Unintended consequences: can the rise of the educated class explain the revival of protectionism? (In progress)

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Abstract

This paper provides a rationale for a revival of protectionism based on the rise of the educated class. In a model à la Ricardo-Viner, trade generates aggregate gains but has redistributive effects, which can be attenuated through taxation. By playing a two-stage political game, citizens decide on trade openness and redistribution. In line with stylized facts, we find that the increase of the skilled population weakens the political support for redistribution and thus fuels the political opposition against trade. A dynamic extension with public education reveals how globalization breeds its own decline. Human capital accumulation is initially sustained by a high level of redistribution, which makes globalization politically viable. Eventually, however, the lack of support for redistribution brought about by the rise of the educated class favors the emergence of protectionist policies.

Keywords: skilled and unskilled workers, redistribution, protectionism.

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1 Introduction

This paper relates the recent revival of protectionism observed in Western democracies to the rise of the educated class. We propose a theory showing that the (endogenous) process of human capital accumulation, by eroding the political support for redistribution, increases the demand for protectionism, if trade openness deepens inequality.

As pointed out by Zeira (2017), the educated class – whose emergence has been driven by the progressive expansion of public education – has been, over the last few decades, one of the major winners from the globalization process. For this reason, this class has encouraged trade openness and gradually tolerated the rise in inequality. On the other hand, a non-negligible share of the "working class" has seen its status deteriorate with globalization. In the absence of an adequate redistribution of the gains from trade (due to the lack of support from the skilled), many lower-educated workers may be tempted to form a political coalition with other losers from trade (namely, entrepreneurs "left behind" from globalization), in order to promote anti-globalization policies.

To rationalize this story, we build a theory based on a trade model à la Ricardo-Viner, in which the international exchange of goods generates aggregate gains but has redistributive effects across workers and firms. In particular, while skilled workers and exporting-sector entrepreneurs gain from globalization, unskilled workers and importing-sector entrepreneurs lose. Inequality, however, can be attenuated through taxation - by redistributing the gains from trade and thus making globalization Pareto-improving *ex post*. We assume that citizens play a two-stage political game, and decide by majority voting on both (the degree of) trade openness and redistribution. In this setting, an increase in the proportion of skilled workers weakens the political support for redistribution, as the median voter on taxation becomes wealthier. Therefore, taxation may fail to make trade beneficial for all, and fuels the political opposition against globalization, with the losers from trade forming a "protectionist" coalition.

A dynamic extension of our model further reveals how globalization breeds its own decline. If human capital accumulation depends on public education, a high level of redistribution – which makes globalization politically viable – also drives an increase in the share of skilled workers. Eventually, however, the lack of support for redistribution brought about by the rise of the educated class favors the emergence of protectionist policies.

Let us also stress that, if it is true that the rise of the educated class reduces the political support for redistribution, any economic process susceptible of bringing about aggregate gains, while inducing redistributive effects, would be opposed by the losers. One may think, for instance, of skill-biased technological progress. Different from trade, however, skill-biased technological progress cannot be easily resisted (or reversed) by voting – and this may also explain why the former can be used as a scapegoat of the latter (Rodrik, 2018).

Moreover, throughout our paper, we look at trade openness as the main aspect of globalization and abstract from the international mobility of workers. In reality, the growing importance of international migration might also explain, at least partially, the change in political attitudes toward globalization – although the available evidence is mixed, with the possible exception of Becker et al. (2016). Analyzing the role of migration lies, however, beyond the scope of this paper.

1.1 Stylized facts

Our theory is motivated by a series of stylized facts. First, as shown in Fig. 1, over the last few decades, OECD countries have experienced a dramatic rise of the educated class.

INSERT FIGURE 1 HERE

Secondly, over the last few decades, the redistributive policy across OECD countries has not kept up with the intensive process of globalization. Fig. 1 shows for the aggregate of OECD countries that, while the ratio trade/GDP has incessantly and remarkably increased as of 1980 up until 2011, public expenditure devoted to redistribution has remained roughly constant as a share of GDP for more than three decades.[1] This seems coherent with our explanation of neo-protectionism as a response to the lack of appropriate redistribution of the gains from trade.

INSERT FIGURE 2 HERE

[1] Trade openness is measured as export plus import over GDP, while social expenditure is public expenditure for redistributive purposes and includes such expenditure items as housing, unemployment and other labor market programs, family

This conjecture is confirmed by Fig. 3, which shows how both *ex ante* (that is, before tax) and *ex post* inequality have increased over time across OECD countries. The increase of the Gini index, computed on market incomes, may in turn be related to the progress of globalization, coherent with the idea that globalization may have deepened within-country inequality (which has been widely documented by empirical papers such as [add citations]). Interestingly, however, the increase of the Gini index based on after-tax income suggests that redistributive mechanisms have not been strong enough to prevent inequality from rising over the last decades.[2]

INSERT FIGURE 3 HERE

The change in the relationship between trade openness and redistribution is also apparent when looking at the cross-country evidence. Fig. 4 shows that, up until the early 1990s, there is a positive cross-country correlation between the degree of trade openness and the extent of redistribution (also extensively documented and rationalized by, among others, Rodrik, 1998). Such correlation has flattened out as of the late 1990s, suggesting that further advancements in trade liberalization have not been followed by a comparable increase in redistribution.

INSERT FIGURE 4 HERE

1.2 Literature

Our paper is primarily related to the economic literature concerned with the political attitudes towards globalization. For instance, Autor et al. (2016), Colantone and Stanig (2018a, 2018b), Dippel et al. (2015), find a causal effect of trade exposure on voting for anti-globalization parties in different Western democracies (namely the US, UK, Germany and a sample of Western European countries). Our politico-economic theory is consistent with the empirical results of these papers, but also explains – by

[2]The same conclusion is reached in a recent paper (Blanchet et al., 2019), which documents the rise of *ex-post* income inequality in Europe (and in the US).

looking at human capital accumulation - why trade penetration has resulted in more protectionist attitudes only in recent years, and not in the past.[3]

Moreover, we draw inspiration from papers analyzing the redistributive effect of trade, like Burstein and Vogel (2017), Grossman et al. (2017) and papers cited therein. In particular, our work emphasizes “between-skill” and “between-occupation” inequality as the main driver of political change. In this respect, our work departs from a related paper by Vannoorenberghe and Janeba (2016), who focus on “between-industry” redistribution and come out with a similar result, namely that the support for trade liberalization depends on the degree of inter-sectoral redistribution. They do not look, however, into the possible causes of redistribution, or the lack thereof – which are instead central to our analysis. In this respect, we identify human capital accumulation and the shift of political preferences as the main obstacle to redistribution, an explanation that is to some extent complementary to that proposed by Antràs et al. (2017), according to whom redistribution is inherently costly, and thus cannot prevent trade from increasing after-tax inequality.

Overall, the idea that redistribution may not keep up with the pace of globalization and thus explain anti-globalization sentiment has been present for a while in academic and policy circles (see for instance Bluth, 2017). We believe, however, that we are the first to provide a formal politico-economic model to explain the lack of redistribution and relate it to a long-run process of human capital accumulation.[4]

This dynamic mechanism, lying at the core of our model and based on the endogenous access to education of larger shares of population, establishes a link between our

[3]A complementary explanation is proposed by Rodrik (2018), who argues that, as globalization intensifies, its distributive costs tend to increase at a faster pace than its aggregate gains, thus justifying the eventual emergence of anti-trades attitudes. While plausible, this theory would, however, leave unexplained why voters demand protection in the form of less globalization and not of more redistribution (Tabellini, ?).

[4]Let us also mention two complementary theories that both rely on alternative assumptions on the agents' preferences to rationalize the current hostility to trade. Pastor and Veronesi (2018) develop a model in which the backlash against globalization emerges endogenously, as a reaction to the higher inequality brought about by trade and growth. Their results, however, depend directly on the assumption that agents are averse to inequality. Drawing on Social Identity Theory, Grossman and Helpman (2018) also come up with a novel explanation for the current anti-trade backlash: a rise in income inequality (brought about by, say, globalization or skill-biased technical change) may induce a change in the agents' patterns of social identification (for instance, unskilled workers stopping identifying themselves with the ”Nation”), which in turn may lead to sudden and dramatic changes in the preferred trade policy.

paper and the growth literature studying the interplay between human capital accumulation and inequality, such as Galor (2011), Benabou (1996) and Zeira (2007), among others. With respect to this literature, we highlight an additional channel (the political economy of trade policies) through which inequality may evolve along the growth path of industrialized economies.

Finally, and more tangentially, our research is also related to two other strands of economic literature. In fact, as long as populist parties advocate protectionist policies as a priority for their political agenda, we contribute to the understanding of the determinants of populism, and contribute to a recent literature including Guiso et al. (2017) and Rodrik (2018) among others. Moreover, as our analysis looks at the link between trade and government spending, it is also related to papers such as Rodrik (1998) and Epifani and Gancia (2009).

2 The theoretical framework

2.1 Population and production

Consider a small open economy populated by a unit measure of agents divided in two classes, entrepreneurs (K) and workers (L). Denote the share of workers by λ and suppose that workers are more numerous than entrepreneurs, that is, $\lambda \in (1/2, 1)$.[5]

Two goods are produced in this economy: the exporting industry is denoted by X, and the importing industry is denoted by M. Entrepreneurs are sector-specific: $K_X = \gamma (1 - \lambda)$ is the measure of entrepreneurs active in sector X, while $K_M = (1 - \gamma)(1 - \lambda)$ are active in sector M.

Differently from entrepreneurs, workers are mobile across sectors. We shall distinguish, however, between two types of workers. A fraction $L_s = \sigma\lambda$ are perfectly mobile from M to X and *viceversa*: we label them as high-skilled workers. The residual share $L_u = (1 - \sigma)\lambda$, are, instead, imperfectly mobile, in that they have to pay a cost (that we formalize below) if they want to operate in sector X: we label them as low-skilled workers.

Denoting by P_X, P_M the prices of, respectively, commodities X and M, the values

[5]While this parameter restriction is realistic, it is not strictly necessary for our results. It, however, helps reduce the complexity of the political economy analysis.

of production in the two -perfectly competitive- sectors are given by

$$Y_X = P_X A_X K_X^{1-\alpha-\beta} L_{X,s}^{\alpha} L_{X,u}^{\beta} \tag{1}$$

$$Y_M = P_M A_M K_M^{1-\alpha-\beta} L_{M,s}^{\alpha} L_{M,u}^{\beta}. \tag{2}$$

Denote by θ_s and θ_u the *endogenous* shares of,respectively, skilled and unskilled workers in the exporting sector. Hence, we can write $L_{X,s} = \theta_s L_s$, $L_{X,u} = \theta_u L_u$, and $L_{M,s} = (1-\theta_s) L_s$, $L_{M,u} = (1-\theta_u) L_s$. A_X, A_M denote the total factor productivities (TFPs) of the two sectors. For simplicity, we pose $A_M = 1$ and $A_X = A$. Symmetrically, we pose $P_M = 1$ (thereby taking commodity M as numeraire) and $P_X = P \in [\underline{P}, \overline{P}]$. Equations (1) and (2) can thus be re-written as

$$Y_X = PA\left[\gamma(1-\lambda)\right]^{1-\alpha-\beta}\left[\theta_s\sigma\lambda\right]^{\alpha}\left[\theta_u(1-\sigma)\lambda\right]^{\beta}$$

$$Y_M = \left[(1-\gamma)(1-\lambda)\right]^{1-\alpha-\beta}\left[(1-\theta_s)\sigma\lambda\right]^{\alpha}\left[(1-\theta_u)(1-\sigma)\lambda\right]^{\beta}.$$

Following the tradition of the trade literature (see for instance Grossman et al., 2017), we interpret a rise of P as an increase in trade openness: more openness for country i implies a rise in the demand of the exporting good (X) and a decrease in the demand of the importing good (M). As a result, the relative price of commodity X increases.

Our model belongs to the Ricardo-Viner class of models (Jones, 1971; Mussa, 1974; Mayer, 1974; Neary, 1978), in which the presence of sector-specific factors allows us to understand the implications of trade openness in terms of between-industry inequality. In addition, our assumption on the differential mobility of workers lends itself to the analysis of between-skill inequality. [add reference to Melitz] We are now ready to determine θ_s and θ_u in the perfectly competitive industry equilibrium.

2.2 Factor prices and intersectoral allocation

Under perfect competition, all factors are remunerated according to their marginal productivities. From now on, let us denote the incomes of high and low skilled workers, and of entrepreneurs in the exporting and in the importing sector as, respectively, y_s, y_u, y_x, y_m. Sector-specific entrepreneurs are paid, respectively, $y_x = MP_{K_X}$ and $y_m = MP_{K_M}$ (where MP stands for marginal productivity).

The equilibrium allocation of skilled and unskilled workers across the two sectors (θ_s^*, θ_u^*) arises endogenously through the income equalization condition. We must then have at equilibrium $y_{M,i} = y_{X,i}$ for $i = s, u$. For perfectly mobile high-skilled workers, this condition implies

$$MP_{M,s} = MP_{X,s}, \tag{3}$$

For low-skilled workers, the equilibrium condition must take into account that they incur an additional cost if they want to be employed in the exporting sector.[6] Similar to Mussa (1982), unskilled labor thus becomes a partially sector-specific input, characterized by imperfect sectoral mobility. We assume that the access cost, which we introduce in a multiplicative form for analytical convenience, is proportional to P, as it is likely to be larger in more internationalized firms. We then have $y_{X,u} = MP_{X,u}/\phi P$, where $\phi \in [1, +\infty)$, and $y_{M,u} = MP_{M,u}$. The mobility cost is positive only as long as $\phi P > 1$.[7] The relevant equilibrium condition for skilled workers then becomes

$$MP_{M,u} = \frac{MP_{X,u}}{\phi P}. \tag{4}$$

From the system made up of (3) and (4), we find

$$\theta_s^* = \frac{\frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{\beta}{1-\alpha-\beta}}}{1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{\beta}{1-\alpha-\beta}}}, \tag{5}$$

$$\theta_u^* = \frac{\frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{1-\alpha}{1-\alpha-\beta}}}{1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{1-\alpha}{1-\alpha-\beta}}}. \tag{6}$$

Notice that θ_s^* and θ_u^* are both increasing in P: that is to say, a rise in trade openness fosters mobility of both skilled and unskilled workers towards the exporting sector. Moreover, it can be proven that $\theta_s^* > \theta_u^*$.[8]

2.3 Trade and incomes

The incomes of our four categories of agents are given by

$$y_x \equiv \frac{\partial Y_X}{\partial K_X} = PA(1-\alpha-\beta) \left[\frac{\lambda}{\gamma(1-\lambda)}\right]^{\alpha+\beta} (\theta_s^* \sigma)^\alpha \left[\theta_u^* (1-\sigma)\right]^\beta, \tag{7}$$

[6] One may think, for instance, that low-skilled workers need to upgrade their skills (by learning a foreign language, etc.) if they want to work for an exporting firm (Doepke and Gaetani, 2018)

[7] The value of the access cost paid by unskilled workers is given by $y_{X,u} [1 - 1/(\phi P)]$ and is therefore proportional to their prospective marginal productivity in the exporting sector. Let us also stress that such cost is external to the production process and has no direct impact on the productivity of the other production factors.

[8] An inspection of (5) and (6) reveals that $\theta_s^* > \theta_u^*$ if and only if $\beta < 1 - \alpha$, which is always true since we have assumed constant returns to scale in production.

$$y_m \equiv \frac{\partial Y_M}{\partial K_M} = (1-\alpha-\beta)\left[\frac{\lambda}{(1-\gamma)(1-\lambda)}\right]^{\alpha+\beta} [(1-\theta_s^*)\,\sigma]^{\alpha}\,[(1-\theta_u^*)(1-\sigma)]^{\beta}, \quad (8)$$

$$y_s \equiv \frac{\partial Y_M}{\partial L_{M,s}} = \alpha\left[\frac{(1-\gamma)(1-\lambda)}{\lambda}\right]^{1-\alpha-\beta} \frac{[(1-\theta_u^*)(1-\sigma)]^{\beta}}{[(1-\theta_s^*)\,\sigma]^{1-\alpha}}, \quad (9)$$

$$y_u \equiv \frac{\partial Y_M}{\partial L_{M,u}} = \beta\left[\frac{(1-\gamma)(1-\lambda)}{\lambda}\right]^{1-\alpha-\beta} \frac{[(1-\theta_s^*)\,\sigma]^{\alpha}}{[(1-\theta_u^*)(1-\sigma)]^{1-\beta}}, \quad (10)$$

where θ_s^*, θ_u^* are given by equations (5) and (6).

We now introduce three sufficient parameter restrictions that allow us to establish a convenient ranking of the incomes of the different types of agents.

Assumption 1 *Parameters are such that:*

$$\textit{(i)}\ \sigma < \frac{\alpha}{\alpha+\beta};$$

$$\textit{(ii)}\ \underline{P} > \frac{\phi^{\frac{\beta}{1-\beta}}}{A^{\frac{1}{1-\beta}}}\left(\frac{\alpha(1-\lambda)(1-\gamma)}{\lambda\sigma(1-\alpha-\beta)-\alpha\gamma(1-\lambda)}\right)^{\frac{1-\alpha-\beta}{1-\beta}};$$

$$\textit{(iii)}\ \overline{P} < \frac{\phi^{\frac{\beta}{1-\beta}}}{A^{\frac{1}{1-\beta}}}\left(\frac{\lambda\sigma(1-\alpha-\beta)-\alpha(1-\gamma)(1-\lambda)}{\alpha\gamma(1-\lambda)}\right)^{\frac{1-\alpha-\beta}{1-\beta}}.$$

We are now ready for the following

Lemma 1 *(Ranking of incomes). Under Assumption 1, the following ranking of incomes holds*

$$y_x, y_m > y_s > y_u. \quad (11)$$

Proof. The proof is contained in Appendix A. ■

As we show in the proof of Lemma 1 contained in Appendix A, part (i) of Assumption 1 ensures that $y_s > y_u$. Parts (ii), (iii) instead, respectively guarantee that $y_x > y_s$ and $y_m > y_s$ Notice, however, that the last two inequalities are only imposed to improve the exposition of the paper, but they are not strictly required for our general argument to hold. Appendix C analyzes what happens when y_x and/or y_m is lower than y_s.

Average income is defined as

$$\overline{y} = \lambda\sigma y_s + \lambda(1-\sigma)\,y_u + (1-\lambda)\,\gamma y_x + (1-\lambda)(1-\gamma)\,y_m. \quad (12)$$

Notice that $\overline{y}$ is always increasing in P. In fact, in the Ricardo-Viner class of models, having one mobile factor is enough to ensure that globalization brings about aggregate productivity gains. Suppose, for instance, that ϕ and/or P tend to infinity, so that unskilled labor becomes *de facto* a fixed factor: the very fact that skilled workers can still flock to the exporting sector allows the whole economy to increase the value of aggregate production.

We close this subsection analyzing the effects of trade openness on each category of agent. Our results are summarized in the following

Lemma 2 *(Impact of trade on incomes) An increase in P (more trade openness) (i) raises the income of both exporting-sector entrepreneurs (y_x) and that of high-skilled workers (y_s); (ii) lowers the income of importing-sector entrepreneurs (y_m); (iii) lowers the income of low-skilled workers (y_u) as long as $\phi P > 1$.*

Proof. The proof is contained in Appendix A. ■

In line with the tradition of the Ricardo-Viner class of models, Lemma 2 tells us that trade openness deepens income inequality in the society and creates a fracture between trade winners (exporting-sector entrepreneurs and skilled workers) and trade losers (importing-sector entrepreneurs and unskilled workers.

2.4 Consumption

We now turn to the analysis of the demand side of the economy. Recall that we are considering a small open economy: as a result, domestic demands are irrelevant for the determination of good prices, but allow us to gauge the consequences of globalization on individual utility and on political attitudes, as well as to introduce a redistributive mechanism in our economy.

Agents derive utility from private consumption (c_X, c_M) and public good consumption (G) according to the following utility function:

$$U\left(c_X, c_M, G\right) = c_M^{\mu} c_X^{1-\mu} + \delta \ln G, \tag{13}$$

where $\delta \in R_+$ captures the preference for public good. The provision of G is financed through taxes, so that

$$G = \tau^M Y \tag{14}$$

where τ^M denotes the prevailing tax rate and Y is the value of the total output produced in the economy ($Y = PY_X + Y_M$), which can be expressed as

$$Y = PA\gamma^{1-\alpha-\beta}\theta_s^\alpha\theta_u^\beta + (1-\gamma)^{1-\alpha-\beta}(1-\theta_s)^\alpha(1-\theta_u)^\beta(1-\lambda)^{1-\alpha-\beta}\lambda^{\alpha+\beta}\sigma^\alpha(1-\sigma)^\beta. \tag{15}$$

Two implicit assumptions in (14) are worth discussing. First, we are assuming that the government collects taxes at the source (under the form of a withholding tax), so that total tax revenues amount to $\tau^M Y$.[9] Second, G is produced according to an "immaterial" process which transforms tax receipts into the public good according to a technical coefficient that we assume equal to 1 fo simplicity.

The solution to the constrained utility maximization problem leads to the following demands for the two private consumption goods:

$$c_{M,i} = \mu\left(1-\tau^M\right)y_i, \tag{16}$$

$$c_{X,i} = \frac{(1-\mu)\left(1-\tau^M\right)y_i}{P}. \tag{17}$$

for $i = \{s, u, x, m\}$.

3 Political economy

Agents' utility depends on both redistribution and the extent of trade openness. Redistribution is summarized by the tax rate τ. As already discussed above, following a consolidated tradition in the international economics literature (from Mussa, 1974 to Grossman et al., 2017), trade openness is proxied by the price level of the exporting commodity, P: a rise (fall) in P means a increase (decrease) of trade openness. For instance, as pointed out by Grossman et al. (2017), protectionist policies such as an increase in a country's import barriers would bring about a decrease in the relative price of a country's export good.[10]

[9] Assuming, alternatively, that taxes were paid on incomes would lead to a different (and lower) tax revenue, $\tau^M\overline{y}$, where $\overline{y}$ is given in (12). In our model, we have $\overline{y} < Y$, because mobility costs do not hinge on production but rather on the income of unskilled workers. Using a withholding rather than an income tax does not affect qualitatevely the implications of our analysis, but it significantly simplifies the formal treatment of the dynamic extension of our model (as it allows us to characterize the steady state through a closed-form solution).

[10] This applies to all trade policy measures intended to reduce the difference between export and import prices, provided that the conditions for the Metzler paradox do not hold.

In our model, τ and P arise endogenously through a political process. In particular, we consider a two-stage voting process in which the four types of agents (s, u, x, m) vote first on trade openness and then on redistribution. In both stages, individual preferences are aggregated by majority voting.

The two-stage timing structure allows us to capture the simple fact that trade policy choices tend to be rarer and less flexible than redistributive policy choices (Vannoorenberghe and Janeba, 2016): for instance, ratifying or overruling trade agreements, joining or not a single market or the WTO are sort of once-in-a-lifetime decisions which are usually more difficult to reverse than taxation/compensation choices. This time frame implies that, when choosing the optimal extent of trade openness, our agents will take into account the potential impact of redistribution on their utility.

Let us characterize the political preferences of the four types of agents along these two political dimensions, starting from redistribution.

3.1 Political preferences for redistribution

The agents' preferred tax rate τ_i^* maximizes their indirect utility function, obtained after substituting for (16) and (17) into (13). Solving the problem for agent $i = s, u, x, m$, we obtain

$$\tau_i^* = \frac{\delta \left(\frac{P}{1-\mu}\right)^{1-\mu} \left(\frac{1}{\mu}\right)^{\mu}}{y_i}. \tag{18}$$

τ_i^* is increasing in δ and decreasing in y_i. A stronger preference for the public good induces the agents to prefer a higher tax rate, regardless of their income. On the other hand, given the reditributive nature of public good provision, poorer agents will demand higher taxation, as in standard political economy models.

As a result, the ordering of incomes described in (11) translates into an unambiguous ranking in the political preferences for redistribution, that we summarize in the following

Lemma 3 *(Political preferences for redistribution). The political attitudes towards redistribution of the different types of agents are described by the following ranking:*

$$\tau_u^* > \tau_s^* > \tau_m^*, \tau_x^*.$$

Proof. The proof follows directly from the fact that τ_i^* is strictly decreasing in y_i (see expression (18)). ■

Lemma 3 tells us that workers prefer a more generous redistribution policy than (either exporting or importing-sector) entrepreneurs. Among workers, low-skilled favor the greatest extent of redistribution.

Because of majority voting, the outcome of the political process will correspond to the most preferred tax rate of the median voter, denoted by τ^M. The identity of the median voter on taxation depends on the demographic structure of the economy, as described by λ and σ.

Lemma 3, together with part (i) of Assumption 1, alllows us to claim the following

Proposition 1 *(Voting on redistribution). The median voter on τ is always a worker, unskilled if $\lambda(1-\sigma) \geq 1/2$, skilled otherwise. Therefore,*

$$\tau^M = \begin{cases} \tau_u^* \text{ if } \sigma \leq 1 - \dfrac{1}{2\lambda} \\ \tau_s^* \text{ if } \sigma > 1 - \dfrac{1}{2\lambda}. \end{cases}$$

Proof. The proof is a direct consequence of Lemma 3, together with part (i) of Assumption 1. ∎

In the following, let us pose

$$\sigma' \equiv 1 - \frac{1}{2\lambda}.$$

σ' represents the threshold below (above) which the median voter on redistribution is an unskilled (skilled) worker. Given that $\tau_s^* < \tau_u^*$, Proposition 1 implies that a rise of σ from below σ' to above σ' brings about a shift in the identity of the median voter from unskilled to skilled worker, and thus a less generous redistributive policy.

3.2 Political preferences for trade openness

The level of trade openness that maximizes agent i's utility can be defined as follows

$$P_i^*\left(\tau^M\right) = \arg\max\left[\frac{y_i}{P^{1-\mu}}\left(1-\tau^M\right)\mu^\mu\left(1-\mu\right)^{1-\mu} + \delta\log\tau^M Y\right], \tag{19}$$

where the expression in square brackets is the indirect utility of agent i (obtained after substituting for (16) and (17) into (13)) and where τ^M is the redistributive policy chosen in the second stage of the voting process (and perfectly anticipated by the agents in the first stage).

P affects the welfare of agents via three distinct channels. The first two are the usual channels highlighted in Mussa (1974): the gross income effect (y_i as a function of P) and the direct demand effect (the presence of P on the denominator of the expression above). The third channel runs through the redistributive policy, whereby a change in P modifies τ^M and Y.

Since the demand and the redistribution channels do not depend on the type of the agent, the ranking of preferences for trade openness across the four categories of agents is only determined by the income channel. The following lemma characterizes this ranking.

Lemma 4 *(Preferences for trade openness). We have the following preference ranking over trade openness across our four types:*

$$P_x^*\left(\tau^M\right) > P_s^*\left(\tau^M\right) > P_u^*\left(\tau^M\right) > P_m^*\left(\tau^M\right).$$

Proof. The proof is contained in Appendix A. ■

Lemma 4 tells us that importing-sector entrepreneurs, being totally immobile, have a more negative attitude towards globalization than unskilled workers, who are only partially immobile. In turn, unskilled workers prefer less globalization than skilled workers, who are completely mobile. Finally, and consistent with the Ricardo-Viner tradition, entrepreneurs who are specific to the exporting sector are those who gain the most from trade openness.

After showing how the political attitude over trade openness varies across groups, we can also look at how the attitude of a given type depends on the identity of the median voter on τ. Let us focus, in particular, on low-skilled workers.

Lemma 5 *(Unskilled workers' attitude to trade). Unskilled workers become more hostile to trade when the median voter on τ becomes a skilled worker, i.e. $P_u^*\left(\tau_u^*\right) > P_u^*\left(\tau_s^*\right)$.*

Proof. The proof is contained in Appendix A. ■

Lemma 5 rationalizes the rise of an anti-trade sentiment from the low-skilled workers. A rise in σ (from below σ' to above σ') triggers a change in the median voter on redistribution. Such change weakens the political support for redistribution (as $\tau_s < \tau_u$) and thus fuels the low-skilled workers' political opposition against trade. We now study the demographic/political conditions under which such opposition may be turn out to be electorally successful.

Let us first analyze how political preferences for trade openness are aggregated under majority voting. After denoting by P^M the level of trade openness that maximizes the utility of the median voter, we can state the following

Proposition 2 *(Voting on trade openness). The median voter on P is always a worker, unskilled if $\lambda(1-\sigma)+(1-\lambda)(1-\gamma) \geq 1/2$, skilled otherwise. After rewriting the inequality above as a condition on σ, we have*

$$P^M = \begin{cases} P_u^* \text{ if } \sigma \leq \frac{1}{2\lambda} - \frac{\gamma(1-\lambda)}{\lambda} \\ P_s^* \text{ if } \sigma > \frac{1}{2\lambda} - \frac{\gamma(1-\lambda)}{\lambda} \end{cases} \tag{20}$$

Proof. The proof is a direct consequence of our demographic assumptions and of Lemma 4. ■

Let us pose

$$\sigma'' \equiv \frac{1}{2\lambda} - \frac{\gamma(1-\lambda)}{\lambda}.$$

σ'' represents the threshold below (above) which the median voter on trade openness is an unskilled (skilled) worker. It is immediate to show that $\sigma' < \sigma''$ for any value of λ and γ belonging to $(0,1)$. This means that the conditions for the unskilled workers to be median voter on trade openness are less restrictive than those on redistribution. The intuition behind this result is that unskilled workers are the median voter on P (i) not only when they are the majority (as it happens with τ) but also (ii) when they do not account for more than a half of the electorate but can form a majority with importing-sector entrepreneurs, who are even more hostile to trade openness (as implied by Lemma 4).

4 Political equilibrium

In our model, a *political equilibrium* is defined as a pair $\left(P^M, \tau^M\right)$ that satisfies (19) for the median voter of trade and (18) for the median voter of redistribution. We can now relate the characteristics of the political equilibria to the demographic characteristics of our economy. In particular, Propositions 1 and 2 allow us to distinguish between three regions depending on the values taken by σ and λ.

When $\sigma \leq \sigma'$ (region 1), unskilled workers are the majority, so that they are the median voter on both redistribution and trade openness: $\tau^M = \tau_u^*$ and $P^M = P_u^*(\tau_u^*)$. When $\sigma' < \sigma \leq \sigma''$ (region 2), unskilled workers are no longer the majority. Concerning redistribution, Proposition 1 tells us that the median voter is a skilled worker. However, unskilled workers are still the median voter on trade openness because they can form a political majority with importing-sector entrepreneurs. Then, in region 2, unskilled workers choose their preferred P by taking into account that the tax rate τ is decided by high-skilled workers, i.e., $\tau^M = \tau_s^*$ and $P^M = P_u^*(\tau_s^*)$. Finally, when $\sigma > \sigma''$ (region 3), low-skilled workers and importing-sector entrepreneurs are not sufficiently numerous to form a majority on trade openness. The median voter on both P and τ is then a high-skill worker, i.e., $\tau^M = \tau_s^*$ and $P^M = P_s^*(\tau_s^*)$. A graphical representation of the three regions on the plane (λ, σ) is provided in Figure 5 (the graphs on panels (a) and (b) are, respectively, drawn for $\gamma < 1/2$ and $\gamma > 1/2$).

INSERT FIGURE 5 HERE

We can enunciate the following

Proposition 3 *(Political equilibrium) The political equilibrium is such that*

$$\left(P^M, \tau^M\right) = \begin{cases} \left(P_u^*(\tau_u^*), \tau_u^*\right) & \text{if } \sigma \leq \sigma' \text{ (reg. 1)} \\ \left(P_u^*(\tau_s^*), \tau_s^*\right) & \text{if } \sigma' < \sigma \leq \sigma'' \text{ (reg. 2)} \\ \left(P_s^*(\tau_s^*), \tau_s^*\right) & \text{if } \sigma > \sigma'' \text{ (reg. 3)} \end{cases} \tag{21}$$

where the expression for τ_i^* for $i = s, u$ is given in (18).

Proof. The proof is a direct consequence of Propositions 1 and 2. ■

Proposition 3 allows us to interpret how the society's political attitude towards trade evolves as σ rises. In particular, it identifies the role of the skill composition of the society in shaping redistributive policies, which in turn affect preferences over trade openness.

Consider the political equilibrium arising in region 1: since low-skilled workers are predominant, they are able to command a high level of redistribution. The possibility to effectively redistribute the gains from trade explains a wide social consensus in favor of trade openness. In terms of the model, we then have $\left(P^M, \tau^M\right)_1 = \left(P_u^*(\tau_u^*), \tau_u^*\right)$, with low-skilled median voters on both policy dimensions.

The political equilibrium corresponding to region 2, instead, describes a situation in which low-skilled workers have lost control of redistributive policy. Even though trade is beneficial for the economy as a whole (as it increases total production, Y), it is more difficult for the losers to be compensated. When the political power on redistribution shifts from low-skilled to high-skilled workers, a protectionist mood arises among the low-skilled workers. The demographic conditions of region 2 are such that low-skilled workers and importing-sector entrepreneurs may form a successful political alliance against trade. The resulting political equilibrium reflects skilled workers' preferences for redistribution and unskilled workers' preferences for trade, that is: $\left(P^M, \tau^M\right)_2 = \left(P_u^*\left(\tau_s^*\right), \tau_s^*\right)$. This new equilibrium, characterized by a lower degree of trade openness (as, from Lemma 4, $P_u^*\left(\tau_s^*\right) < P_u^*\left(\tau_u^*\right)$), imposes efficiency losses on society.

Finally, along region 3 high-skilled workers become median voter along both policy dimensions. The resulting political equilibrium, defined by the pair $\left(P^M, \tau^M\right)_3 = \left(P_s^*\left(\tau_s^*\right), \tau_s^*\right)$, is characterized by the highest level of trade openness (as $P_s^*\left(\tau_s^*\right) > P_u^*\left(\tau_u^*\right)$) and the lowest level of redistribution.[11]

[...] It is tempting to use our analytical results to interpret the evolution of political attitudes towards trade in the western world over the last decades.

- Political equilibrium of region 1: social-democracy equilibrium (high redistribution, trade openness) of the 1960s

- Political equilibrium of region 2: protectionist trap (low-redistribution, protectionism), nowadays resurgence of populism and nationalism

- Political equilibrium of region 3: liberal equilibrium (low-redistribution, trade openness), still resurgence of protectionist mood: low-skilled workers still do not like trade (as in region 2) but they are not sufficiently numerous to impose their political agenda.

5 Dynamics

We now study a dynamic extension of our model, in which the skill composition of the working population arises endogenously as a result of public expenditure on education

[11] The values of τ_s^* in regions 2 and 3, although chosen by the same median voter, are not equal as they depend on a changing economic environment. It can be proven that the τ_s chosen in region 3 is lower than that chosen in region 2.

financed through tax revenues.[12]

The evolution of the share of skilled workers across generations is assumed to obey the following law of motion:

$$\sigma_{t+1} = \pi^{SS}\sigma_t + \pi^{US}\left(1-\sigma_t\right), \tag{22}$$

where π^{SS} and π^{US} denote the probabilities to have a skilled offspring for a skilled or an unskilled parent, respectively. In particular,

$$\pi^{SS} = \left(1-\zeta\right)\chi^{SS} + \zeta\frac{\eta G_t}{1+G_t}, \tag{23}$$

$$\pi^{US} = \left(1-\zeta\right)\chi^{US} + \zeta\frac{\eta G_t}{1+G_t}, \tag{24}$$

with $\zeta \in (0,1)$. Note that π^{SS} and π^{US} are a weighted average between type-specific characteristics (χ^{SS} and χ^{US}, respectively) and effective investment in education. The parameter $\eta \in (0,1)$ captures the productivity of public expenditure in schooling on social mobility. It is reasonable to restrict the attention to the case of $\chi^{SS} > \chi^{US}$, in which the probability of producing skilled offspring is higher for skilled parents. For the sake of analytical simplicity, and without loss of generality, we set $\chi^{SS} = 1$. Finally, note that equation (22) is built on the implicit assumption that fertility does not depend on workers' skills.

Most importantly, we restrict the support of the trade policy space $\left[\underline{P}, \overline{P}\right]$ enough to ensure that $P_u^*\left(\tau_s^*\right) = \underline{P}$ and $P_u^*\left(\tau_u^*\right) = P_s^*\left(\tau_s^*\right) = \overline{P}$.[13] As we will see, this simplification, by constraining the political decision over trade openness to a binary choice, allows us to obtain a closed-form solution to the dynamic model.

The only endogenous variable affecting the evolution of σ_t is G_t. In turn, G_t is affected by σ_t both directly (through the economic process) and indirectly, by defining the prevailing political equilibrium. In particular, the value of σ_t determines whether at time t the economy belongs to regions 1,2 or 3 as defined in Section 4. We can then

[12]One may also think that redistribution positively affects human capital accumulation via alternative channels (other than public investment in schooling). For instance, redistribution may help contrasting those capital market imperfections that, as highlighted by Galor and Zeira (1993), tend to hamper human capital accumulation and hence economic growth.

[13]In fact, as proven in lemmas 4 and 5, we have

$P_u^*\left(\tau_s^*\right) < P_u^*\left(\tau_u^*\right), P_s^*\left(\tau_s^*\right)$. It is then possible to choose $\underline{P}$ so that $\arg\max\left[U_u\left(P\left(\tau_s^*\right)\right)\right] \leq \underline{P}$ and $\overline{P}$ so that $\min\left\{\arg\max\left[U_s\left(P\left(\tau_s^*\right)\right)\right], \arg\max\left[U_u\left(P\left(\tau_u^*\right)\right)\right]\right\} \geq \overline{P}$, thus respectively implying that $P_u^*\left(\tau_s^*\right) = \underline{P}$ and $P_u^*\left(\tau_u^*\right) = P_s^*\left(\tau_s^*\right) = \overline{P}$.

write

$$G_t = G\left(\sigma_t, \tau^M(\sigma_t), P^M(\sigma_t)\right) = \begin{cases} G_{1,t}\left(\sigma_t, \tau_u^*(\sigma_t), \overline{P}\right) \text{ if } 0 \leq \sigma_t \leq \sigma' \\ G_{2,t}\left(\sigma_t, \tau_s^*(\sigma_t), \underline{P}\right) \text{ if } \sigma' < \sigma_t \leq \sigma'' \\ G_{3,t}\left(\sigma_t, \tau_s^*(\sigma_t), \overline{P}\right) \text{ if } \sigma'' < \sigma_t \leq 1. \end{cases} \tag{25}$$

After plugging the expression for G_t as given in (25) into (23) and (24), and then (23) and (24) into (22), we obtain the transition function of σ as

$$\sigma_{t+1} = \begin{cases} f_1(\sigma_t) \text{ if } 0 \leq \sigma_t \leq \sigma' \\ f_2(\sigma_t) \text{ if } \sigma' < \sigma_t \leq \sigma'' \\ f_3(\sigma_t) \text{ if } \sigma'' < \sigma_t \leq 1, \end{cases} \tag{26}$$

where

$$f_1(\sigma_t) = (1-\zeta)\left[\chi^{US} + \sigma_t\left(1-\chi^{US}\right)\right] + \zeta\frac{\eta\Psi_1(1-\sigma_t)}{1+\eta\Psi_1(1-\sigma_t)},$$

$$f_2(\sigma_t) = (1-\zeta)\left[\chi^{US} + \sigma_t\left(1-\chi^{US}\right)\right] + \zeta\frac{\eta\Psi_2\sigma_t}{1+\eta\Psi_2\sigma_t},$$

$$f_3(\sigma_t) = (1-\zeta)\left[\chi^{US} + \sigma_t\left(1-\chi^{US}\right)\right] + \zeta\frac{\eta\Psi_3\sigma_t}{1+\eta\Psi_3\sigma_t}.$$

In the above equations, Ψ_1, Ψ_2 and Ψ_3 (whose complete expressions are given in Appendix B) are combinations of the parameters of the static model, thus excluding σ_t and the parameters that shape social mobility, such as ζ, χ^{US} and η.

We define a *stationary equilibrium* (steady state) for this economy any fixed point of function (26). The next proposition establishes, for each region, the parameter conditions for the existence of a stable steady state. In what follows, we express our parameter conditions with the reference to η, whose effect on social mobility is both unambiguous and easy to interpret.

Proposition 4 *(Existence and stability of steady states). (i) The economy converges monotonically to a unique stable steady state in region 1 if*

$$\frac{(1-\zeta)\left(1-\chi^{US}\right)}{\Psi_1\zeta} < \eta < \frac{2\lambda}{\Psi_1}\left(\frac{2\zeta\lambda}{\zeta+(1-\zeta)\chi^{US}} - 1\right);$$

(ii) The economy converges monotonically to a unique stable steady state in region 2 if

$$\frac{2\lambda\left[\chi^{US} - \zeta\left(2\lambda + \chi^{US} - 1\right)\right]}{\Psi_2(1-2\lambda)\left(\zeta + \chi^{US} - \zeta\chi^{US}\right)} < \eta < \frac{\left[2\lambda\left(\frac{\zeta}{1+2\gamma(\lambda-1)-2\lambda} - \frac{\chi^{US}(\zeta-1)}{1+2\gamma(\lambda-1)}\right)\right]}{\Psi_2\left[\zeta\left(\chi^{US}-1\right) - \chi^{US}\right]};$$

(iii) The economy converges monotonically to a unique stable steady state in region 3 if

$$\eta > \frac{\left[2\lambda\left(\frac{\zeta}{1+2\gamma(\lambda-1)-2\lambda} - \frac{\chi^{US}(\zeta-1)}{1+2\gamma(\lambda-1)}\right)\right]}{\Psi_3\left[\zeta\left(\chi^{US}-1\right)-\chi^{US}\right]}.$$

Proof. The proof of the proposition as well as the expressions for the steady states are contained in Appendix B. ■

Note that the conditions on η in Proposition 4 are not mutually exclusive, thus implying that in principle our dynamic model may admit multiple stable steady states. In particular, in the case of mature economies, we might be interested in understanding whether a "protectionist" equilibrium may co-exist with a more liberal equilibrium. The issue of equilibrium multiplicity along regions 2 and 3 (corresponding to more advanced stages of human capital accumulation) is addressed in the following

Corollary 1 *(Multiple equilibria). If $\Psi_3 > \Psi_2$, there may exist two steady states located in regions 2 and 3 respectively. Otherwise, equilibrium multiplicity can be ruled out.*

Proof. The proof follows directly from points (ii) and (iii) of Proposition 4. ■

Proposition 4 and Corollary 1 imply that our economy might well admit a political equilibrium only in region 2. In such a case, which is represented in Figure 6, the economy ends up in a steady state characterized by protectionism and low redistribution. For alternative values of the parameters, however, a unique steady state may be located in region 3, as depicted in Figure 7. In such a case, protectionism is only a transitory phase, which is eventually overcome by the more sustained process of human capital accumulation - made possible, for instance, by a larger η. At the steady state, the share of skilled workers is sufficiently large to promote trade openness associated with moderate redistribution. In this case, free trade reemerges as a long-run political equilibrium although the losers from globalization still hold protectionist preferences (since the latter are not sufficiently numerous to impose their political agenda).

INSERT FIGURES 6,7

6 Concluding remarks

[...]

bla bla bla

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A Proofs of the static model

Proof of Lemma 1. We now show that, under Assumption 1, the income ranking specified in (11) holds.

(i) ($y_s > y_u$) From (9) and (10), we obtain that $y_s > y_u$ holds if and only if

$$\alpha \left[(1 - \theta_u^*) (1 - \sigma) \right] > \beta \left[(1 - \theta_s^*) \sigma \right],$$

Given that $\theta_s^* > \theta_u^*$, the (sufficient) following condition ensures that the previous inequality is satisfied:

$$\sigma < \frac{\alpha}{\alpha + \beta}.$$

(ii) ($y_x, y_m > y_s$) Given (8) and (9), and given (5), after a few algebraic steps, we obtain that $y_m > y_s$ if and only if

$$P < \frac{\phi^{\frac{\beta}{1-\beta}}}{A^{\frac{1}{1-\beta}}} \left(\frac{\lambda\sigma (1-\alpha-\beta) - \alpha (1-\gamma)(1-\lambda)}{\alpha\gamma (1-\lambda)} \right)^{\frac{1-\alpha-\beta}{1-\beta}} . \tag{27}$$

After rewriting the high-skilled income as

$$y_s \equiv \frac{\partial Y_X}{\partial L_{X,s}} = PA\alpha \left[\gamma (1-\lambda)\right]^{1-\alpha-\beta} \left[(1-\sigma)\lambda\right]^{\beta} (\sigma\lambda)^{\alpha-1} \frac{(\theta_u^*)^{\beta}}{(\theta_s^*)^{1-\alpha}}, \tag{28}$$

we can then compare (28) with (7) and obtain that $y_x > y_s$ if and only if

$$P > \frac{\phi^{\frac{\beta}{1-\beta}}}{A^{\frac{1}{1-\beta}}} \left(\frac{\alpha (1-\lambda)(1-\gamma)}{\lambda\sigma (1-\alpha-\beta) - \alpha\gamma (1-\lambda)} \right)^{\frac{1-\alpha-\beta}{1-\beta}} . \tag{29}$$

Conditions (ii) and (iii) of Assumption 1 follow immediately from (27) and (29).

Proof of Lemma 2. (i)-(ii) Given that both θ_s^* and θ_u^* are increasing in P, (7) is increasing in P and (8) is decreasing in P.

(iii) Plugging (5) and (6) into (9), we obtain

$$y_s(P) = \alpha \left[(1-\gamma)(1-\lambda)\right]^{1-\alpha-\beta} (\sigma\lambda)^{\alpha-1} \left[(1-\sigma)\lambda\right]^{\beta} \frac{\left[1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{\beta}{1-\alpha-\beta}}\right]^{1-\alpha}}{\left[1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{1-\alpha}{1-\alpha-\beta}}\right]^{\beta}},$$

Since $\alpha + \beta < 1$, we have that $dy_s/P > 0$.

(iv) Plugging (5) and (6) into (10), we obtain

$$y_u(P) = \beta \left[(1-\gamma)(1-\lambda)\right]^{1-\alpha-\beta} (\sigma\lambda)^{\alpha} \left[(1-\sigma)\lambda\right]^{\beta-1} \frac{\left[1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{1-\alpha}{1-\alpha-\beta}}\right]^{1-\beta}}{\left[1 + \frac{\gamma}{1-\gamma} (AP)^{\frac{1}{1-\alpha-\beta}} (\phi P)^{-\frac{\beta}{1-\alpha-\beta}}\right]^{\alpha}}.$$

It can be further shown that $dy_u/P \gtreqless 0$ if $P \lesseqgtr 1/\phi$.

Proof of Lemma 4. The indirect utility of agent i can be written as

$$U_i(P) = \frac{y_i(P)}{P^{1-\mu}} \left[1 - \tau^M(P)\right] \mu^{\mu} (1-\mu)^{1-\mu} + \delta \log \tau^M(P) Y(P) \tag{30}$$

where the only individual-specific term is $y_i(\cdot)$.

We can look at the three income ratios which write as

$$\frac{y_x}{y_s} = \frac{1-\alpha-\beta}{\alpha} \frac{\sigma\lambda}{\gamma(1-\lambda)} \theta_s^*;$$

$$\frac{y_s}{y_u} = \frac{\alpha}{\beta} \frac{1-\sigma}{\sigma} \frac{1-\theta_u^*}{1-\theta_s^*};$$

$$\frac{y_u}{y_m} = \frac{\beta}{1-\alpha-\beta} \frac{(1-\gamma)(1-\lambda)}{(1-\sigma)\lambda} \frac{1}{1-\theta_u^*}.$$

The income ratios y_x/y_s and y_u/y_m are increasing in P as $d\theta_i^*/dP > 0$ for $i = s, u$. Furthermore, given that (i) $\theta_i^*(P)$ for $i = s, u$ is a strictly concave function in P, (ii) $\theta_s^*(0) = \theta_u^*(0) = 0$ and (iii) $\theta_u^*(P) < \theta_s^*(P)$ for any P, it follows that $d\theta_u^*/dP|_P < d\theta_s^*/dP|_P$ for any P; we then have $d(y_s/y_u)/dP > 0$.

Given that all the three income ratios are increasing functions of P, we can conclude that $P_x^*(\tau^M) > P_s^*(\tau^M) > P_u^*(\tau^M) > P_m^*(\tau^M)$.

Proof of Lemma 5. The intuition for the proof is that, when $\tau = \tau_s^*$, net marginal benefits from globalization for unskilled workers are lower than if $\tau = \tau_u^*$. Hence, we have $P_u^*(\tau_s^*) < P_u^*(\tau_u^*)$. Write the indirect utility of unskilled workers as

$$U_u(P, \tau^M) = \frac{y_u(P)}{P^{1-\mu}} \left[1 - \tau^M(P)\right] \mu^\mu (1-\mu)^{1-\mu} + \delta \log \tau^M(P) Y(P),$$

where $\tau^M = \{\tau_u^*, \tau_s^*\}$.

Start from a situation in which $\tau^M = \tau_u^*$. $P_u^*(\tau_u^*)$ solves the following FOC:

$$\frac{dU_u(P, \tau^M)}{dP} = (1-\mu)^{1-\mu} \mu^\mu \frac{d\left(\frac{y_u(P)}{P^{1-\mu}}\left[1 - \tau_u^*(P)\right]\right)}{dP} + \delta \frac{d(\ln \tau_u^*(P) Y(P))}{dP} = 0, \quad (31)$$

The value $P_u^*(\tau_u^*)$ equalizes the marginal costs from globalization (first addend) to its marginal benefits (second addend). When the tax rate goes down, $\tau^M = \tau_s^*$, marginal costs (first addend) go up and marginal benefits (second addend) go down. Hence P^* must decrease in order to satisfy the new FOC. As a result,

$$\frac{dU_u(P)}{dP} = (1-\mu)^{1-\mu} \mu^\mu \frac{d\left(\frac{y_u(P)}{P^{1-\mu}}\left[1 - \tau_s^*\right]\right)}{dP} + \delta \frac{d(\ln \tau_s^* Y(P))}{dP} = 0$$

for $P_u^*(\tau_s^*) < P_u^*(\tau_u^*)$.

B Dynamics: proofs and additional material

Expressions for Ψ_1, Ψ_2, Ψ_3. We now derive the explicit expressions for Ψ_1, Ψ_2, Ψ_3 introduced in Section 4. Using the expression for τ_i^*, for $i = u, s$, as given in (18), and the expressions for total production and workers' incomes, as respectively given in (15), (9) and (10), into (14), we can write public expenditure as

$$G_t = \begin{cases} \Psi_1 (1-\sigma_t) \text{ if } 0 \leq \sigma_t \leq \sigma' \\ \Psi_2 \sigma_t \text{ if } \sigma' < \sigma_t \leq \sigma'' \\ \Psi_3 \sigma_t \text{ if } \sigma'' < \sigma_t \leq 1, \end{cases} \tag{32}$$

where

$$\Psi_1 \equiv \frac{\left(\overline{P} A \gamma^{1-\alpha-\beta} \left(\theta_s\left(\overline{P}\right)\right)^{\alpha} \left(\theta_u\left(\overline{P}\right)\right)^{\beta} + (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\overline{P}\right)\right)^{\alpha} \left(1-\theta_u\left(\overline{P}\right)\right)^{\beta}\right) \lambda \delta \overline{P}^{1-\mu}}{\beta (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\overline{P}\right)\right)^{\alpha} \left(1-\theta_u\left(\overline{P}\right)\right)^{\beta-1} (1-\mu)^{1-\mu} (\mu)^{\mu}},$$

$$\Psi_2 \equiv \frac{\left(\underline{P} A \gamma^{1-\alpha-\beta} \left(\theta_s\left(\underline{P}\right)\right)^{\alpha} \left(\theta_u\left(\underline{P}\right)\right)^{\beta} + (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\underline{P}\right)\right)^{\alpha} \left(1-\theta_u\left(\underline{P}\right)\right)^{\beta}\right) \lambda \delta \underline{P}^{1-\mu}}{\alpha (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\underline{P}\right)\right)^{\alpha-1} \left(1-\theta_u\left(\underline{P}\right)\right)^{\beta} (1-\mu)^{1-\mu} (\mu)^{\mu}},$$

$$\Psi_3 \equiv \frac{\left(\overline{P} A \gamma^{1-\alpha-\beta} \left(\theta_s\left(\overline{P}\right)\right)^{\alpha} \left(\theta_u\left(\overline{P}\right)\right)^{\beta} + (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\overline{P}\right)\right)^{\alpha} \left(1-\theta_u\left(\overline{P}\right)\right)^{\beta}\right) \lambda \delta \overline{P}^{1-\mu}}{\alpha (1-\gamma)^{1-\alpha-\beta} \left(1-\theta_s\left(\overline{P}\right)\right)^{\alpha-1} \left(1-\theta_u\left(\overline{P}\right)\right)^{\beta} (1-\mu)^{1-\mu} (\mu)^{\mu}}.$$

Note that, in the expressions above, P^* has been replaced by the political choice relevant for each region ($\overline{P}$ in regions 1 and 3, $\underline{P}$ in region 2).

Proof of Proposition 4. (i) Solving $f_1(\sigma) = \sigma$, we obtain two possible solutions, only one of which can be comprised between 0 and 1 (the other being always strictly higher than 1). It is given by

$$\sigma_1^* = 1 + \frac{1}{2\eta(1-\lambda)} - \frac{\sqrt{\left(\zeta\left(1-\chi^{US}\right)+\chi^{US}\right)\left(\chi^{US}-\zeta\left(\chi^{US}-1-4\eta(1-\lambda)\right)\right)}}{2\eta(1-\lambda)\left(\zeta\left(1-\chi^{US}\right)+\chi^{US}\right)}. \tag{33}$$

We now study the conditions under which σ_1^* belongs to region 1: we have that $\sigma_1^* < \sigma'$ if

$$\eta < \frac{2\lambda}{\Psi_1}\left(\frac{2\zeta\lambda}{\zeta+(1-\zeta)\chi^{US}} - 1\right).$$

We now want to understand whether such steady state is stable. The first partial derivative of $f_1(\sigma)$ can be written as

$$\frac{\partial f_1(\sigma)}{\partial \sigma} = (1-\zeta)\left(1-\chi^{US}\right) - \frac{\Psi_1 \zeta \eta}{\left(1+\Psi_1 \eta (1-\sigma)\right)^2},$$

and is always smaller than one. This guarantees that σ_1^* is a stable steady state. Finally, for convergence to the steady state to occur monotonically, we need the above partial derivative to be positive. This occurs for

$$\eta > \frac{(1-\zeta)\left(1-\chi^{US}\right)}{\Psi_1\zeta}.$$

(ii) From the inspection of the first and the second partial derivatives of $f_2(\sigma_t)$, it turns out that such function is always increasing and concave. We can then proceed as we did for region 1. We focus on the stable steady state. Its expression is given by

$$\sigma_2^* = .$$

By comparing σ_2^* with σ' and σ'', we can show that σ_2^* belongs to region 2 if

$$\frac{2\lambda\left[\chi^{US}-\zeta\left(2\lambda+\chi^{US}-1\right)\right]}{\Psi_2(1-2\lambda)\left(\zeta+\chi^{US}-\zeta\chi^{US}\right)} < \eta < \frac{\left[2\lambda\left(\frac{\zeta}{1+2\gamma(\lambda-1)-2\lambda}-\frac{\chi^{US}(\zeta-1)}{1+2\gamma(\lambda-1)}\right)\right]}{\Psi_2\left[\zeta\left(\chi^{US}-1\right)-\chi^{US}\right]}.$$

(iii) It can be proven that $f_3(\sigma_t)$ is always increasing and concave. Proceeding as above, we can find the following expression for the stable steady state:

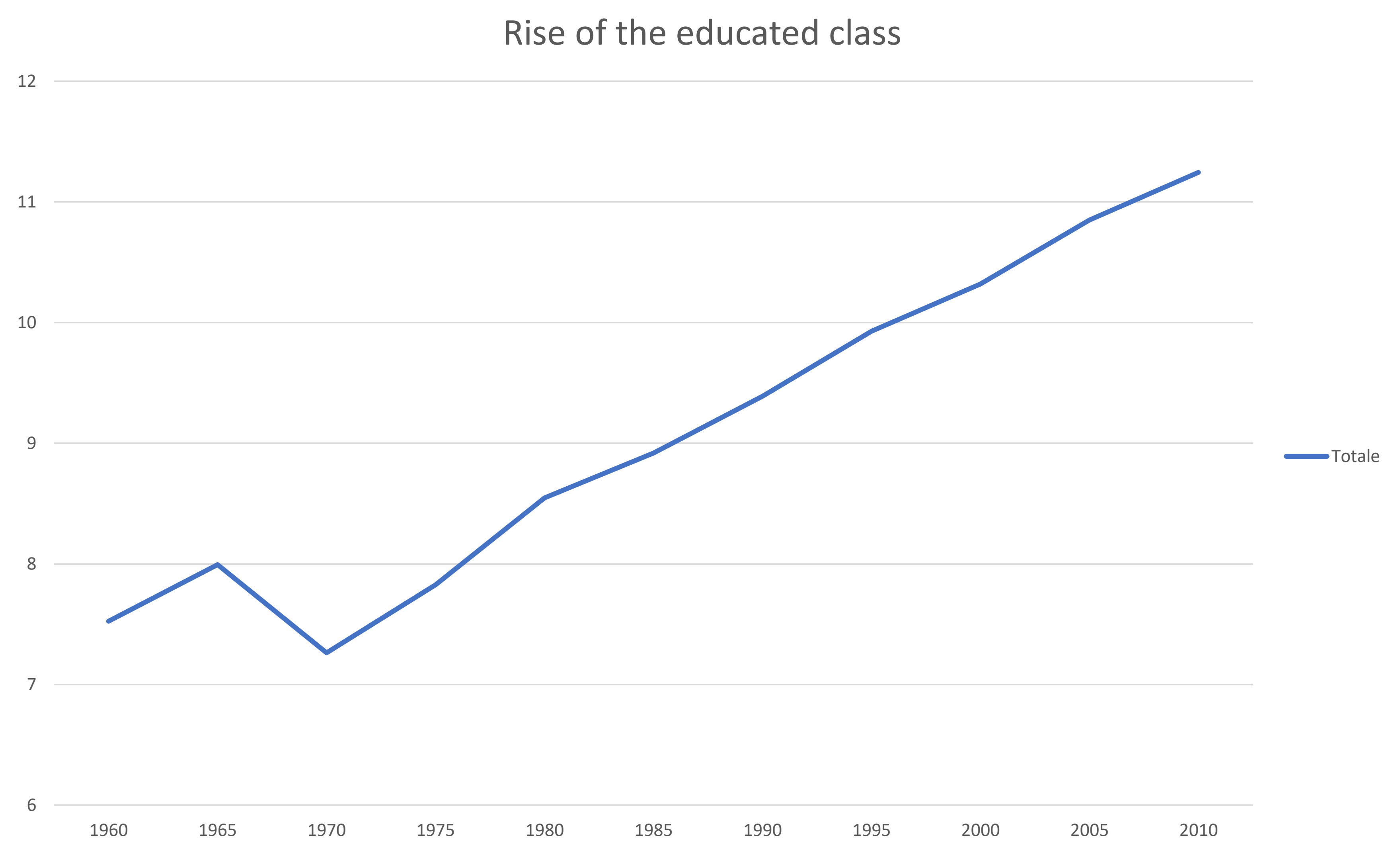
$$\sigma_3^* = .$$

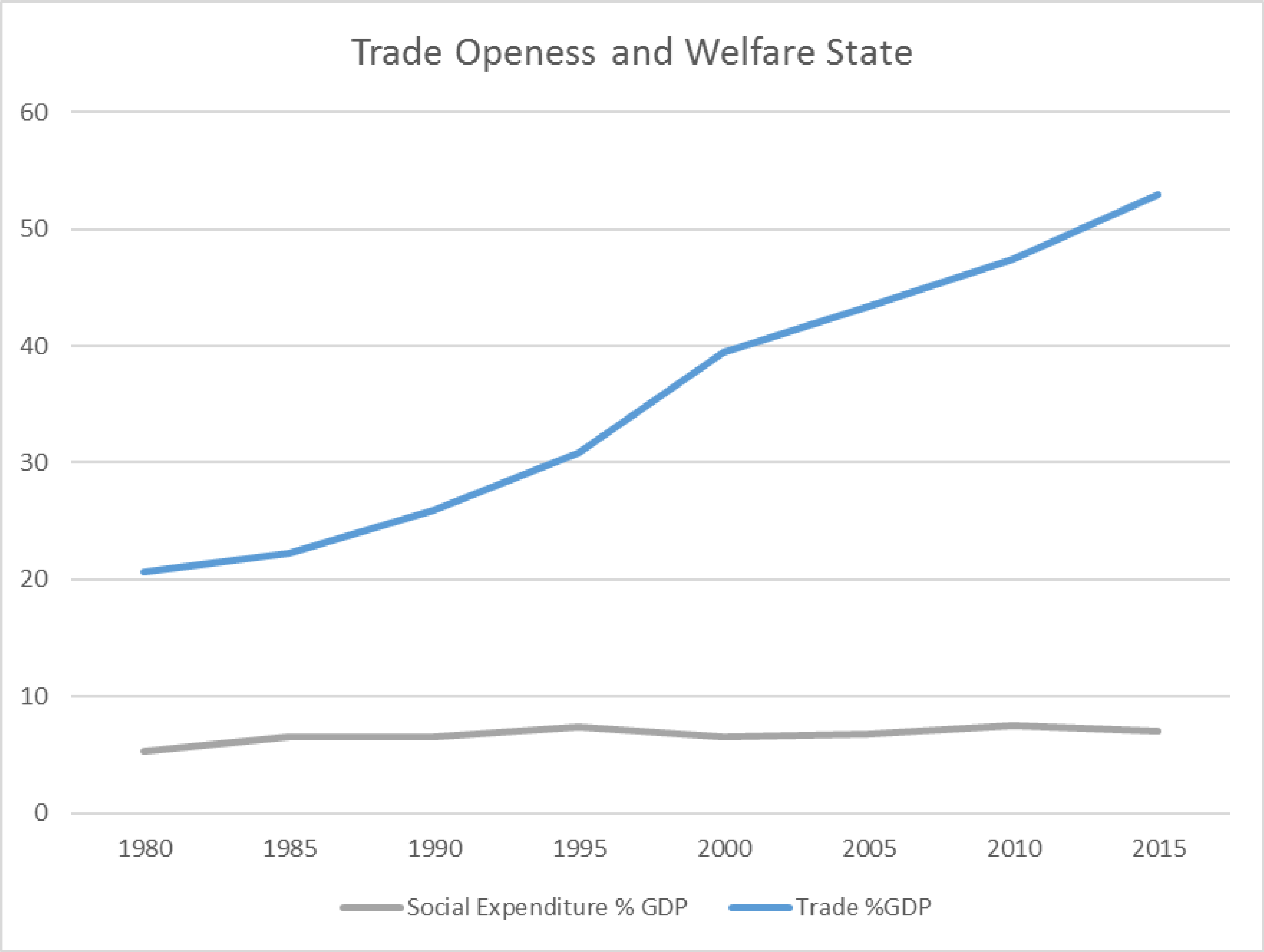
It can be shown that σ_3^* is higher than σ'' if

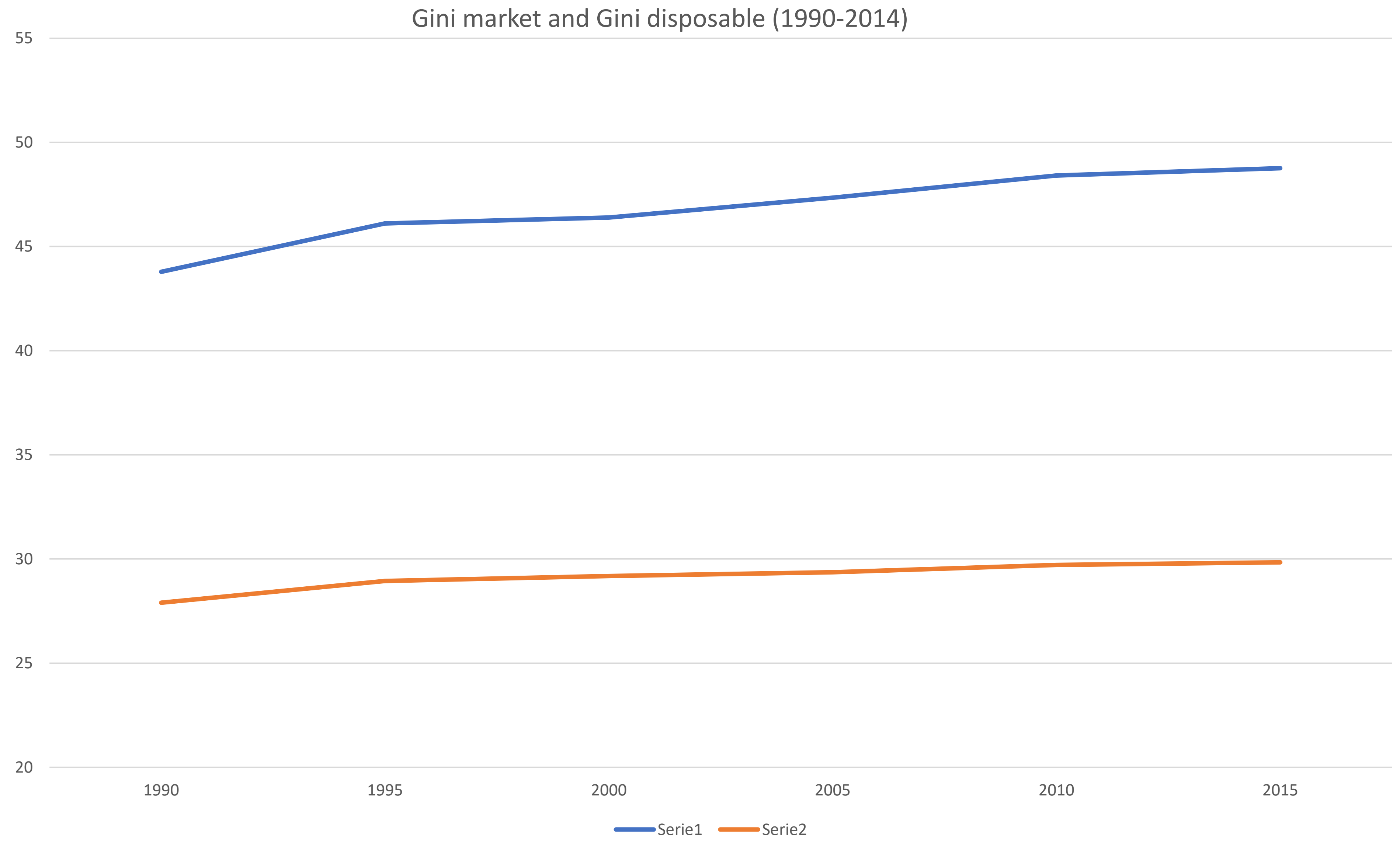
$$\eta < \frac{\left[2\lambda\left(\frac{\zeta}{1+2\gamma(\lambda-1)-2\lambda}-\frac{\chi^{US}(\zeta-1)}{1+2\gamma(\lambda-1)}\right)\right]}{\Psi_3\left[\zeta\left(\chi^{US}-1\right)-\chi^{US}\right]}.$$

C Alternative demographic or income scenarios

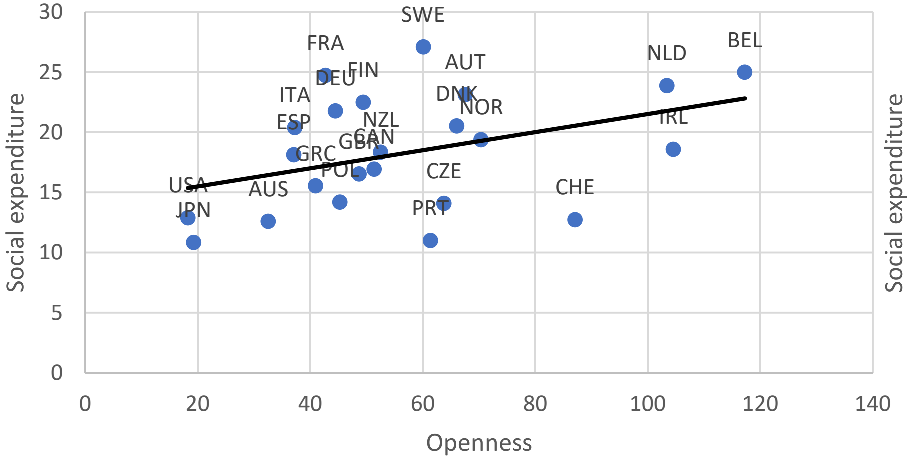
(i) If $y_m < y_s$, then $\tau_m > \tau_s$. This implies that, along region 2, importing-sector entrepreneurs are median voters on taxation. As a result, the political equilibrium of region 2 is $\left(P^M, \tau^M\right) = \left(P_u^*\left(\tau_m^*\right), \tau_m^*\right)$ for $\sigma' < \sigma \leq \sigma''$. Given that $\tau_m < \tau_u$, Lemma 5 is still valid (in that $P_u^*\left(\tau_m^*\right) < P_u^*\left(\tau_u^*\right)$) and, hence, the political equilibrium of region 2 can still be labelled as the protectionist equilibrium. A totally analogous reasoning can be carried out for the case $y_x < y_s$.


Rise of the educated class
12
11
10
9
8
7
6
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Totale

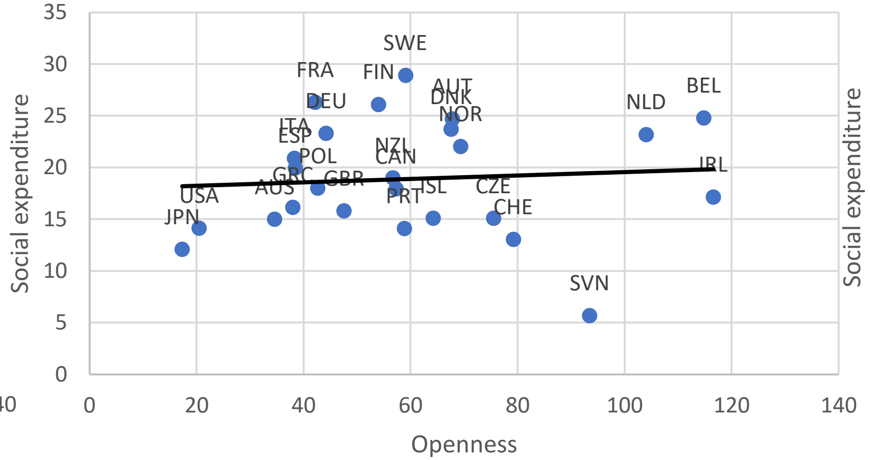

Trade Openess and Welfare State
60
50
40
30
20
10
0
1980
1985
1990
1995
2000
2005
2010
2015
Social Expenditure % GDP
Trade %GDP


Gini market and Gini disposable (1990-2014)
55
50
45
40
35
30
25
20
1990
1995
2000
2005
2010
2015
Serie1
Serie2

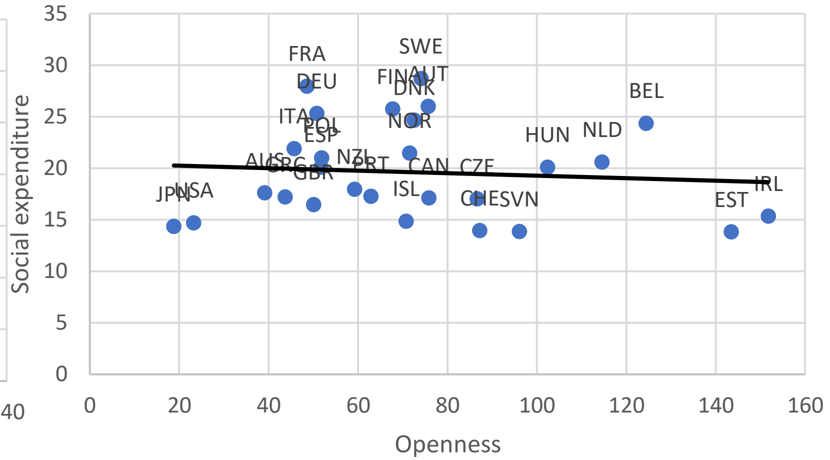
Openness and social expenditure (1985-90)



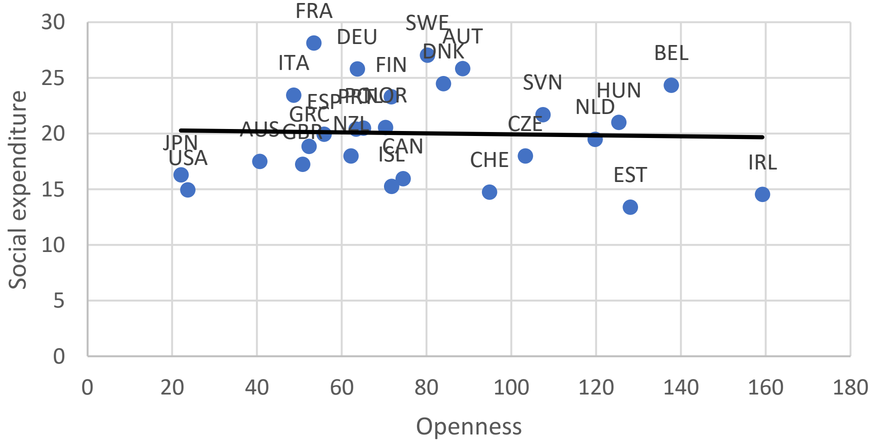
Openness and social expenditure (1990-95)



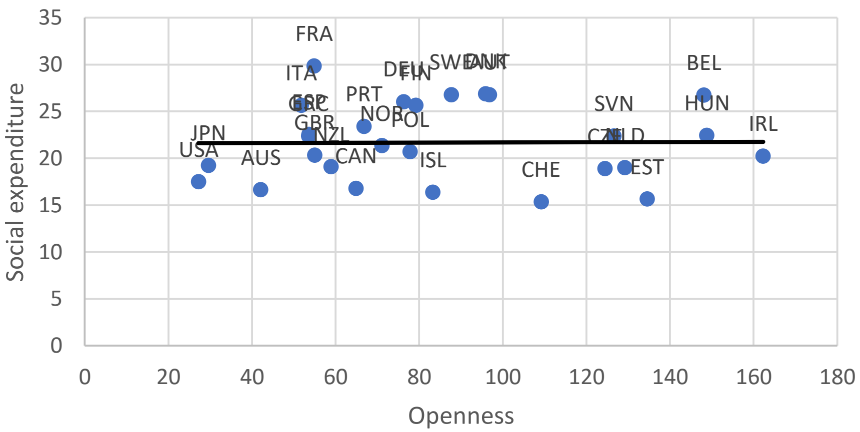
Openness and social expenditure (1995-00)



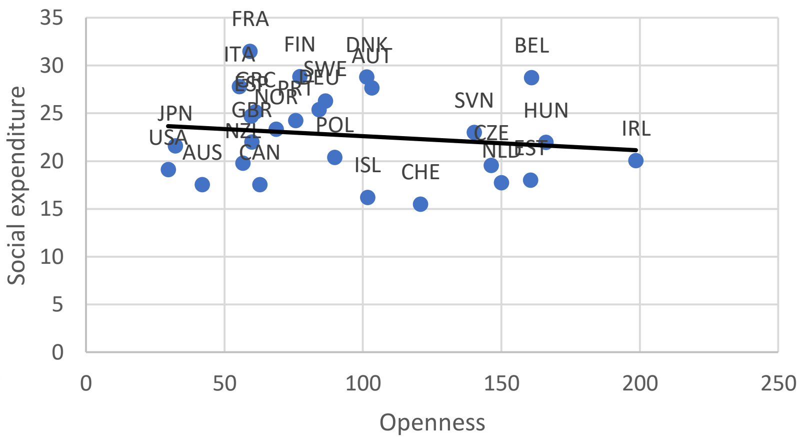
Openness and social expenditure (2000-05)

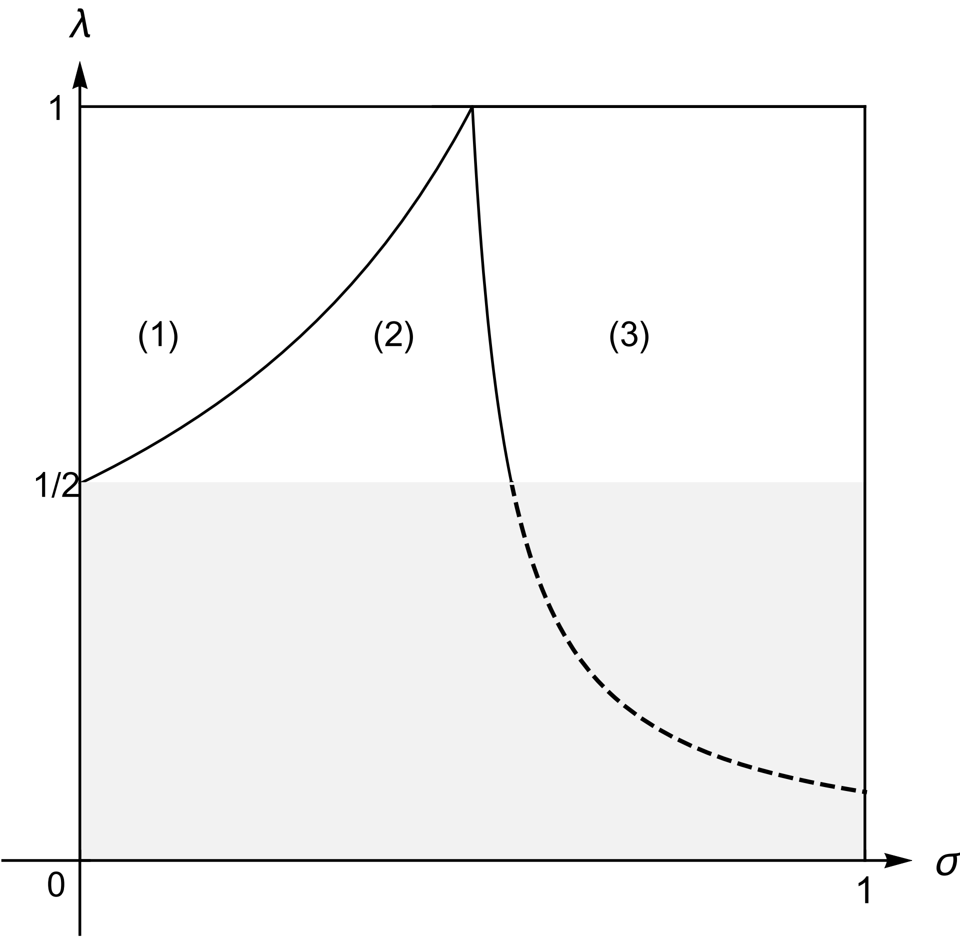


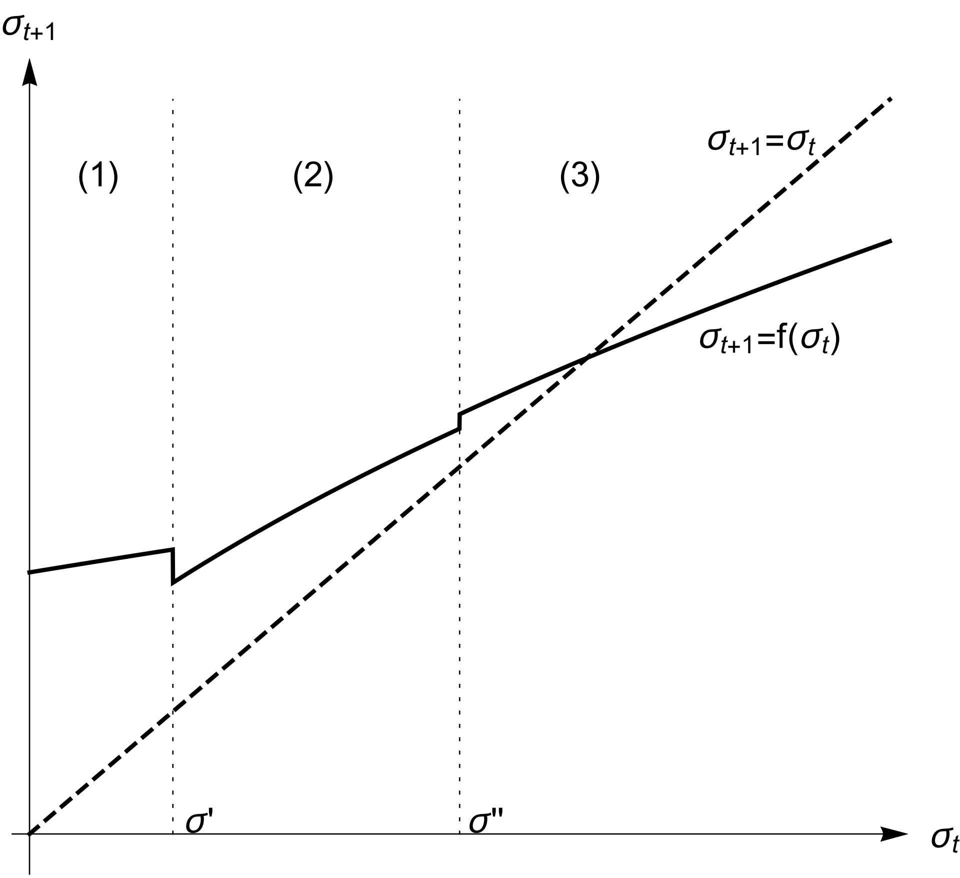
Openness and social expenditure (2005-10)



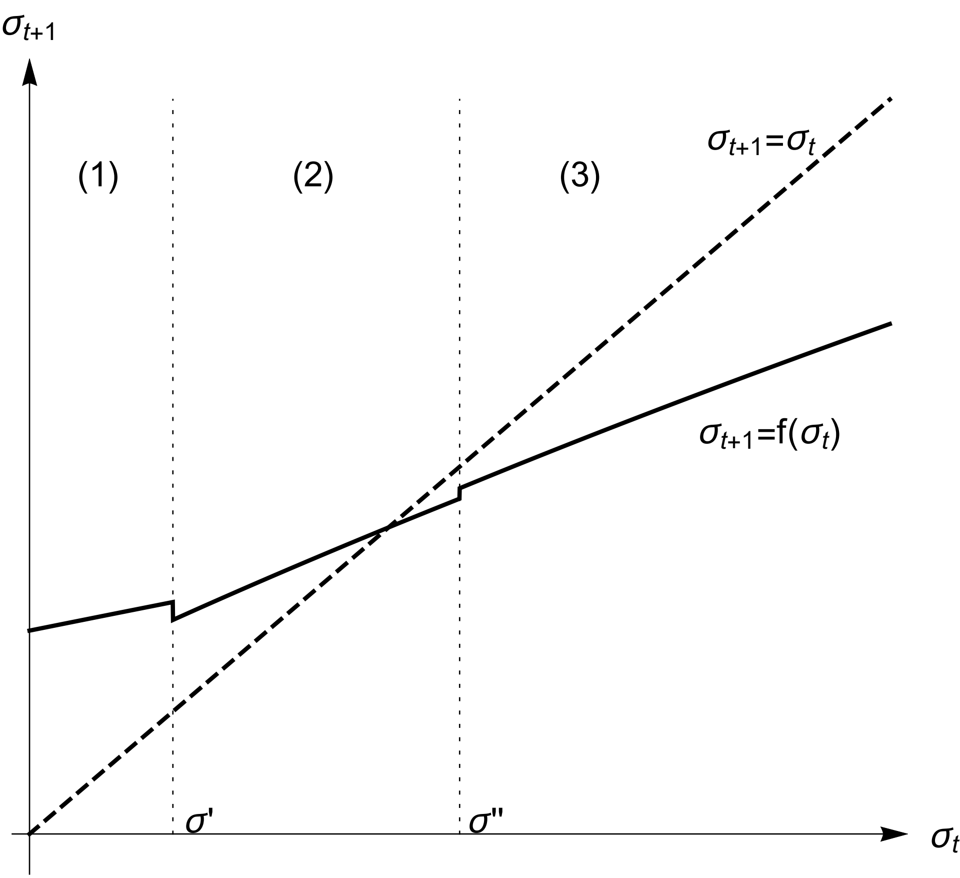
Openness and social expenditure (2010-15)




λ
1
1/2
0
(1)
(2)
(3)
σ
1



σ_{t+1}
(1)
(2)
(3)
$\sigma_{t+1}=\sigma_t$
$\sigma_{t+1}=f(\sigma_t)$
σ'
σ''
σ_t



σ_{t+1}
(1)
(2)
(3)
$\sigma_{t+1}=\sigma_t$
$\sigma_{t+1}=f(\sigma_t)$
σ'
σ''
σ_t