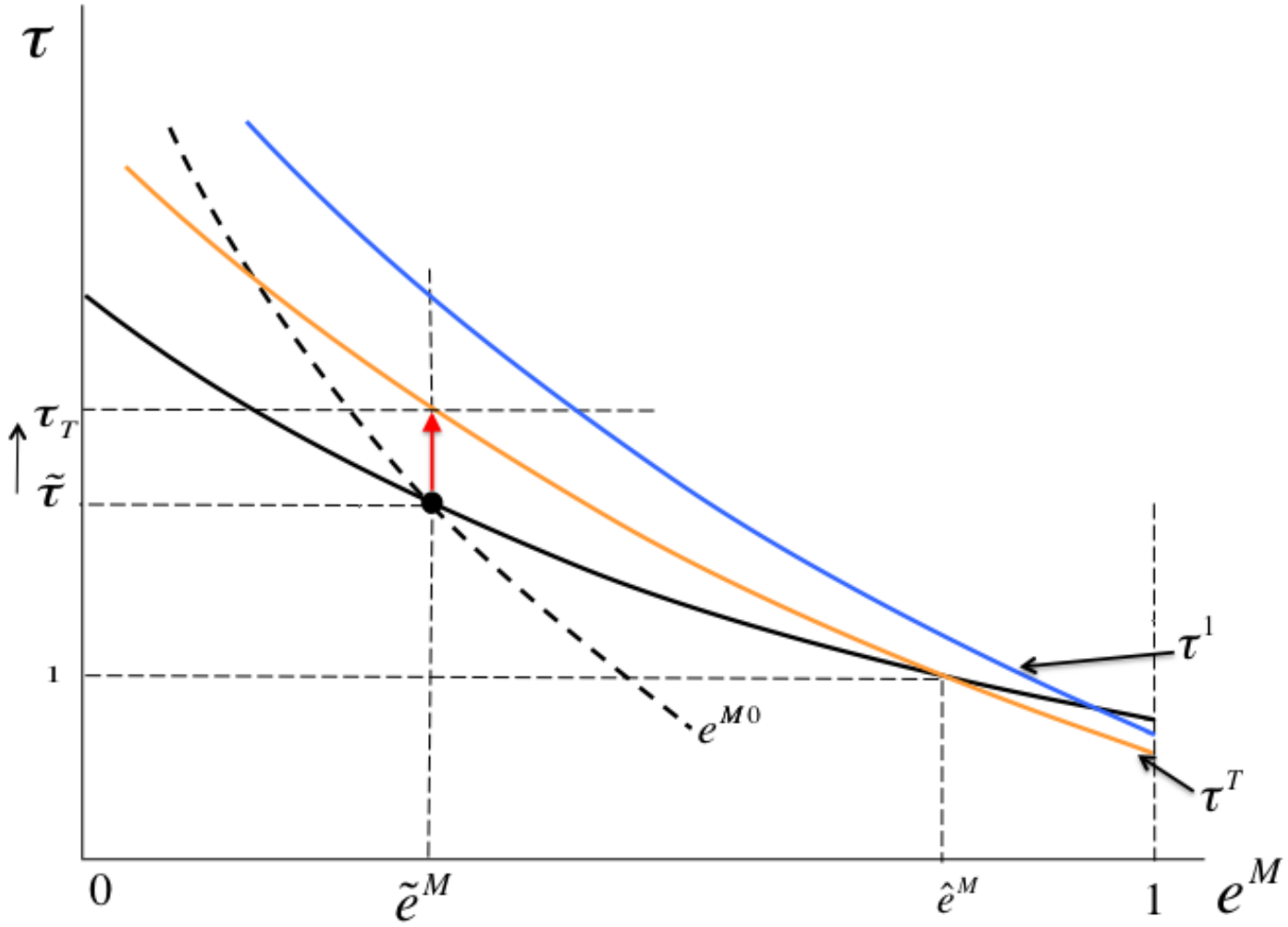


Potential Welfare Cost of Overshooting

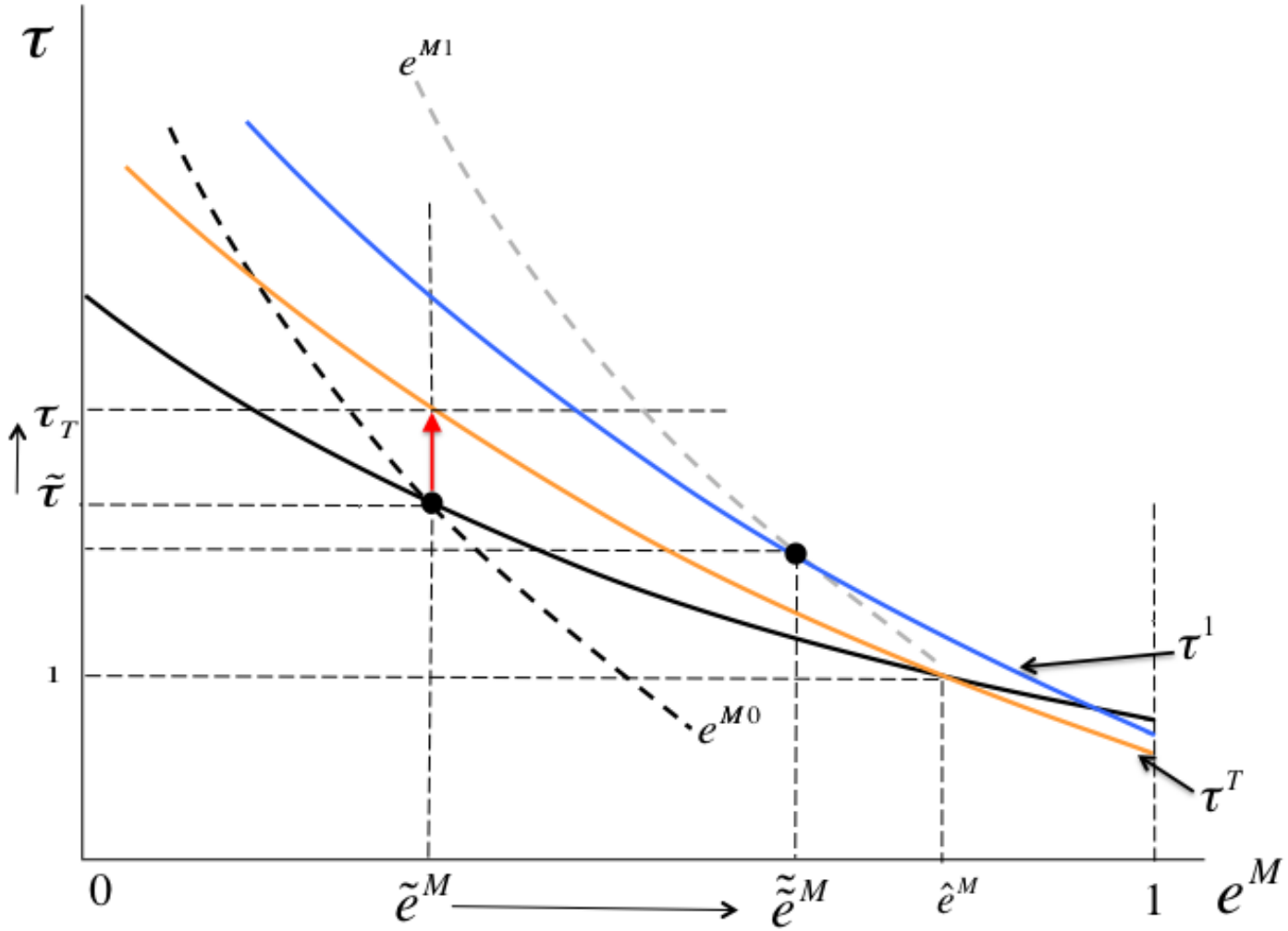
Or, continuing value of the WTO



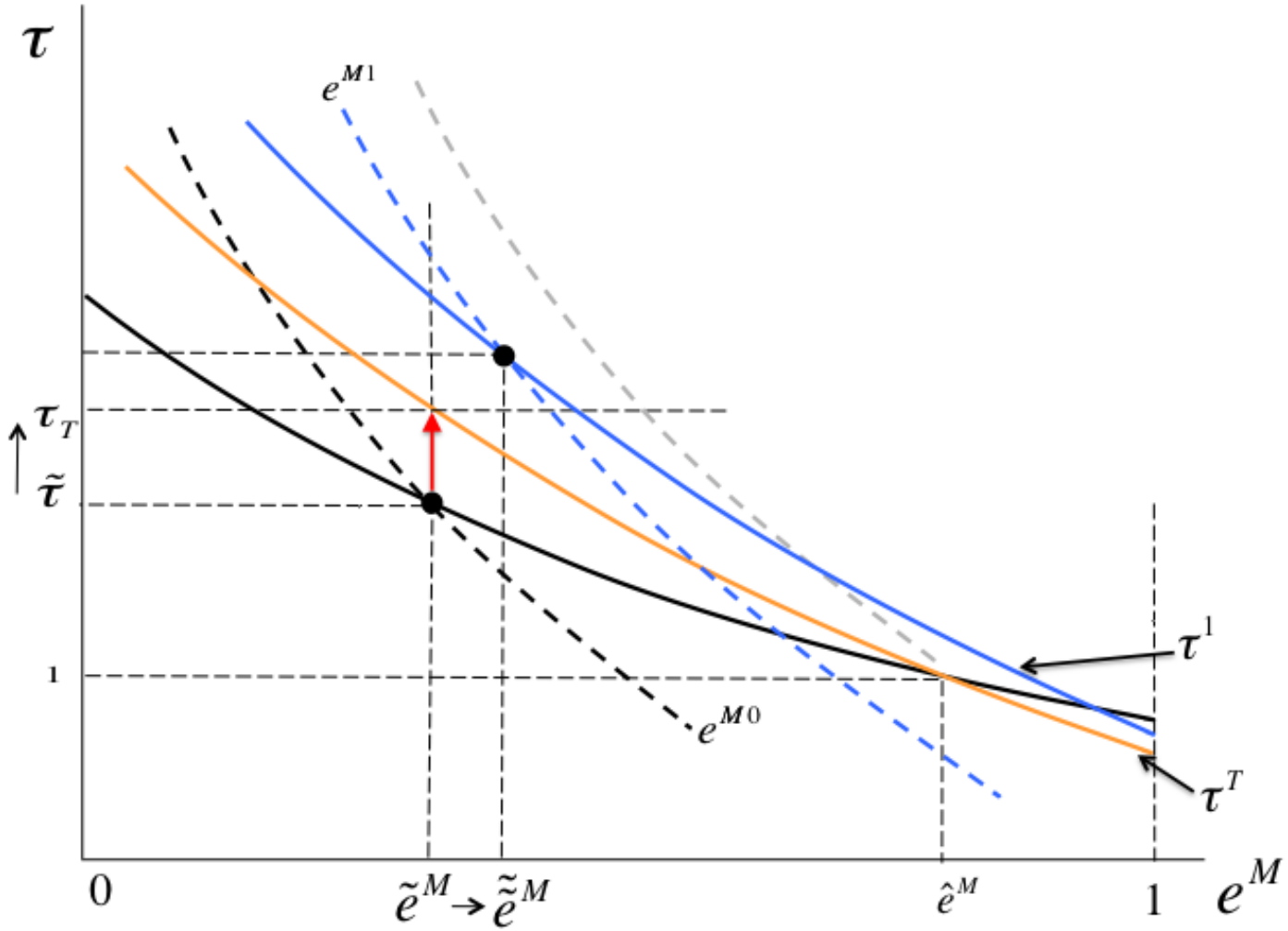
Increasing Protectionism Case:



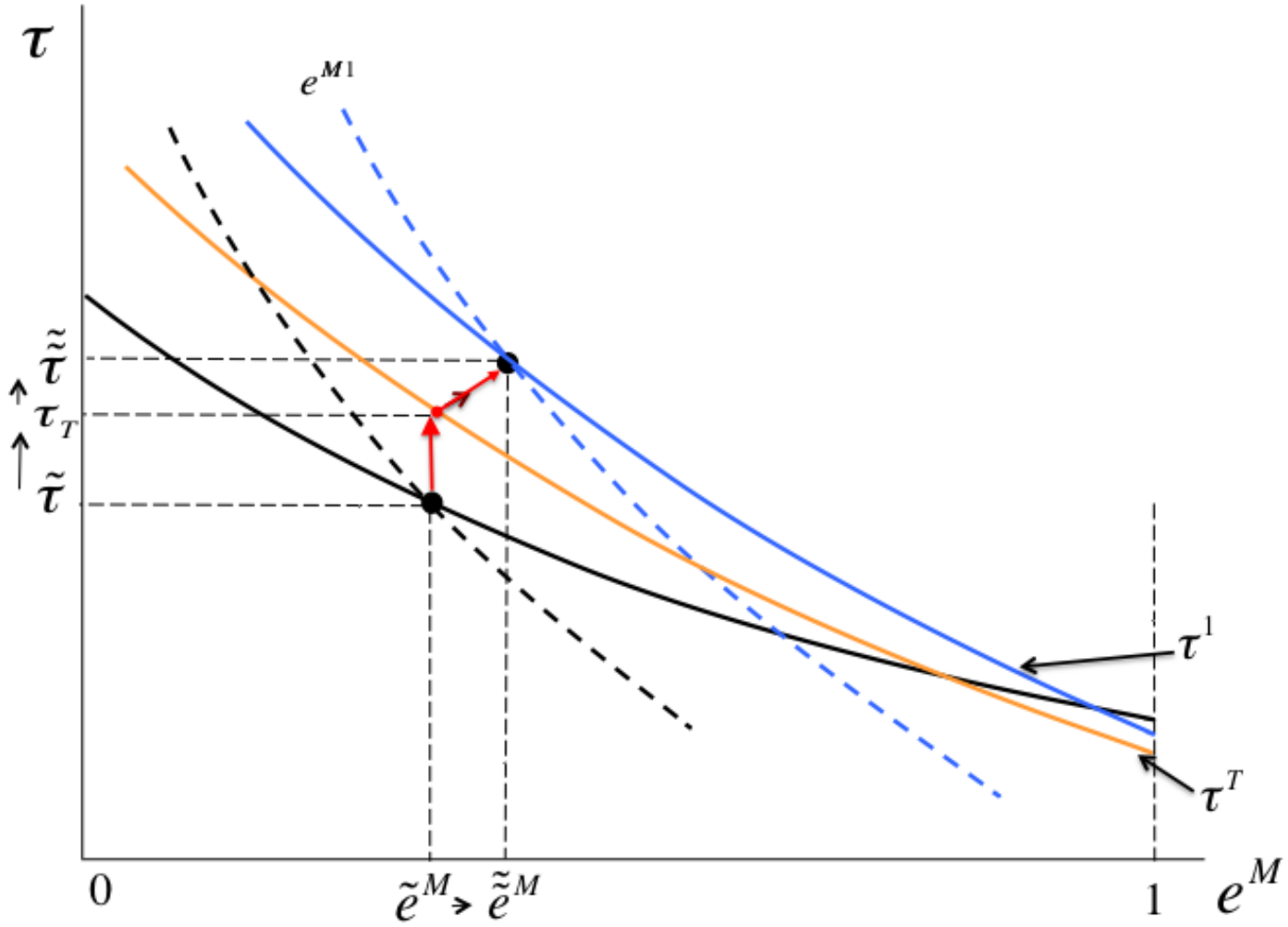
Increasing Protectionism Case:



Increasing Protectionism Case:

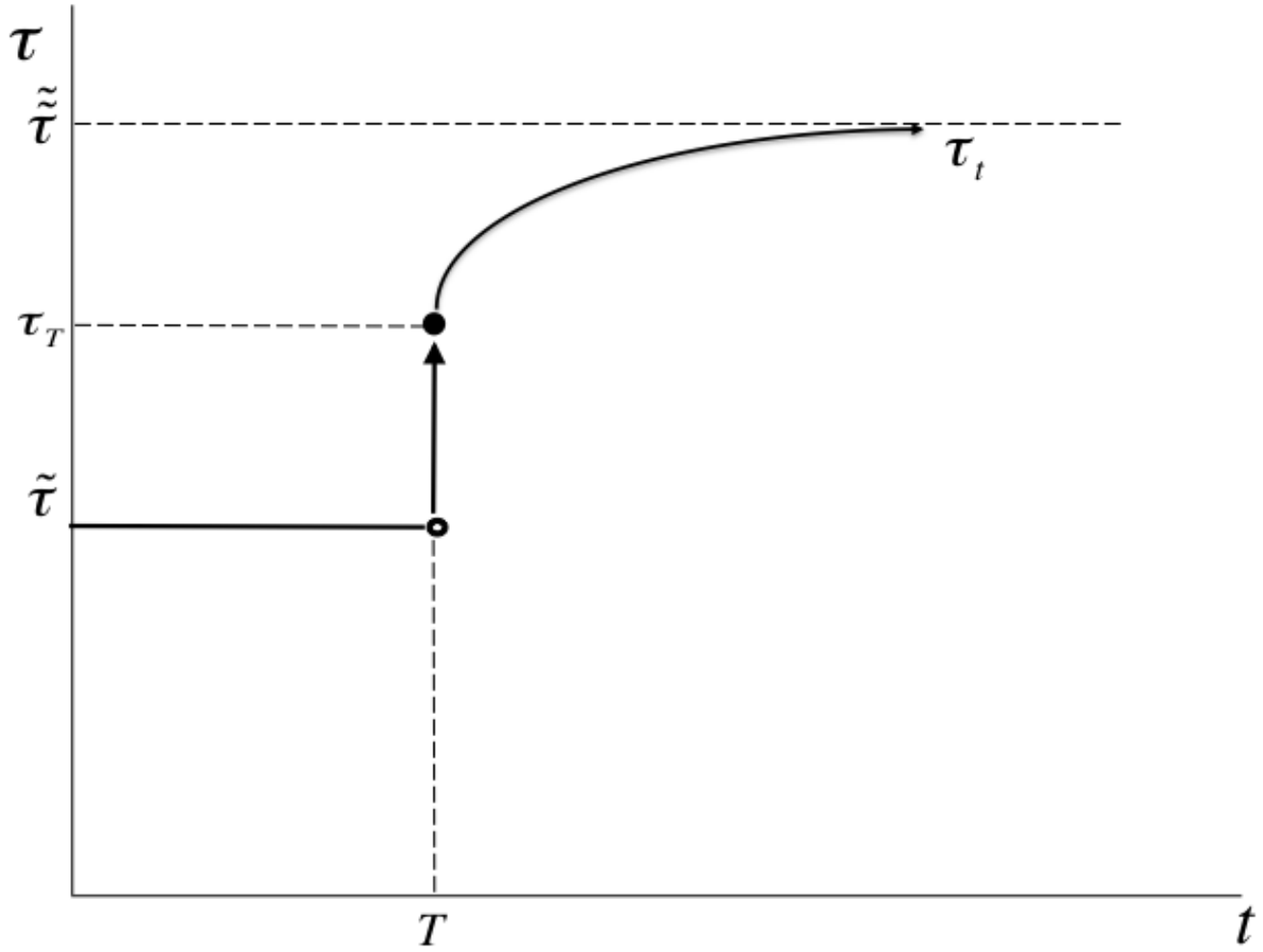


Increasing Protectionism Case:



Increasing Protectionism Case:

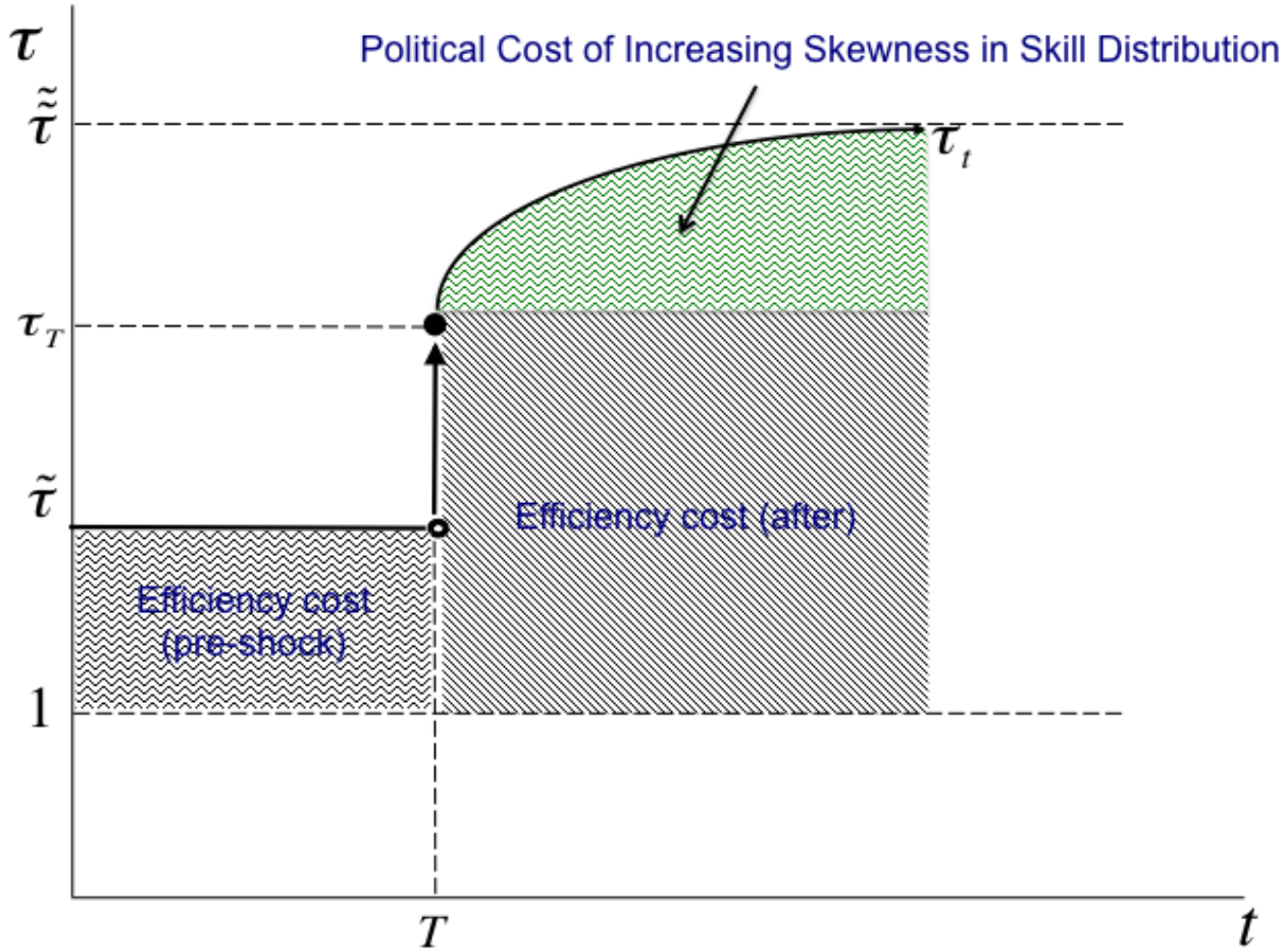
Time Path of Trade Policy Adjustment



Increasing Protectionism Case:

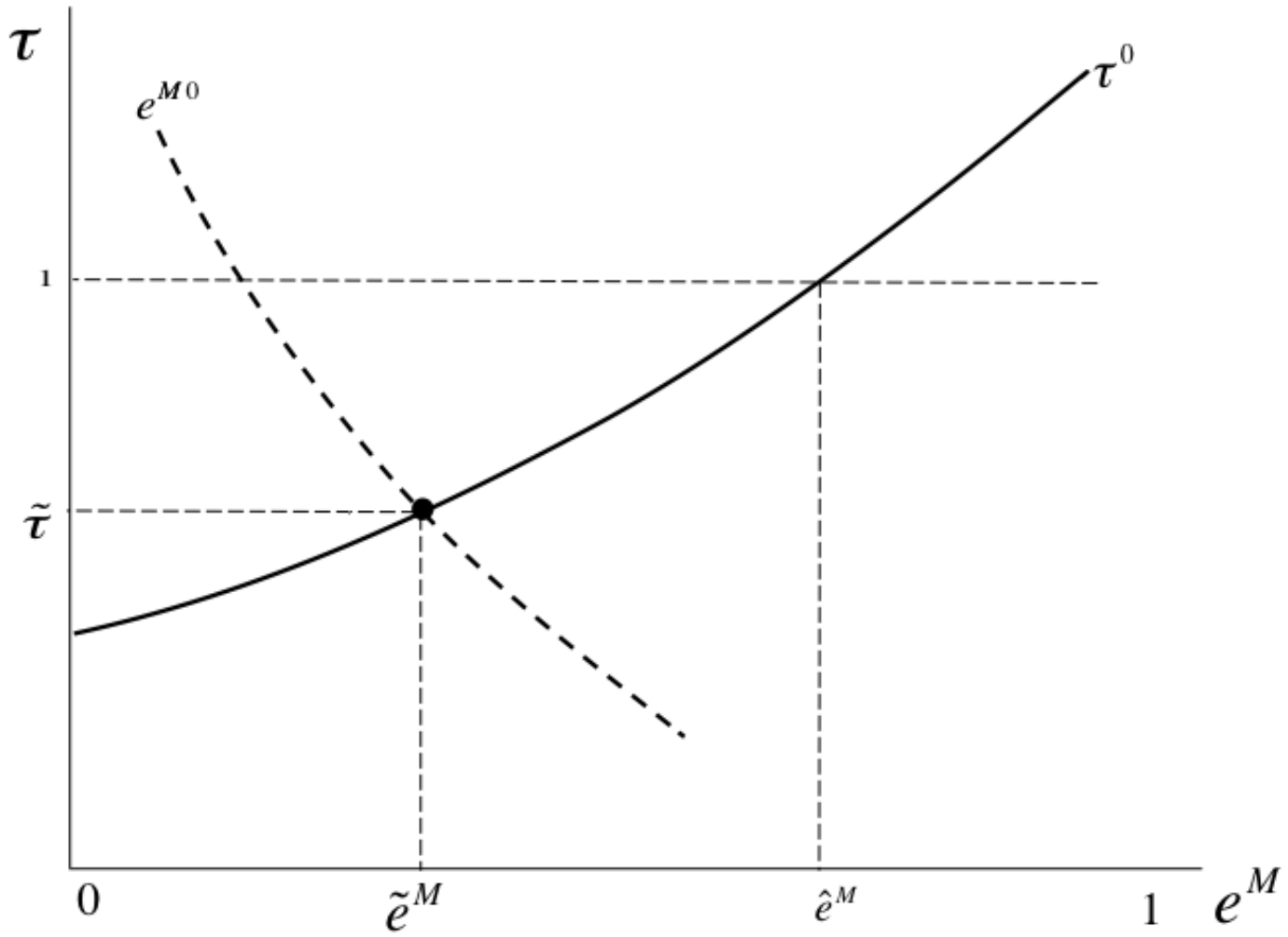
Welfare Implications

One Last Alternative



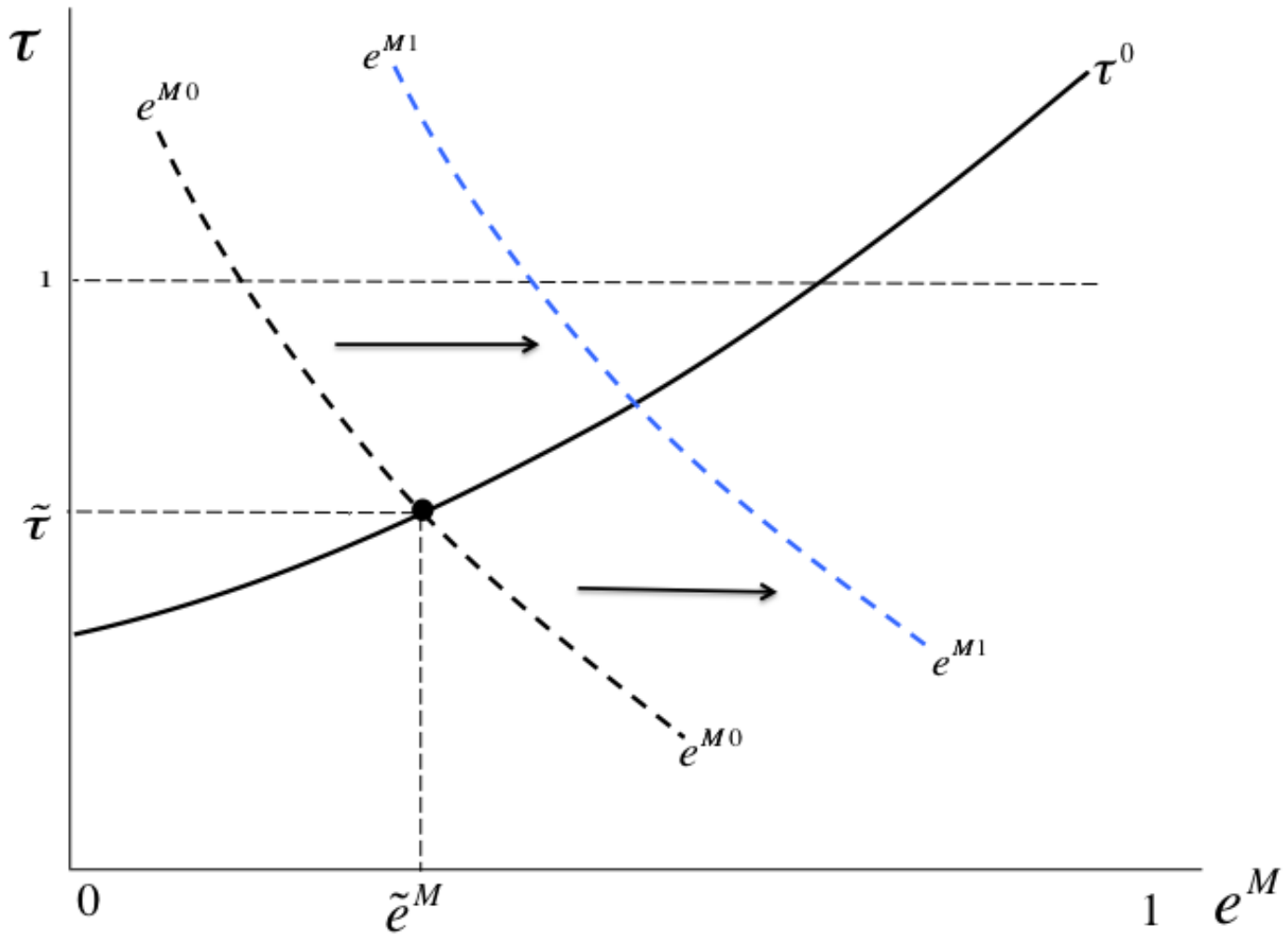
Developing Country Case:

Comp. Adv. in U; Assume human capital is skewed, as in North



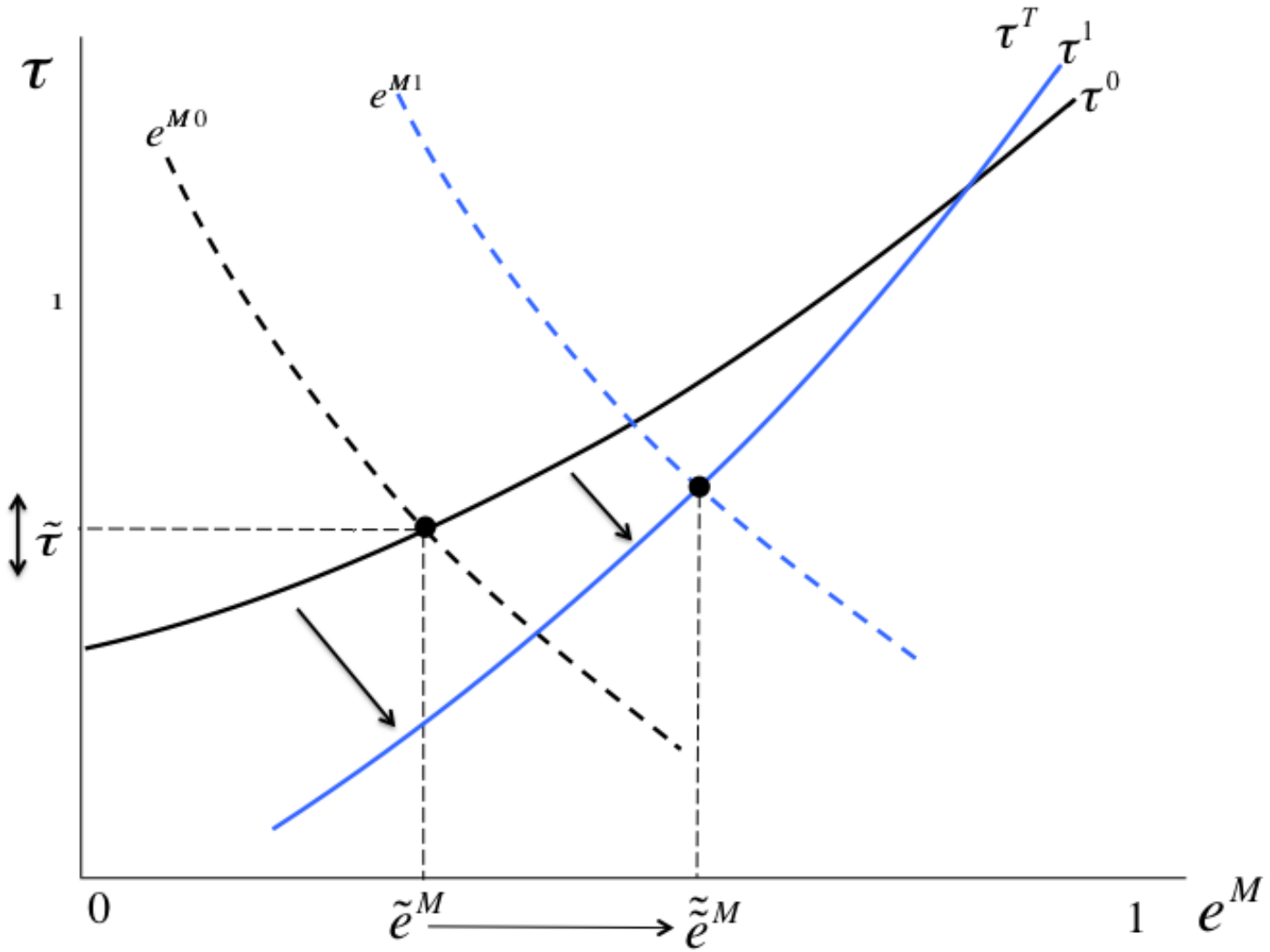
Developing Country Case:

Response to $\uparrow p^w$: $e^M(\tau)$ shifts right/up



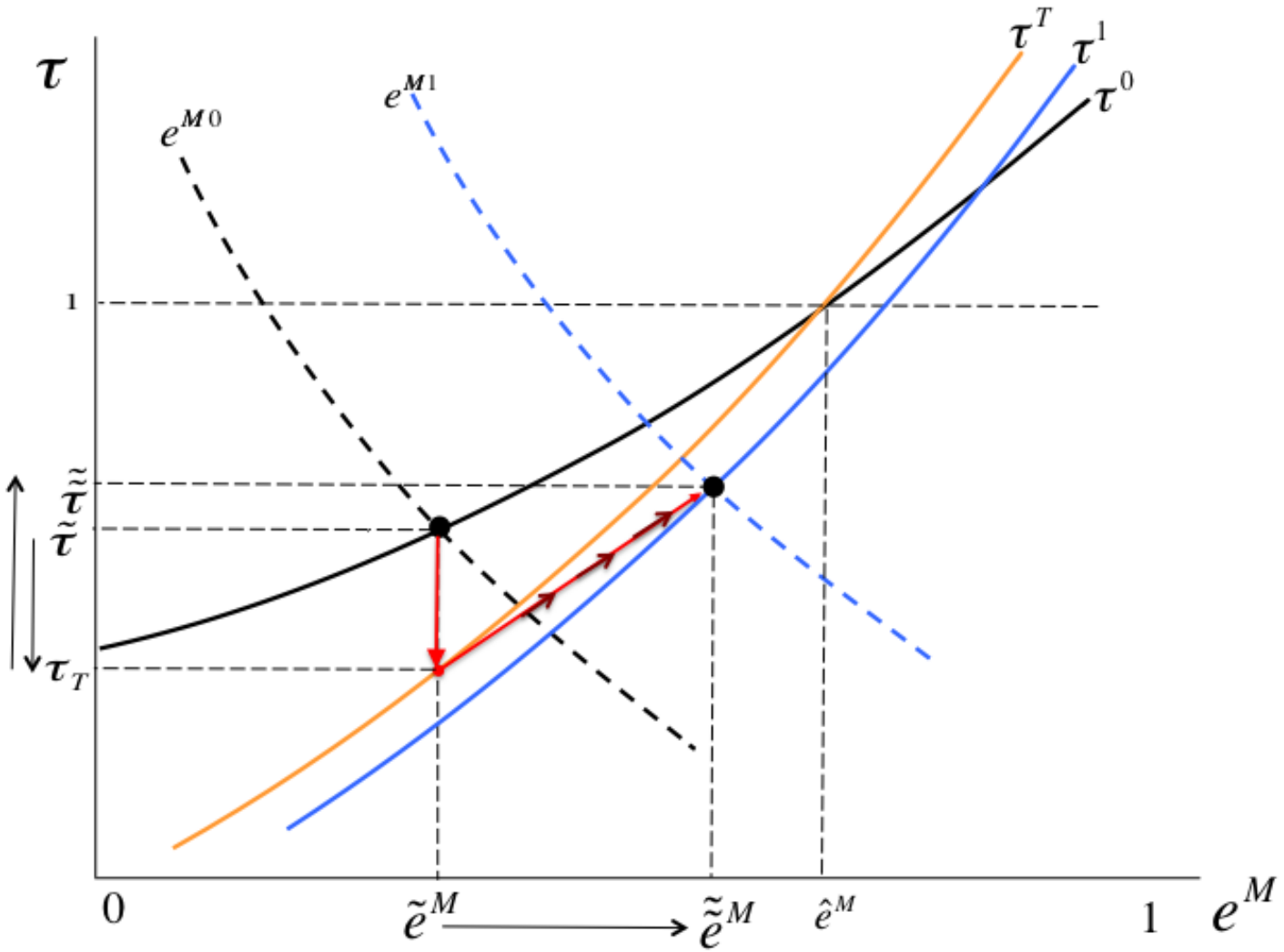
Developing Country Case:

Response to $\uparrow p^w$: $\tau(e^M)$ pivots counterclockwise



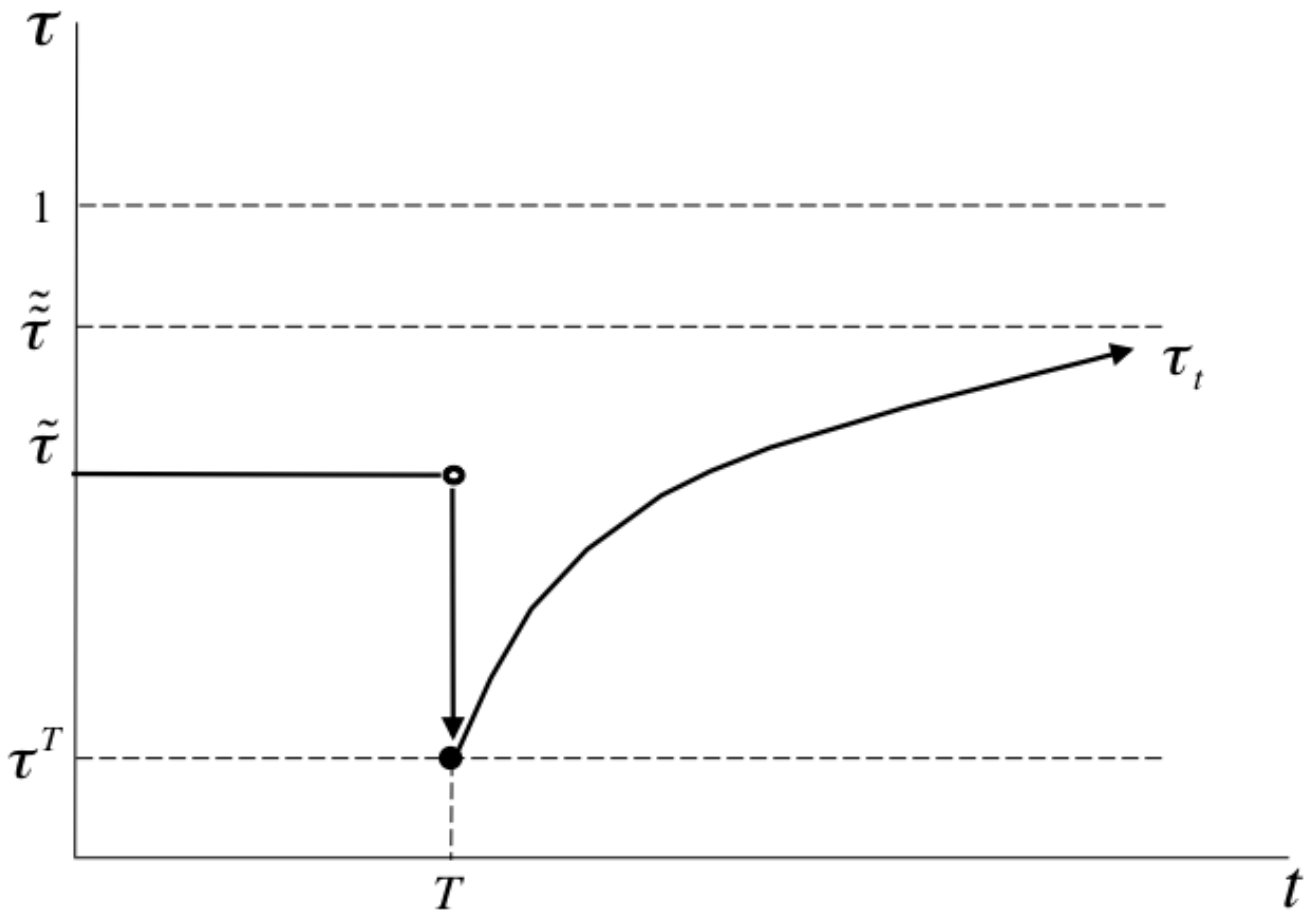
Developing Country Case:

Transition Dynamics



Developing Country Case:

Time Path of Policy Response



Conditions for Political Overshooting

1. The shock makes the median voter *more* protectionist:
   - Median voter's (real) *wage* is depressed by the shock

     Note: vulnerability to the shock must be correlated with initial distribution, so that the shock doesn't redefine the median voter's identity.

2. Majority of voters are politically enfranchised, s.t. median voter rule offers a fair approximation of trade policy rule

3. Through education/skill acquisition, voters' policy preferences can adjust over time.

▸ Suggestive Evidence

The $64K Question

Can the Majority Share in Globalization's Gains (eventually)?

A Pessimistic View

- Autor et al. (2012) (2013)
- Stolper-Samuleson + unequal distribution of capital
- SBTC exacerbating winner-take-all economy?

Counterarguments

- If transfers/educational investment are politically determined, inequality may be self-correcting...
- History repeats itself? Witness the late 19th - early 20th century response to industrialization
- semi-SBTC to the rescue?

Closing Remarks

- When real adjustment takes time, global shocks can lead to dramatic short-run political responses and 'overshooting'.
  - The more unequally a shock is felt, the greater and more persistent the political response
- Implications – additional efficiency costs of:
  - stickiness: not just static costs, but also longer transitions
  - inequality in *vulnerability*: potentially perverse policy transitions
- Key question: how flexible are workers in the long run? Crucial measure is *potential* adjustment.

Broader Contribution

- Introduce 'Policy Overshooting'
- Tractable model of political *adjustment process* based on simple insight: policy may respond faster than structural change
- Broad range of applications, from social security to fuel efficiency standards and beyond

Thank You!

A Generalizable Model

Broader Applications include...

- Fuel Efficiency Standards
- Social Security
- Climate Change Policy
  - As long as policy can change more quickly than the real economy can adjust, then short term vested interests create the potential for 'policy overshooting': short run policy reactions far in excess of long run steady state outcomes.

Political Equilibrium

Definition

A *Markov perfect political equilibrium* is defined by the tariff policy rule $T : [0,1] \to [1, \tau^P]$ s.t. $\tau_t = T(e^M_{t-1})$ and the individual education decision rule for every agent a, $\xi(a) : [1, \tau^P] \to [0,1]$ where $e_t(a) = \xi(\tau_t; a)\ \forall a$, such that $\forall t$:

1. $T(e^M_{t-1}) = \arg\max_{\tau_t} V^o(\tau_t; a^M, e^M_{t-1}) = v(p_t(\tau_t))[1 + x^s(h(a^M, e^M_{t-1})p_t(\tau_t) + R(\tau_t)]$

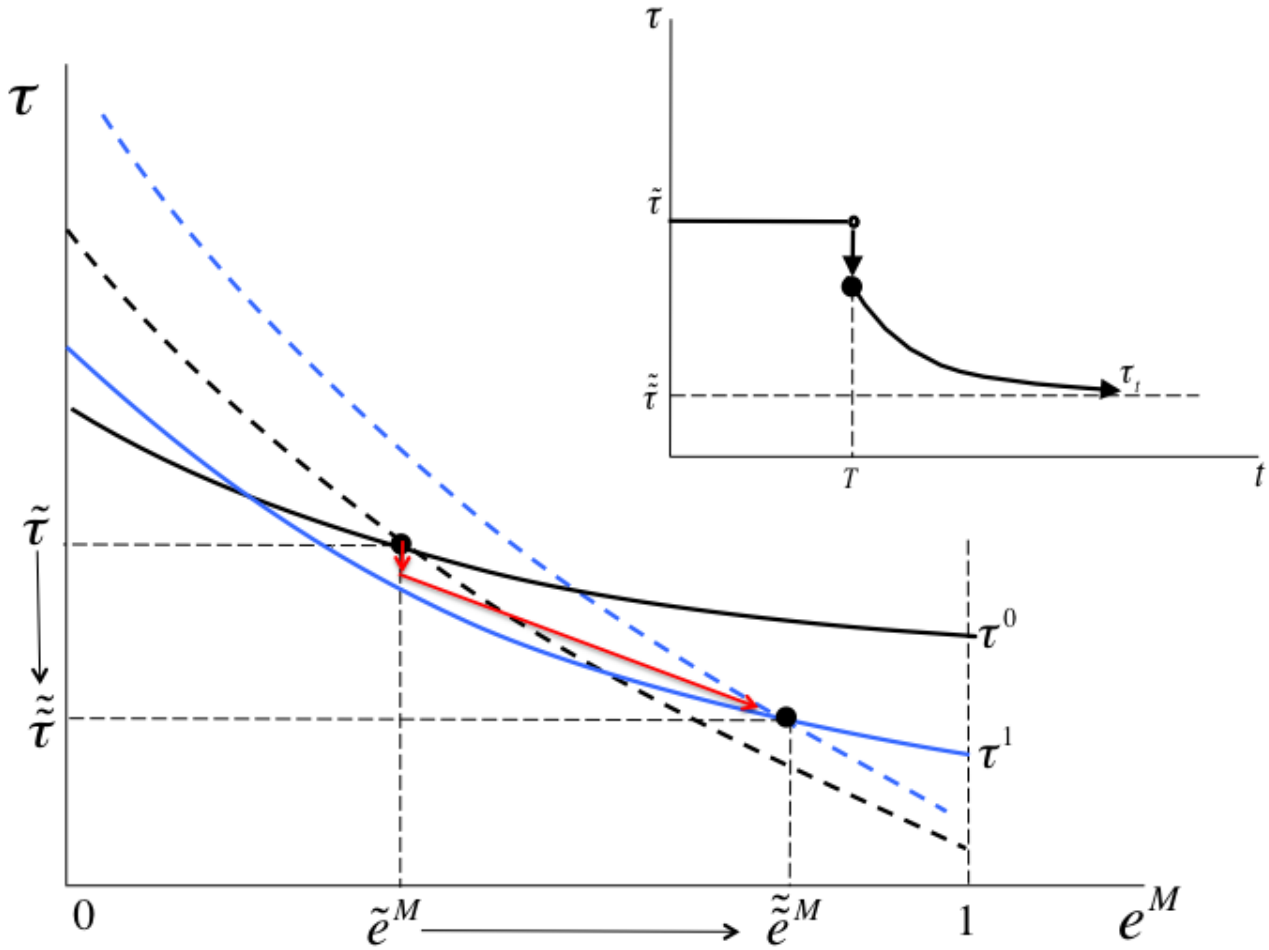
2. $\xi(\tau_t; a) = h_e^{-1}\left(a, \left(\frac{v_{p_t}}{v_{p_{t+1}}}\frac{\tau_{t+1}}{\beta p^w x^s_h}\right)\right)$, s.t. $\tau_t = T(e^M_{t-1})\forall t$.

where $e^M_t \equiv (a^M; p_t, p_{t+1})$.

▸ Back to to E-Z Definition

Alternative Case: Rapid Liberalization

Median voter becomes *less* protectionist due to shock



▸ Back to Baseline Overshooting Case

Voters' Trade Policy Preferences

Income:

$$I_t^o(a) = \underbrace{1}_{\text{base rate}} + \underbrace{x^s(h(a, e_{t-1}(a)))p_t}_{\text{skill premium}} + \underbrace{R(\tau_t)}_{\text{tariff revenue}}$$

Optimal Policy:

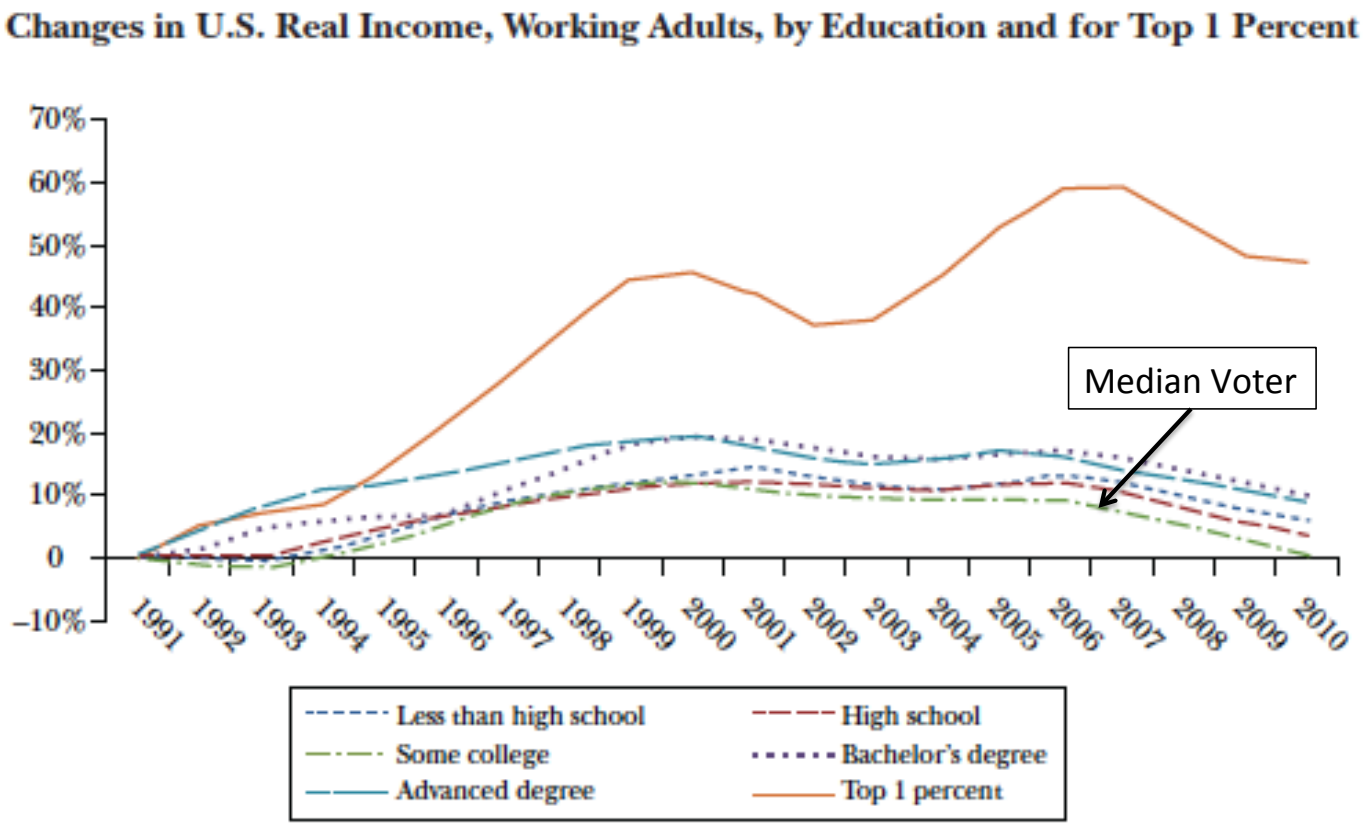
$$\tau^o(a; e_{t-1}(a)) = \arg\max_{\tau_t} \qquad V^o\big(p_t, I_t^o(a, e_{t-1})\big) \tag{2}$$

FOC:

$$V_\tau(a) = v_I \underbrace{\left\{ \underbrace{[E_t^s(a) - \bar{E}_t^s]}_{\equiv \Delta_t(a)} \underbrace{\frac{\partial p_t}{\partial \tau_t}}_{(-)} + \underbrace{tp \frac{dE_t^s}{d\tau_t}}_{=0 \text{ @ t=0}} \right\}}_{\text{individual bias}} = 0. \tag{3}$$

Back to Model

The Majority are Vulnerable



Source: US Census via Haskel, Lawrence, Slaughter *JEP* 2012

Protectionist Sentiment is Rising

Survey Question:

"In general, do you think that free trade agreements between the United States and foreign countries have helped the United States, have hurt the United States, or have not made much of a difference either way?"

Results:

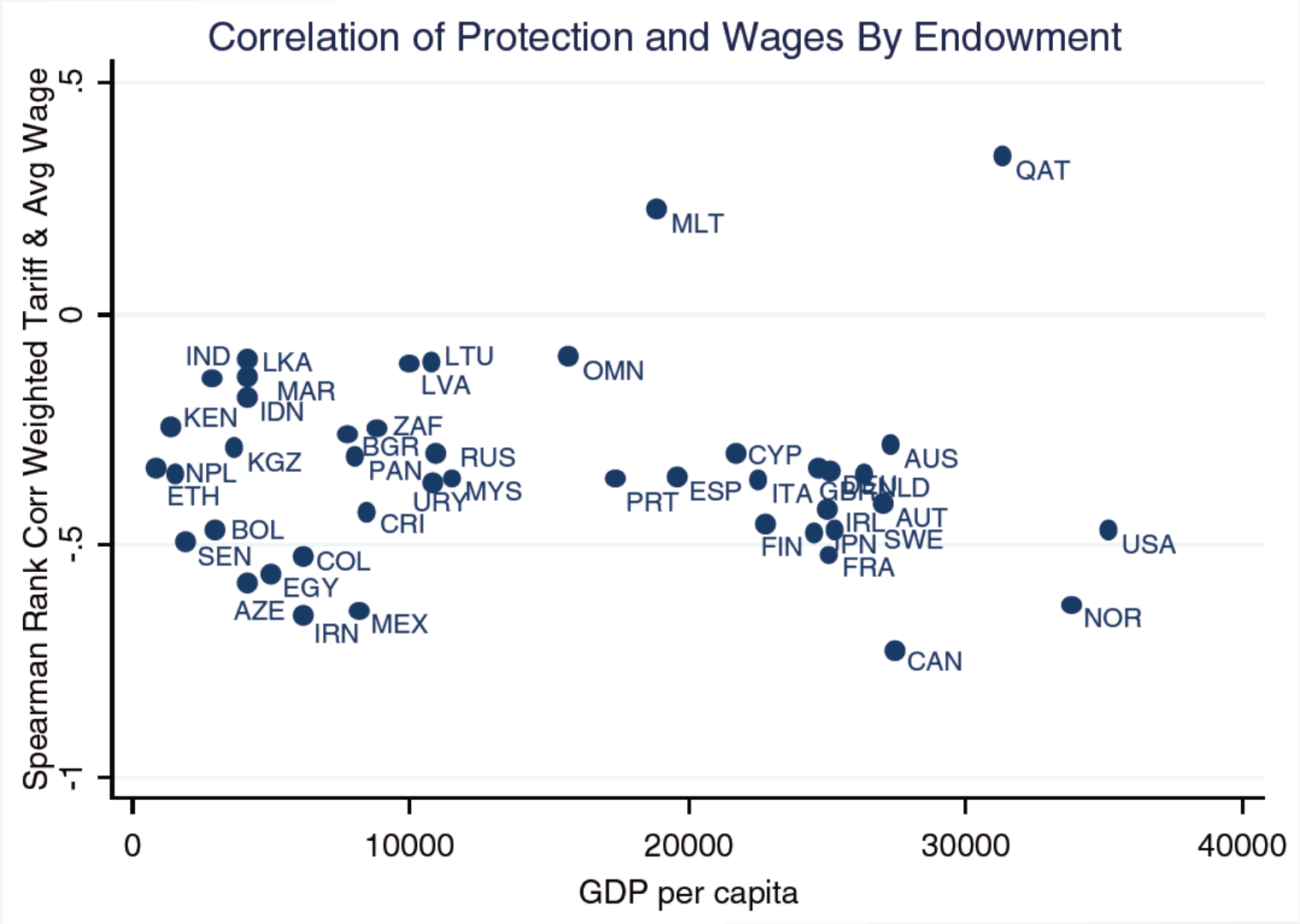
- December 1999: 39% Helped vs. 30% Hurt
- March 2007: 26% Helped vs. 48% Hur
- September 2010: 17% Helped vs. 53% Hurt

◇ Key feature: The recent converts have college + education

–Wall Street Journal, "Americans Sour on Trade," 10/4/10 (pg A1)

Vox Populi:

Near Universal Protection for Lower-Wage Workers



Source: Lu, Scheve, Slaughter *AJPS* 2012

Caveat: Rhetoric vs. Policy in Practice

Despite impassioned speeches from the House floor...

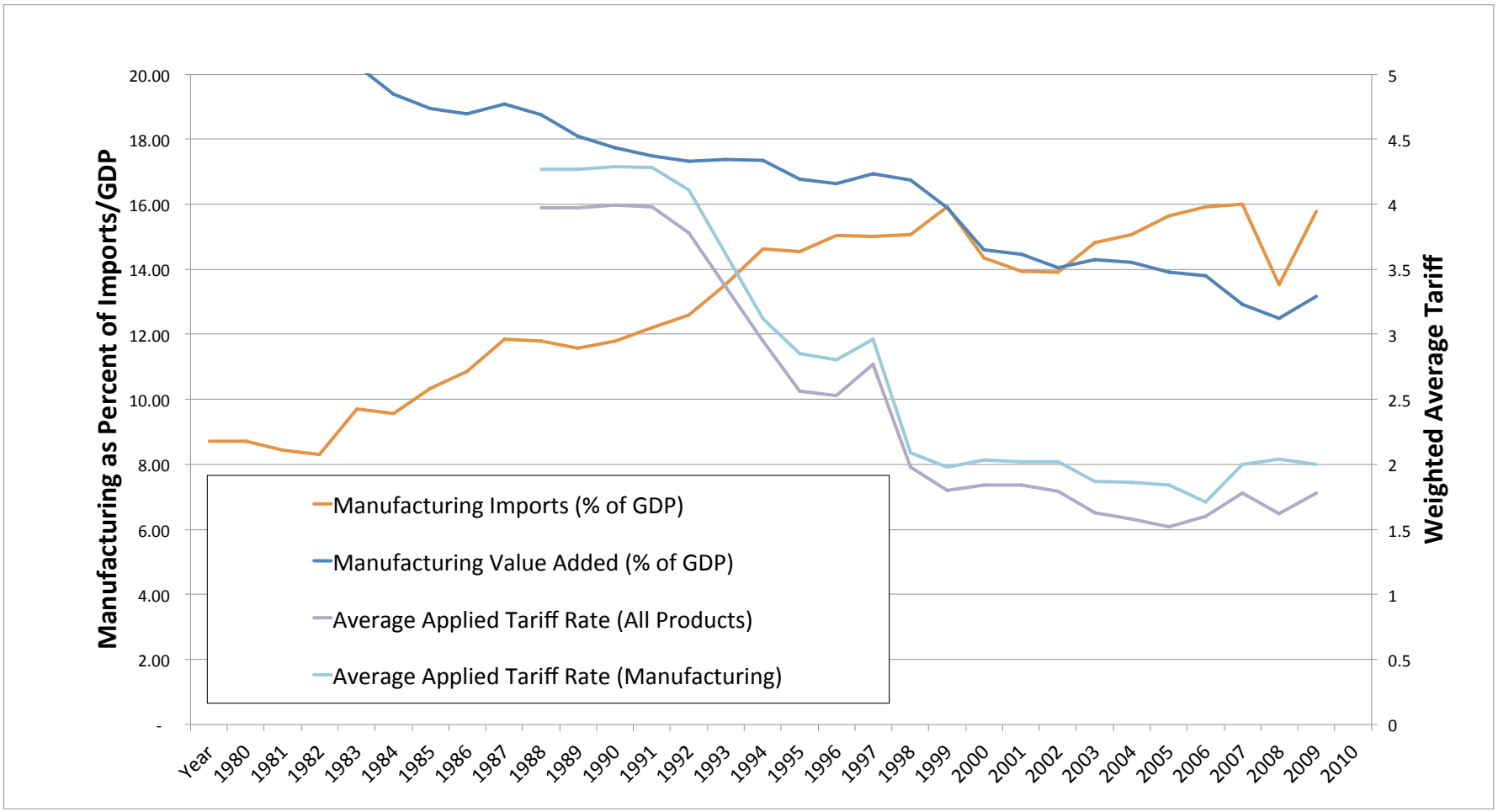
"We can't continue to sit on our hands while Chinese businesses undercut American workers and our manufacturing base continues to drift overseas."

–Representative Bill Pascrell Jr. March 6, 2012 (H1169)

...the data suggest other forces at play...

Despite the Rhetoric...

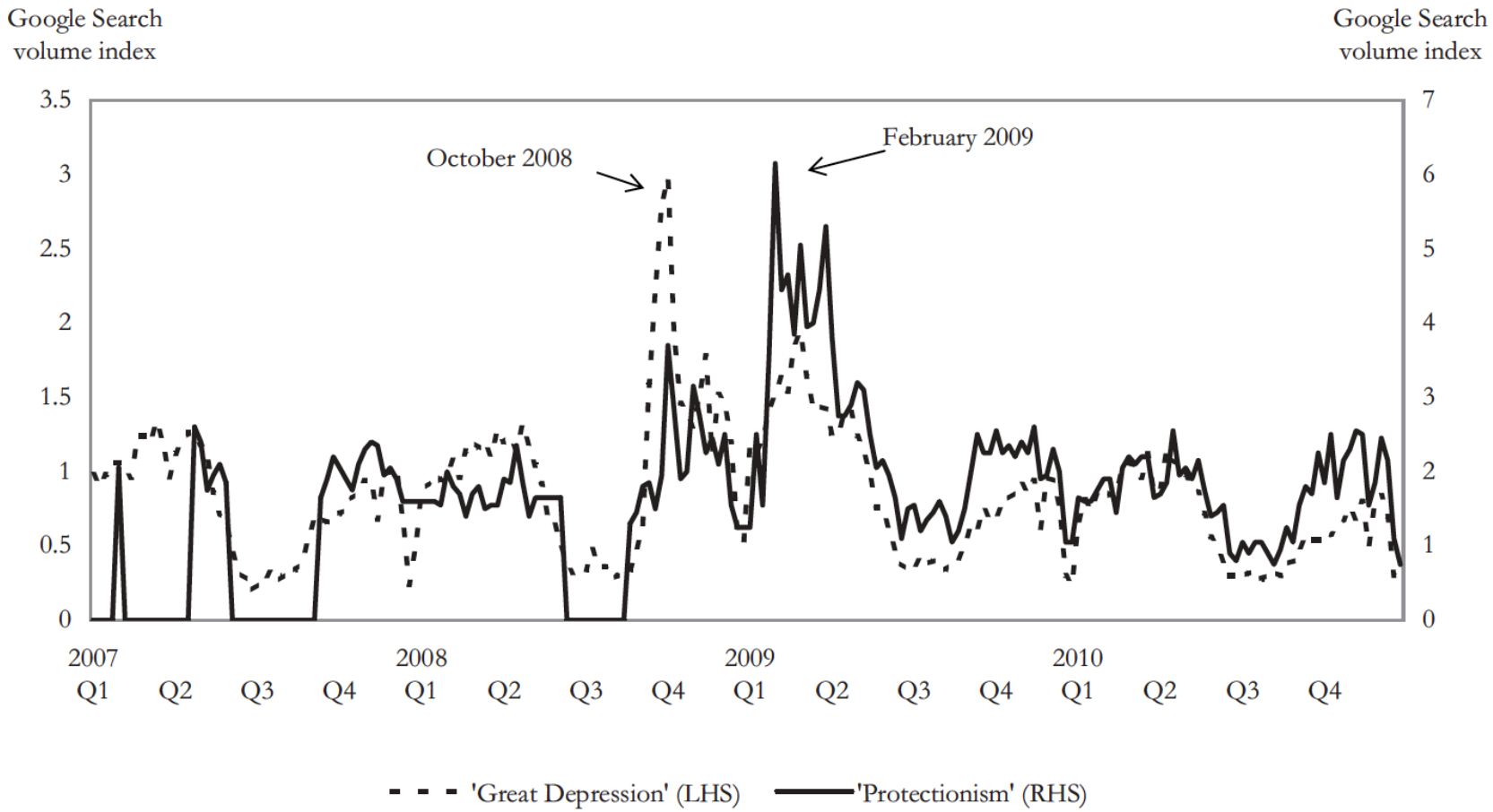
Decreasing Output, Falling Tariffs, Rising Imports of U.S. Manufacturing



Source: World Bank Statistics (DataBank)

Protectionism Since the 2008 Crisis

Not a return to Smoot-Hawley... but only thanks to WTO bindings, etc.?



Source: Bown (2011)

Back