DEGLOBALIZAION AND SOCIAL SAFETY NETS IN POST-COVID-19 ERA: TEXTBOOK
MACROECONOMIC ANALYSIS

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ABSTRACT

Globalization is expected to be reversed, at least partially, in the post pandemic era. The Great Financial Recession of 2008–10 marked a historic turning point in the direction of weakening the degree of global economic integration. Now, in the post-pandemic era, policymakers appear poised to take deliberate steps to reinforce the movement toward de-globalization. At the same time, safety nets are expected to be strengthened. In this paper, we develop a model, with which we analyze central macroeconomic interactions between globalization and safety nets. We put together stylized elements of trade globalization, financial globalization, international tax competition, immigration, and welfare state, all in a two-skill, two-period stylized model, where policy (taxes and social benefits) is determined through majority voting.

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Abstract:

Globalization is expected to be reversed, at least partially, in the post pandemic era. The Great Financial Recession of 2008–10 marked a historic turning point in the direction of weakening the degree of global economic integration. Now, in the post-pandemic era, policymakers appear poised to take deliberate steps to reinforce the movement toward de-globalization. At the same time, safety nets are expected to be strengthened. In this paper, we develop a model, with which we analyze central macroeconomic interactions between globalization and safety nets. We put together stylized elements of trade globalization, financial globalization, international tax competition, immigration, and welfare state, all in a two-skill, two-period stylized model, where policy (taxes and social benefits) is determined through majority voting.

Introduction

The corona virus pandemic alters the interactions among globalization, migration and redistribution policies will take. Throughout history, crisis and human progress have often gone hand in hand. The growing COVID-19 pandemic could strengthen nationalism and isolationism and accelerate the retreat from globalization. The COVID-19 pandemic is driving the world economy to retreat from global economic integration. National security and public health concerns are providing new rationales for protectionism.

One aspect of a lack of resilience of the last decades of globalization to Corona Virus Pandemic is that value (supply) chains that were highly vulnerable. They were not sufficiently diversified. They were sensitive to interruptions caused by either a pandemic like this one or trade conflicts. The recent backlash against trade globalization is not a new phenomenon, either. International trade increased rapidly after 1990, fueled by the growth of a complex network of global value chains (GVCs). These chains represent the process of ever-finer specialization and geographic fragmentation of production. In the wake of the 2008 Global Financial Crisis, uncertainty in the world economy led many firms to reassess their business models. Rather than relying on global supply chains, an increasing number of firms invested in robots, which prompted a renaissance of manufacturing in industrialized countries. The global value chains could be reshuffled, or be reduced. Whether they will be localized or regionalized, or whether the crisis will lead to the continuation of globalization. The expectation is that the COVID-19 crisis will structurally transform globalization on the long-term.

There exists large body of international trade literature on impediments to trade in goods due to border related friction cost: country specific standards, regulations, technical barriers to trade, together with product-specific information costs, increase border effects. By the Lerner's Symmetry, any wedge between the domestic and the world prices applied to the importable good is equivalent to a wedge between world and domestic prices applied to the exportable good.

The "border effect" in international trade refers to a situation in which there is higher volume of trade within a country compared with the volume of trade across the country's borders. Gravity equations have been widely used to infer trade-flow effects of various institutional arrangements. They have been especially successful to explain the border-effect puzzle. McCallum (1995) estimates a conventional gravity model where bilateral trade between Canadian provinces, or between a Canadian province and US state, should depend on each of their province or state GDP has and distance from the country's centers. His study uses 1988 data, just before the Canada–US free trade agreement was signed, Although trade economists were not surprised at the existence of a border effect, they find significant size of the estimated effect in McCallum (1995) perplexing. Anderson and van Wincoop (2001) study show why previous empirical studies have had an upward bias in the estimation of the border effect. Anderson and van Wincoop (2001) argue that border effects have an asymmetric effect on countries of different size, and in particular, have a larger effect on small countries. They show previous border-effect estimations suffer from omitted variables bias. They allow the omitted variables in, and find that national borders reduce trade between industrialized countries by still significant amounts of 20-50 percent. Chen (2004), and Chen and Novy (2011), identify industry-specific trade barriers that are responsible for border effects such as country specific standards, regulations, etc. Fouquin, and Hugot (2016), use a gravity theory-grounded measure to create a rich data set of bilateral relative trade costs. The trade costs are aggregated to

obtain world indices, as well as indices along various trade routes. They find that the post-WWII fall of trade costs in recent times began in Europe before extending to the rest of the world.

The present paper focuses on the gradual process of diminishing border effects (that is, the increased intensity of trade globalization) on domestic factor prices and income inequality. For this purpose, our model applies a standard factor proportion (Heckscher-Ohlin) model, except that factors' supply is endogenous in the model. The endogeneity of labor supply stems from the possibility of high-skilled emigration. The endogeneity of capital supply arises from the endogeneity of domestic savings. The model lends itself in a straightforward manner to an analysis of the effect of the world prices of final goods on domestic factor prices a la Stolper and Samuelson (1941). In addition, the model includes a reinforcing effect whereby the change in the domestic factor prices, triggers capital formation through savings a la Rybsczinski (1955). Increased trade globalization intensity means simply an exogenous reduction in the wedge between world prices and domestic final good prices. Naturally, this Stolper-Samuelson type changes in domestic factor price changes trigger a standard reallocation process of domestic factors of production across sectors and affect the prices of domestic factors of production. Furthermore, the ensuing changes in factor prices trigger changes in savings and capital formation. The induced changes in high-skilled emigration and capital formation lead in turn to changes in the factor supply. The latter work through the Rybsczinski mechanism on re-configuration of sectoral outputs, and thus, the volume of international trade.
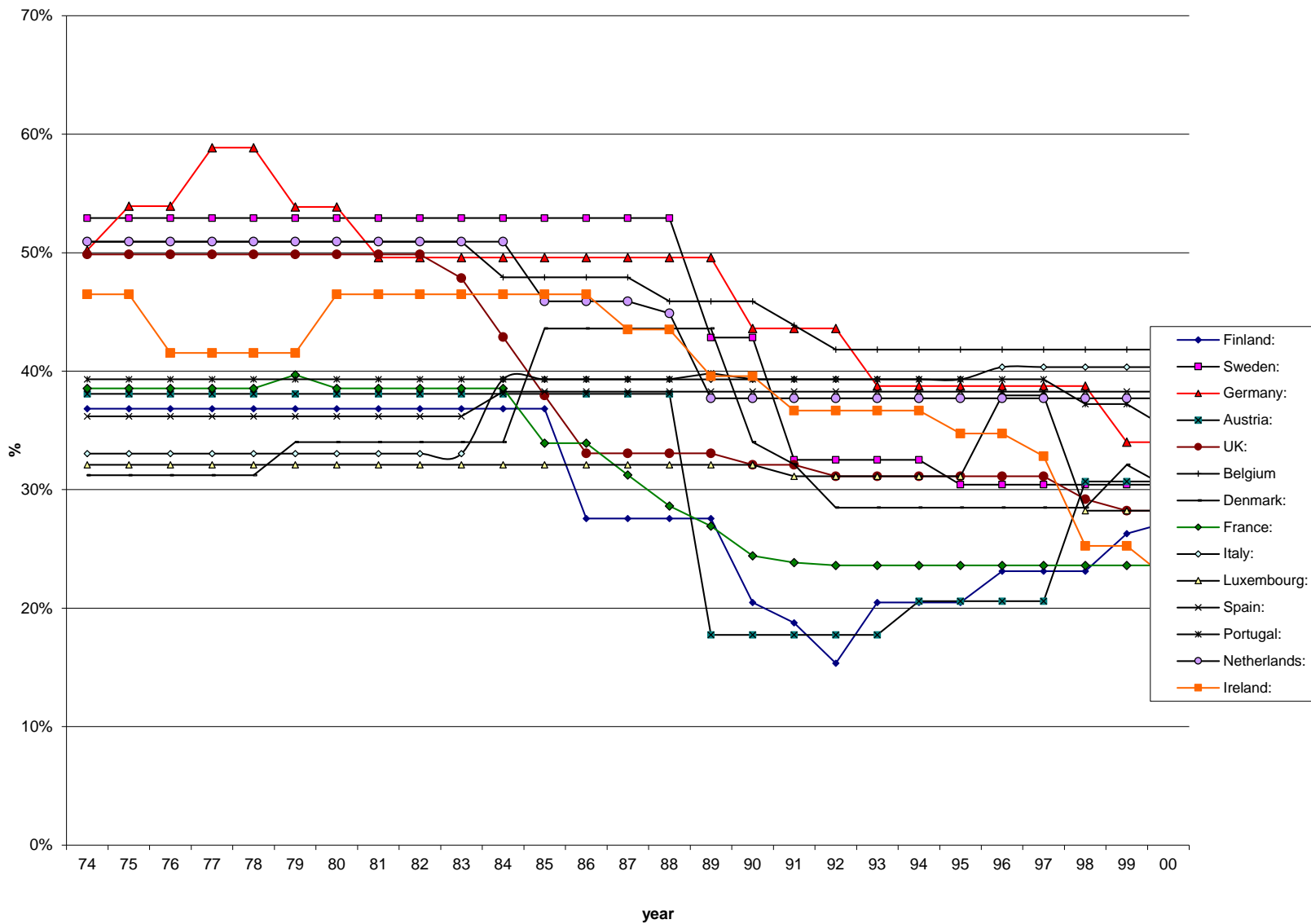
2. International Tax Competition

Financial globalization triggers tax competition among countries, and the possibility of a "race to the bottom".[4] As a result, the tax burden may shift from the highly mobile factors (e.g. capital and top-skilled labor) to the weakly mobile factors (e.g. low-skill labor). This shift has first-order implications for both the functional and the size distribution of income. A country that imposes high tax rates may push mobile factors (especially capital) abroad where the country cannot effectively tax them, eroding its own tax base and lowering domestic economic activity at the same time. It may significantly affect corporate financing and location decisions of both US, and European, multinational groups. In consequence, the enhanced competitive pressure could result in an erosion of foreign countries' tax bases and an associated loss in tax revenue triggering a new wave of international tax competition. [5] Figure 1 gives evidence for the intensity of corporate tax competition following the launch of the European Union.

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[4] The Economist magazine put it succinctly: "Globalization is a tax problem for three reasons. First, firms have more freedom over where to locate. This will make it harder for a country to tax a business much more heavily than its competitors will. Second, globalization makes it hard to decide where a company should pay tax, regardless of where it is based. This gives them [the companies] plenty of scope to reduce tax bills by shifting operations around or by creating transfer pricing. Third, globalization nibbles away at the edges of taxes on Individuals. It is harder to tax personal income because skilled professional workers are more mobile than they were two decades ago."

5 Michael Devereux, Rachel Griffith and Alexander Klemm (2002) analyze the development of taxes on corporate income in EU and G7 countries over the 1980s and the 1990sthey establish that tax revenues on profitable investments had fallen. In particular, taxes on income earned by multinational firms are subject to tax competition forces. Additional evidence pertaining to international tax competition for relatively mobile portfolio investments, so that a country with more mobility has lower capital tax rates, is abundant. See empirical support for the hypothesis in Hines (1999), Sorensen (2002), Besley, Griffith and Klemm (2001), Devereux and Griffith (2002), and Lassen and Sorensen (2002), Razin, Sadka, and Nam (2004), and Krautheim and Schmidt-Eisenhor (2011).

Figure 1: Hall-Jorgenson Effective Tax Rates on Corporate Income: Selected EU Countries

Assumptions: Equity finance,   r = 4 %, inflation rate π = 4 %, δ = 20 %, Normal tax life = 10 years. Countries (from top to bottom): Finland, Sweden, Germany, Austria, UK, Belgium Denmark, France, Italy, Luxemburg, Spain, Portugal, Netherlands, Ireland. [6]

3. Global financial globalization

We capture the degree of financial globalization by the ease with which capital flows from one country to another. We assume a pure source-based income taxation. This means that the country does not impose taxes on foreign-source income of its residents, but taxes foreigners on their income originating within the country. [7]

Capital income of residents and foreigners (from domestic sources only) is taxed at a flat rate t_k. Therefore; the net return on investing into domestic capital is $1 + r(1 - t_k)$ for investors, where r is the domestic interest rate.

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[6] Calculations based on the well-known work of Hall and Jorgenson (1967), who introduced the user cost of capital approach; applied to international data by King and Fullerton (1984). Figure 1 follows the formula for the effective tax rate on corporate income (τ_e), as refined by Auerbach (1983):

$$\tau_e = \frac{(r + \delta)(1 - \tau_s z) - (r + \delta)(1 - \tau_s)}{(r + \delta)(1 - \tau_s z) - \delta(1 - \tau_s)}$$

where
r – Real cost of funds (real rate of return the firm must earn after corporate taxes by the instruction of its shareholders).
δ – physical rate of depreciation (assumed exponential)
τ_s – statutory corporate tax rate
z – Present value of depreciation allowances.

[7] Under the source principle of international taxation only income from domestic sources is subject to a tax, whereas foreign-source income is exempt. Under the residence principle, in contrast, resident income is taxed on a worldwide basis. Razin and Sadka (2017) illustrate diagrammatically the efficiency disadvantage of the equilibrium under the source principle, compared to the residence equilibrium. Because (as in the Diamond-Mirrlees (1971); the production efficiency proposition) and M the consumption possibilities frontier shrinks under the source principle, relative to the frontier under the residence principle, the latter is more efficient. However, tax revenue collection tends to be larger under the former, because of the existence of tax havens and lack of sufficient international tax coordination. The tax-competition setup of source taxation is more pronounced in source-taxation than in residence taxation .Note, for instance, that tax competition has little influence on capital taxation under the residence principle with cross-country information sharing.

Assume that capital does flow internationally, but at some cost $\delta_k > 0$ per unit.[8] A domestic

individual who invests abroad can thus gain only $1 + (1 - t_K^*)r^* - \delta_k$, where r^* is the world

interest rate and t_K^* is the tax rate, levied abroad under a source-based taxation. In a small, open

economy context, the two (exogenous) variables t_K^* and r^* play an equivalent role, where the only

relevant variable is $R^* = (1 - t_K^*)r^*$, which is the net of tax international interest rate.

We assume that the cost of capital flows applies symmetrically to foreign investors, i.e. their return

on investment in the domestic country is given by $1 + (1 - t_K)r - \delta_k$, where investing abroad

yields a return R^*.

The small open economy exports capital in case:

(1) $(1 - t_K)r = R^* - \delta_k$,

which means that $(1 - t_K)r - \delta_k < R^*$, and therefore foreigners do not invest in the domestic

economy.

Similarly, the small open economy imports capital in case:

(2) $(1 - t_K)r - \delta_k = R^*$,

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[8] This cost may generate home bias of investment, as in the case of information asymmetry. See Razin, Sadka, and Yuen (1998). The parameter δ_k captures (albeit in a reduced form) a group of frictions, contractual and informational. Such frictions, which affect the volume and the composition and the volatility of international capital flows, cause deviations from the "law of one rate of return". As an example, foreign direct investors get more efficient outcomes than foreign portfolio investors do. The reason is that foreign direct investors have direct control over management. Thus, they are able to make a better-informed decision of how to run the business. However, the better information mires FDI investors with the "lemons" problem: If the investors' liquidity in the source country dries up, forcing the investors to sell off their foreign subsidiaries, market participants would not know whether the subsidiary is liquidated because of the investors' liquidity problems, or because of bad inside information about the profitability of the subsidiary. Consequently, the market will place a discount on assets sold by an FDI investor, who has the inside information, unlike the foreign portfolio investment, which has no inside information about profitability of the investment. The "law of one rate of return" is not applicable to foreign direct investment because of the "lemon problem". See Goldstein and Razin (2006).

which means that $(1 - t_K)r > R^* - \delta_k$, and therefore the residents of the small open economy do not wish to invest abroad.

Remarkably, the foreign tax parameter, t_K^*, with which the domestic tax rate, t_K, competes, and the financial globalization parameter, δ_k, have similar effects on the small open economy when it exports capital; but the opposite effects when it imports capital. Specifically, when t_K^* and δ_k fall, then capital export is boosted in the capital-export case. This is because the net return abroad to domestic savers rises. Therefore simulating the tax competition effect on the welfare state economy of reduced t_K^* is equivalent to the effect of a reduced δ_k; both indicate that the globalization forces intensify. However, in the capital import case, a fall in t_K^* the net return abroad to foreign savers increases, and therefore capital imports by the domestic economy diminishes. A fall in δ_k however raises the net return for foreign investors in the domestic economy, which boosts capital, imports. Therefore simulating the tax competition effect on the welfare state economy of reduced t_K^* has the opposite effect of a reduced δ_k.

4. A Model

The paper's focus is twofold: (i) the effects of globalization on the volumes of capital flows, the volume of trade, the emigration of high-skill labor, and income distribution. And, (ii) the role of the welfare state, as shaped by majority voting, in enhancing the welfare of many (rather than just a few) income groups in the presence of globalization and tax competition forces.

To put trade and financial globalization, tax competition, high-skilled emigration, and the generosity of the welfare state, all in a coherent analytical framework, we develop here a political-economy model, where the welfare state parameters (taxes and social benefits) are determined through majority voting[9]. It is a stripped-down model consisting of the essential (minimal) features, which allow us to analyze these issues.

To enable us to consider trade in goods we assume that there minimally are two tradable goods (x and y). In the absence of uncertainty and differentiated products, each sector will either export or import its standard product, but not both at the same time. World prices of x and y are exogenously given for our small open economy with good x serving as a numeraire, whose price is normalized to one, and the world price of y is denoted by p*.

There is an impediment to trade in goods. Specifically, goods can be exported, but again only at some border related friction cost (e.g., country specific standards, regulations, etc.). For concreteness of the notation, we consider y as an export good. A similar and straightforward notation applies when x is the export good.[10] We denote this cost per unit of price by δ_y, so that the domestic price of the export good y is

(3)
$$p_t = \frac{p^*}{(1 + \delta_y)}.$$

[10] By the Lerner Symmetry proposition, any wedge between the domestic and the world prices applied to importables, is equivalent to a wedge between world and domestic prices applied to exportables.

In order to consider redistribution issues, which are at the heart of the welfare state, we assume that there minimally are two types of individuals -- low skilled-poor (indexed u) and high-skilled –rich (indexed s).There are two types of factors of production—capital (K) and labor (L). The workers have two types of skills—low (l) and high (h). Labor market productivity of the skilled individual is 1 and labor market productivity of the unskilled individual is $\rho < 1$.

Each high-skill individual is endowed with $\bar{x}_s$ units of good x, and $\bar{y}_s$ units of good y , respectively, in the first period; a low-skill individual is endowed with only $\theta < 1$ units of the skilled endowements. Thus, an skilled-rich individual enjoys both higher initial endowment ("wealth"), and higher labor market skill than the unskilled-poor individual.

The overall size of the initial native-born population is normalized to one, where a proportion λ of the population is of high skill and a proportion $1 - \lambda$ is of low skill. We denote by $m_s \geq 0$ the number of high-skill emigrants. Note that when $\lambda < 0.5$, then the low-skill form a majority and will be decisive in the voting process. When $\lambda - m_s > 0.5$, assuming that emigrants do not participate in the political process, the high skill form the majority and are decisive in the voting process.

To consider saving and investment we assume that there minimally are two periods (1 and 2).

A representative firm produces good g according to a constant-returns-to scale technology:

$$(4) \quad g = A_g F_g(K_g, L_g) = A_g K_g^{\alpha_g} L_g^{1-\alpha_g}, \quad g = x, y,$$

where, K_g is the input of physical capital, and L_g is labor, measured in efficiency units, used in the respective production process. $A_g > 0$ is a total factor productivity coefficient, and α_g and $1 - \alpha_g$ are, respectively, the capital and labor shares in the sector producing g.

Capital is employed together with labor in the first period with output generated in the second period. We assume that labor is paid in the second period, at the end of the production process.

Capital (K) is a composite good, produced in the first period as of a variable mix of x_k and y_k, according to:

(5) $\qquad K = x_k{}^\beta y_k{}^{1-\beta}$, where $0 < \beta < 1$.

To find the cost minimizing mix of x and y, of which a unit of capital (K) is composed of, one, has to solve the following problem:

$$\min_{(x,y)} (x_k + p_1 y_k)$$

subject to:

$$x_k{}^\beta y_k{}^{1-\beta} \geq 1 ,$$

where p_t is the domestic price of y in period $t = 1,2$.

Solving this problem yields also the unit price p_k of capital as

(6) $\qquad p_k = D p_1^{1-\beta}$,

where $D = (\frac{1-\beta}{\beta})^\beta + (\frac{\beta}{1-\beta})^{1-\beta}$.

The labor supply in efficiency units (L^S) is given by

(7)
$$L^S = \lambda - m_s + (1 - \lambda)\rho \quad .$$

Demands for labor and capital are given, respectively, by the marginal productivity conditions in both sectors. Note that because labor and capital move freely between the two sectors, then the factors of production earn the same remuneration across sectors, that is:

(8)
$$w = (1 - \alpha_x)A_x k_x^{\alpha_x},$$

(9)
$$w = p_2(1 - \alpha_y)A_y k_y^{\alpha_y}$$

(10)
$$p_k(1 + r) = \alpha_x A_x k_x^{1-\alpha_x},$$

(11)
$$p_k(1 + r) = p_2 \alpha_y A_y k_y^{1-\alpha_y},$$

where k_g is the capital- labor ratio in sector g, that is $k_g = \frac{K_g}{L_g}$; w is the wage rare per efficiency unit, paid in the second period after the completion of the production process. Note that for simplicity we assume that capital fully depreciates at the end of the production process.

We denote by c_{gi1} the consumption of good g = x,y by an individual of type i = u,s in period t = 1,2. All individuals have identical preferences, given by

(12)
$$u_i = (c_{xi1}{}^a c_{yi1}{}^{1-a})^b (c_{xi2}{}^a c_{yi2}{}^{1-a})^{1-b} + dB^\gamma,$$

where $0 < a < 1, 0 < b < 1, d > 0, \gamma > 0,$ and B is a uniform social benefit (provided in an equal amount to all individuals), assumed (for simplicity) to be provided in the second period only. This social benefit captures the various ingredients that a welfare state provides, such as health services, education, in-kind transfers, etc. Note that the social benefit is <u>not</u> a perfect substitute to private consumption[11].

Individual budget constraints for period 1 and 2 are given, respectively, by:

$$(13) \qquad\qquad S_i \;=\; \bar{x}_i + p_1 \bar{y}_i - \; c_{xi1} \quad - \quad p_1 c_{yi1} \quad .$$

$$(14) \qquad\quad S_i[\,1 + (1 - t_k)r\,] + \rho_i\,(\,1 - t_l\,)w = \; c_{xi2} \quad + \quad p_2 c_{yi2}\,,$$

where, S_i is domestic saving of individual i = u, s. Observe that when $(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)$ is positive, then capital is exported and equation (1) is relevant; whereas when $(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)$ is negative, then capital is imported and equation (2) is relevant.

We abstract from a tax on the initial endowments because these are in fixed supply at the beginning of the first period, and a tax on them is not distortive; it will tend to be extremely high. Furthermore, when the low-skill form the majority, they will tax them at a rate of 100%. For a similar reason, we abstract also from a tax on consumption (VAT) because it is equivalent to a tax on wages (which are taxed directly in our model), and a tax on the initial endowments (see, for instance, Frenkel, Razin and Sadka (1991)).

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[11] In our model, the redistribution made by the welfare state is in the form of an in-kind benefit.

Consumption demands are then given by:

(15) $$c_{xi1} = abI_i \ .$$

(16) $$c_{yi1} = \frac{(1-a)bI_i}{p_1},$$

(17) $$c_{xi2} = a(1-b)I_i[1 + (1 - t_K)r],$$

and

(18) $$c_{yi2} = \frac{(1-a)(1-b)I_i \ (1+(1-t_K)r)}{p_2},.$$

where I_i is a lifetime income (in present value) of an individual of type i = u, s, given by

(19) $$I_i = \frac{\rho_i \, w(1-t_L) + \ (\bar{x}_i + p_i\bar{y}_i) \ [1+(1-t_K)r]}{1+(1-t_K)r},$$

where

(20) $$\rho_i = \left(\begin{matrix} \rho \ \ for \ i=u \\ 1 \ \ for \ i=s \end{matrix} \right)$$

Finally, consider the government, which is active in a balanced-budget way only in the second period. Its budget constraint is:

$$(21) \qquad (1 - m_s)B = t_l wL + t_k r p_k (K_x + K_y).$$

Note that the government taxes capital income of both domestic residents and foreigners which originates in the domestic economy, $rp_k(K_x + K_y)$. This means that when saving of domestic residents exceeds domestic investment, $p_k(K_x + K_y)$, with the excess invested abroad, then this excess is not taxed at home. Converesely, when savings of domestic residents fall short of domestic investment, $p_k(K_x + K_y)$, with the shortage financed by foreigners, then this shortage is taxed by the domestic government.

Clearance in the goods market in period 1, and period 2, respectively, yields:

$$(1 - \lambda)(c_{xu1} + p_1 c_{yu1})) + (\lambda - m_s)(c_{xs1} + p_1 c_{ys1}) + p_k(K_x + K_y)$$

$$= (1 - \lambda)(\bar{x}_u + p_1 \bar{y}_u) + (\lambda - m_s)(\bar{x}_s + p_1 \bar{y}_s) + p_k(K_x + K_y)$$

(22)
$$- [(1 - \lambda)S_u + (\lambda - m_s)S_s]$$

and

$$(1 - \lambda)(c_{xu2} + p_2 c_{yu2}) + (\lambda - m_s)(c_{xs2} + p_2 c_{ys2}) + (1 - m_s)B =$$

(23)
$$F_x(K_x, L_x) + p_2 F_y(K_y, L_y) + [(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)] I_{CF},$$

where

(24) $I_{CF} = C$
$$\begin{cases} 1 + R^* - \delta_k & \text{if } (1-\lambda)S_u + (\lambda - m_s)S_s \geq p_k(K_x + K_y) \\ 1 + (1-t_k)r & \text{if } (1-\lambda)S_u + (\lambda - m_s)S_s \leq p_k(K_x + K_y) \end{cases}.$$

Note that when the country exports capital (that is, $(1 - \lambda)S_u + (\lambda - m_s)S_s > p_k(K_x + K_y)$), then it incurrs the cost of δ_k on its capital exports. Conversely, when foreigners invest in the domestic economy (that is, $(1 - \lambda)S_u + (\lambda - m_s)S_s < p_k(K_x + K_y)$), then the country pays foreiners only $1 + (1 - t_k)r$, because they are taxed on their income originating in the domestic economy; foreigners bears the friction cost δ_k in this case. Note, however, that it follows from equations (13) – (14) that equation (22) is redundant, as it merely states that exports/imports of goods and capital are allowed.

Clearance in the labor market yields:

(1) $$L^S = L_x + L_y.$$

We allow skilled individuals to emigrate abroad according to the following equation:

(26) $$m_S = Z(u_S^* - u_s)^z \qquad \text{with } Z > 0, \ 0 \ < z \ < \ 1.$$

where u_S^* is the (exogenously given) utility level attained by s-individuals who reside abroad. Note that the number of emigrants depends positively on the foreign-domestic utility differential, $u_S^* - u_s$.

As for the welfare state features in the model, we assume that the tax-transfer policy (that is, the choice of t_L, t_k and B) are determined by majority voting. Because the individuals in each of the two skill groups are identical, the larger group determines policies, according to its own preferences.. Thus, when λ is less than 0.5 (and so is $\lambda - m_s$), the u-individuals form the majority, and the tax-transfer policy is determined so as to maximize the u-individual utility level (that is, u_u). This regime is henceforth referred to as the u-regime. Similarly, when $\lambda - m_s$ (which is not an exogenous variable) is larger than 0.5, the tax-transfer policy is determined by the s-individuals, to maximize their utility level, u_s. This regime is henceforth referred to as the s-regime.

The forces of trade and financial globalization are intertwined in their implications for income distribution and tax-transfer policies. To get a better insight into these interdependent effects we consider separately trade globalization and financial globalization.

We resort to numerical simulations in order to characterize these two regimes. In particular, we study how globalization (as proxied by the friction costs δ_k and δ_y), and how tax competition (as expressed by the tax parameters t_k and t_k^*) affect these two regimes.

5. Trade globalization and Welfare-State Policies

In this section we start with the study of trade globalization, income distribution and the welfare state. For this purpose, we shut off the channel of international financial flows in the model. Our focus is on the implications of trade globalization through these effects for income distribution and the ensuing political-economy benefits and taxes. As we shall see, these implications depends on: (i) the factor abundance of our small open economy and the related factor intensity of the export good; (ii) on whether or not there is complete specialization in the export good.[12]

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[12] Schott (2003) points to failure of existing attempts to find support for the idea that a country's endowments determine its production and trade. These attempts have traditionally focused on the overly restrictive, "one size fits all" equilibrium of Heckscher-Ohlin (HO) trade theory. In this view all countries of the world producing all goods, so that both Japan and the Philippines, for example, are assumed to produce identical electronics and apparel goods using the same techniques. A second, far richer equilibrium is possible within the framework, however, in which countries specialize in the particular subset of goods most suited to their mix of endowments, so that relatively labor-abundant Philippines might produce labor intensive t-shirts and portable radios while capital-abundant Japan manufactures capital intensive semiconductors and satellites.

5.1 Capital-Abundant Economy

Suppose that good y is more capital intensive than good x. Suppose further that our small open economy is more capital abundant relative to the rest of the world. This means that the world relative price of y (namely p^*) is higher than the domestic autarky relative price of good y.

Recall that we measure the degree of trade globalization by the parameter δ_y, which is an impediment to trade in goods (equation (1)). First, we examine how trade globalization affects the income distribution in the absence of the welfare state (that is, $t_L = t_K = B = 0$). Then, we examine how the welfare state responds to trade globalization under the two configurations of political power balance: (i) Skill-rich majority; (ii) Unskilled-poor majority.

With sufficiently high δ_y, the country is in autarky. Naturally, the autarkic relative price of the would-be export good lies below the world relative price. In this range, a decline in δ_y does not affect the domestic prices, as long as the economy is still in autarky. When δ_y continues to fall, the country opens up to trade in goods; it exports good y and imports good x. In this non-autarkic regime, a decline in δ_y raises, as expected, the domestic price of the export good (y) toward the world price p* (see equation (3)). Figure 2(a) shows that as δ_y decreases, the autarky ceases to exist first when the skilled form the majority in the welfare state[13]. As δ_y further declines, then the autarky collapses with the absence of the welfare state; Next, the autarky collapses last (in response

Schott (2003) develops a methodology and provides evidence in support of a full-specialization, Heckscher-Ohlin equilibrium.

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[13] The levels of δ_y for which there is autarky when the skilled form the majority in the welfare state does not appear in the figure.

to a decrease in δ_y) when the unskilled form the majority in a welfare state. As long as the impediment to trade is strong enough (that is, δ_y is sufficiently high), the volume of exports is flat. As δ_y declines and autarky ceases to exist, export rise in response to the increase in its domestic price, p_2 , as shown in Figure 2(b). As p_2 rises, more labor and capital shift to the export sector (from the importable sector), until complete specialization in the export sector occurs (and the importable good is no longer domestically produced).[14] In accordance with Figure 2(a), complete specialization occurs first when the skilled form the majority in the welfare state. Second, is the no-welfare-state case, and last is when the unskilled form the majority in the welfare state. Regardless of the intensity of globalization, the volume of exports is largest when the skilled-rich form the majority, intermediate in the no-welfare-state case, and smallest when the unskilled-poor form the majority.[15]

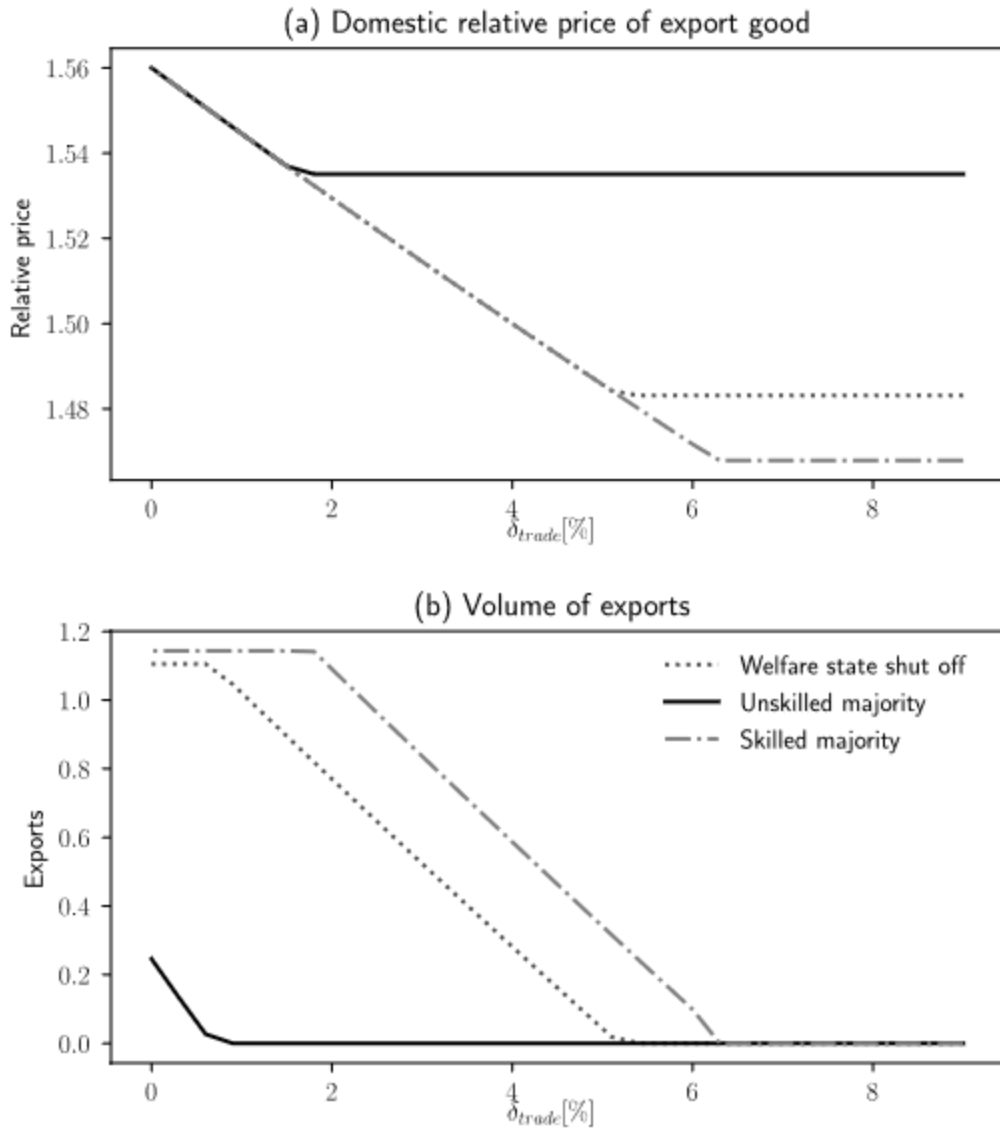Figure 2 (the capital-abundant case): Exports and Prices

(a) The domestic relative price of the export good,

(b) The volume of exports

Note: For parameter values, see Appendix.

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[14] With full specialization, the factor price ratio, w/r, becomes constant. That is with further changes in δ_K w and r increase by the same proportions, and the intertemporal price that drives saving and capital formation is flat. Therefore, the output of exportable y reaches its upper limit and becomes flat as well. With full specialization, the value of output is py. From Cobb Douglas preferences, agents have constant expenditure shares. That is, price-weighted consumption of exportable is a fraction $\emptyset$ of value of output $pc_y = \emptyset py$, implying $c_y = \emptyset y$. Therefore, if y reaches the upper limit and becomes constant with respect to further changes in δ_K , c_y and exports, $y - c_y$, become flat   as well.

[15] In the parameter values employed in the simulations, there is no complete specialization when the unskilled form the majority in the welfare state even when there is no trade impediment ($\delta_y = 0$).

(a) Domestic relative price of export good

(b) Volume of exports

- ······ Welfare state shut off
- —— Unskilled majority
- —·— Skilled majority

Panels (a) and (b) of Figure 2 suggest that when the export good is more capital intensive (relative to the import good) in a capital-abundant country (relative to the rest of the world), then: (i) the

skilled-rich are most pro-globalization; (ii) the unskilled-poor are least pro-globalization; and, (iii) the case of no welfare state is in between.

Figure 3 describes the effect of increased trade globalization on the pre-tax factor prices. Parallel to Figure 1, the flat segments reflect autarky (for high values of δ_y). Once δ_y falls below the autarky threshold, the return to capital rises and the wage falls in response to increased globalization, as predicted by the Stolper-Samuelson mechanism; see Figure 2(a), which shows that the relative price of capital-intensive good rises. When complete specialization occurs (and this happens for our parameter values only in the no-welfare regime, or when the skilled form the majority), then both factor prices rise as the degree of globalization intensifies. Note also that in the case of a one-good production the two-factor prices rise at the same rate—the rate of increase of the domestic price of the export good.

Figure 3 (the capital abundant case): Pre-tax Factor Prices

(a) Wage

(b) Domestic return to capital

Note: For parameter values, see Appendix.

(a) Pre-tax gross return to capital
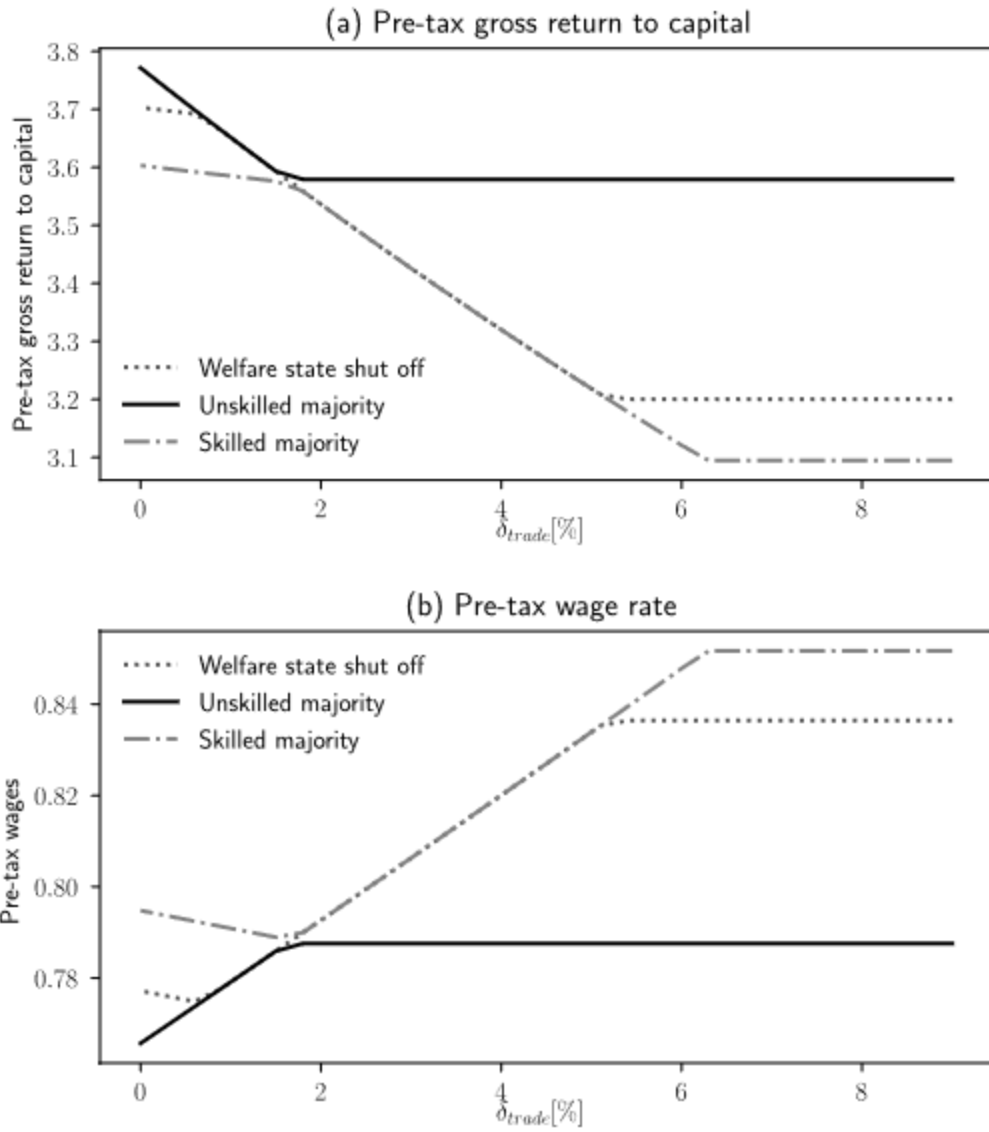
(b) Pre-tax wage rate

Figure 4 describes the effect of increased globalization on the taxes and the social benefit. There are several patterns to note. First, when the skilled form the majority, they levy taxes on labor only. Analogously, when the unskilled form the majority, they levy taxes on capital only. This pattern

holds even though the two classes own both capital and labor. However, for our parameter values

(the skill-premium ρ and the wealth disparity), the skill-rich have higher stake in their capital

income, whereas the unskilled-poor have higher stake in their labor income.[16]

A second related pattern is that both classes maintain the welfare state when they form the majority.

In this regard, we note that the social benefit B is essential as it consists of some goods and services

that the market does not provide (e.g., job security, health care, etc.). The third pattern is that, as

the degree of globalization intensifies, the tax on labor (respectively, capital) rises when the skilled

(respectively, the unskilled) form the majority, and then declines. Indeed each class has an

incentive to raise the tax that hurts more the other class, but at some point, the distortion caused

by the higher tax stops and reverses the rising trend. When the skill-rich raise the labor tax, the

distortion stems from skilled emigration. When the unskilled-poor raise the capital tax, the

distortion stems from both the skilled emigration and the reduced savings and capital formation.

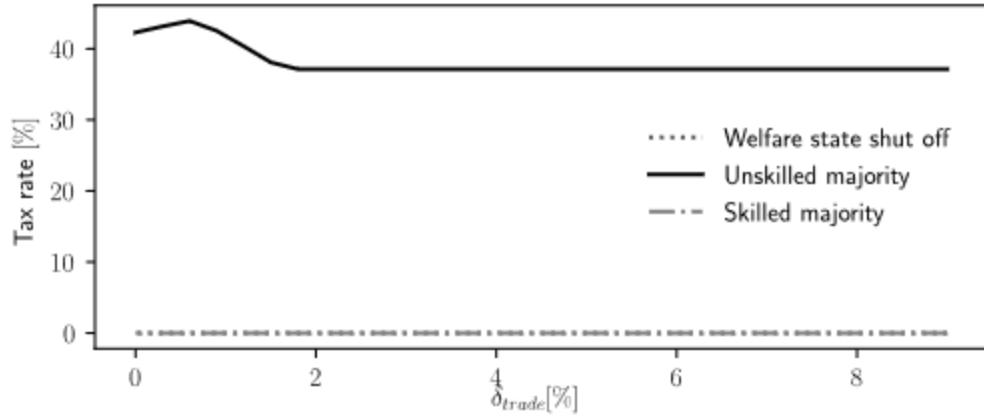Figure 4 (the capital-abundant case): Taxes and Social Benefits
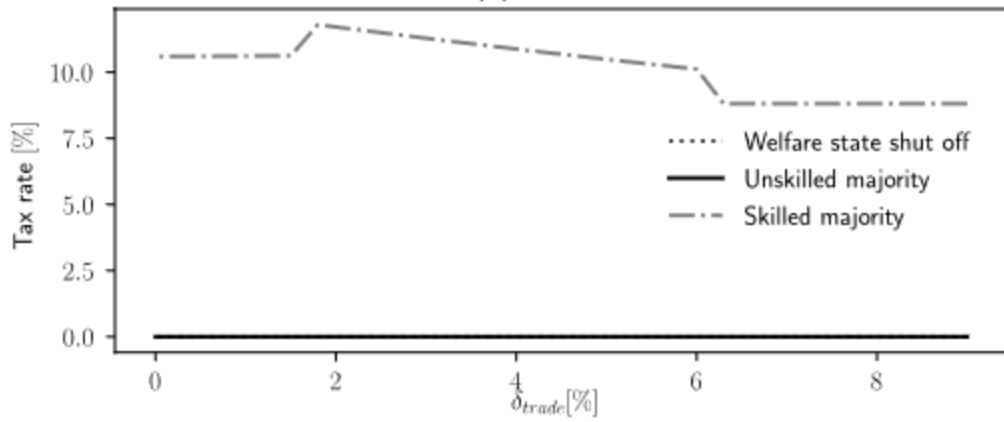
(a) Capital

(b) Labor

(c) Social Benefit

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[16] One may wonder why there are still tax and social benefit changes in the economy in the l autarky state as δ_k falls, for the welfare state regime. The reason is that the pure market forces (indicated by the graph of when the welfare state is shut off) are leading to greater exports. The welfare state reacts in the presence of such market pressures by levying taxes and providing social benefits which exports for a range of values of δ_k, until its value is sufficiently low. At this point, the welfare state gives in to the "market forces", and exports begin to rise.
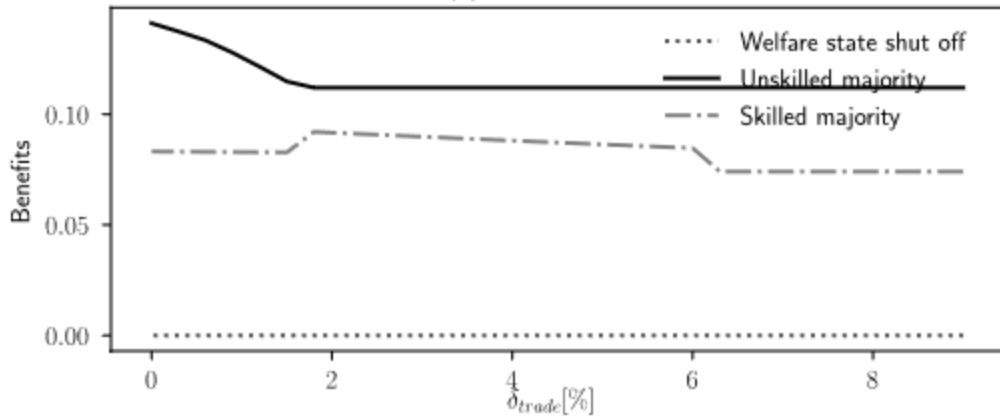
Note: For parameter values, see Appendix.

(a) Capital tax

(b) Labor tax

(c) Social benefit

5.2 Labor-Abundant Economy

We turn now to a different set of parameter values that renders our small open economy to be a labor-abundant relative to the rest of the world. That is the autarky price of the export good which is now the labor-intensive good (good x) is below the world price of that good ($1/p^*$).

As can be seen in Figure 2', as the degree of globalization intensifies (that is, as δ_x declines), the first departure from autarky occurs when the unskilled-poor form the majority. Next, is the case of no welfare state; and the last departure from autarky occurs when the skilled-rich form the majority. A mirror image is what happens to the volume of exports after the departure from autarky: it is the largest when the unskilled-poor form the majority; intermediate under the no-welfare-state regime, and smallest when the skilled-rich form the majority.

As in the capital-abundance case, also in the labor abundance case, when the skilled-rich form the majority, they levy taxes on labor only. Analogously, when the unskilled-poor form the majority, they levy taxes on capital only.

In contrast to the capital-abundance case, it is now the unskilled-poor who are the most pro-globalization; the skilled-rich are the least pro-globalization; and in the absence of a welfare state system, the economy's posture toward globalization is in between.[17]
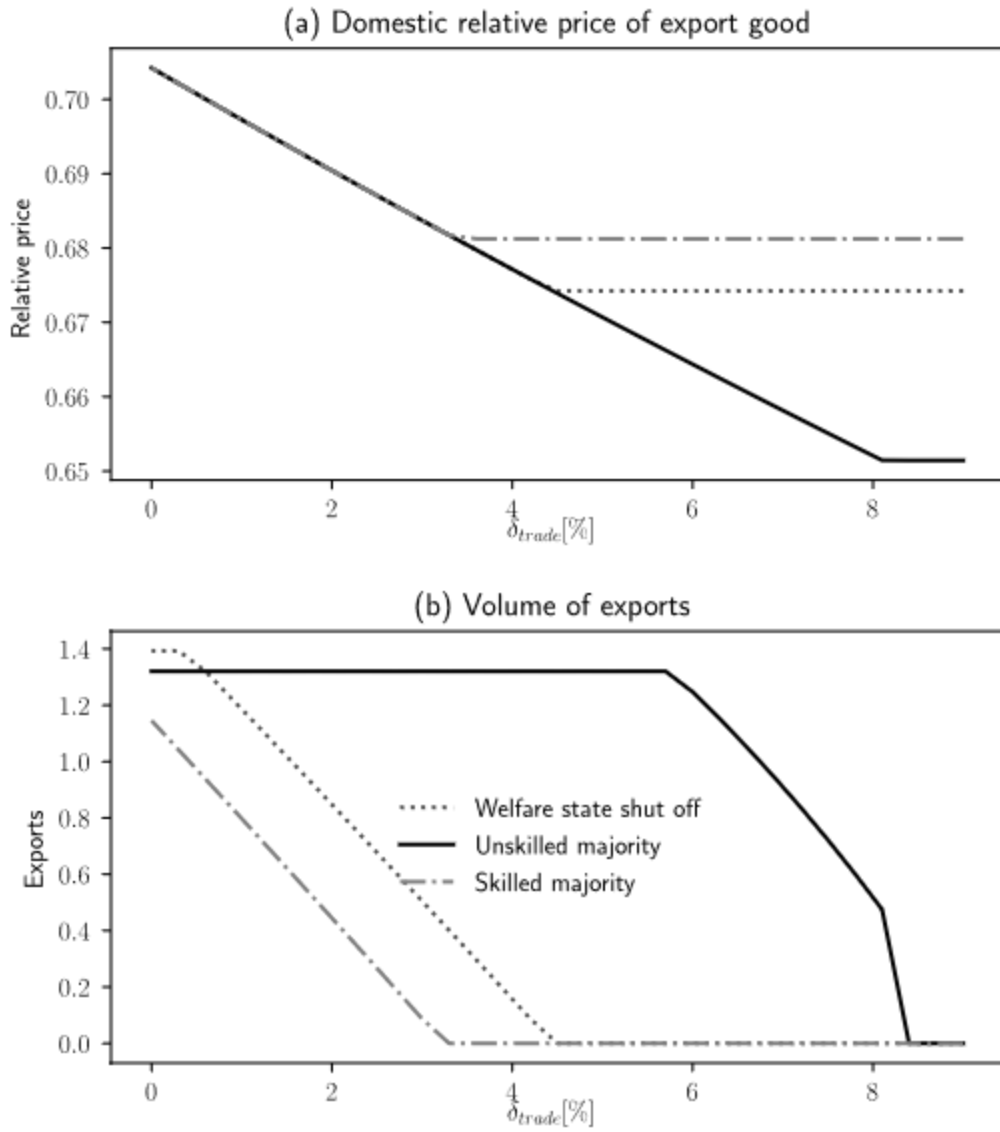
Figure 2'(The labor-abundant case): Exports and Prices

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[17] Mayer (1984) analyzes endogenous commercial policies that the median voter chooses based on the capital and wage he/she is endowed with.

(a) The domestic relative price

(b) The volume of exports
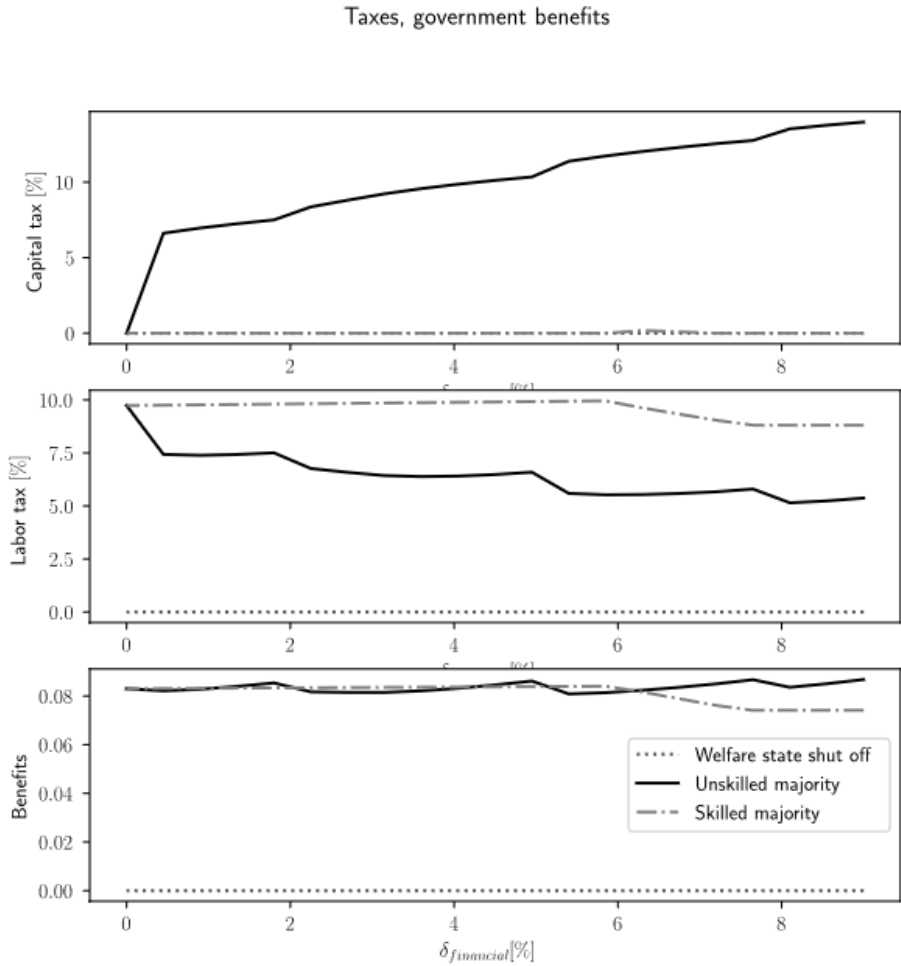
Note: for parameter values see Appendix.

(a) Domestic relative price of export good

(b) Volume of exports

Figure

5 (labor-abundant case): Taxes and Social Benefits

(a) Capital

(b) Labor

(c) Social Benefit

Taxes, government benefits

6. Financial Globalization

We turn now to the case of financial globalization. As before, we capture the ease of globalization by the level of the friction cost δ_k. A lower level of δ_k means a higher degree of financial globalization. Note that in the case of capital exports (corresponding to a positive sum of net foreign assets position), a decline in δ_k raises the return to investing abroad, and thereby stimulates

it (see equation (1)). In the case of capital imports (corresponding to a negative sum of net foreign assets position) , a decline in δ_k raises the return to foreigners on their investment in our small open economy, and thereby accelerates it (see equation (2)). We divide the discussion into two different capital-account regimes: financial capital exports (for high saving economies) and capital imports (low saving economies).[18]
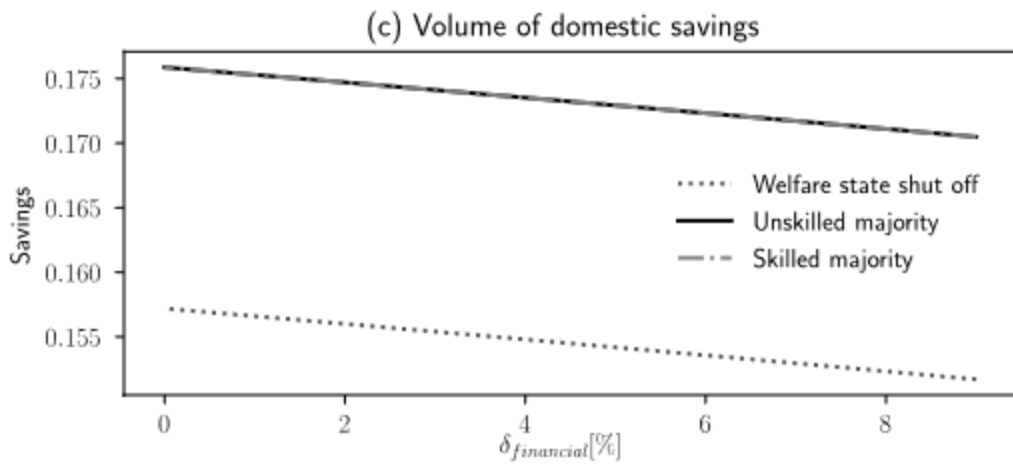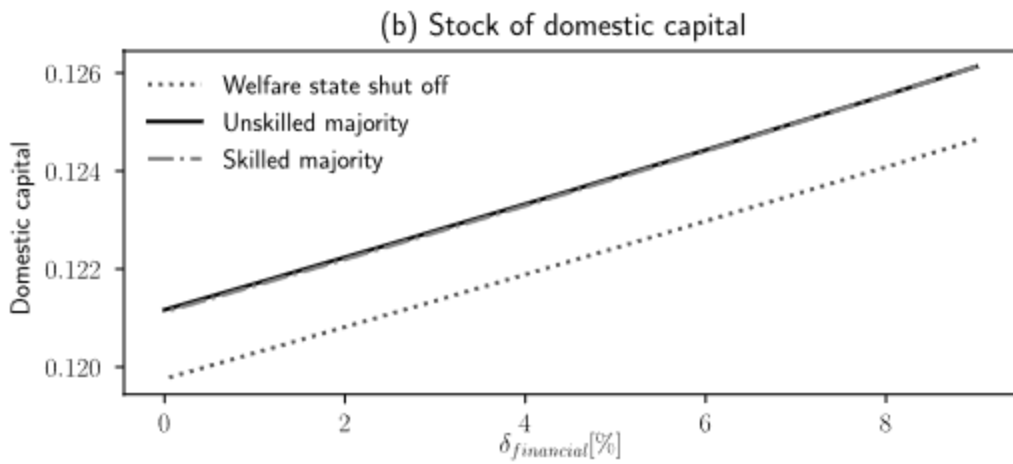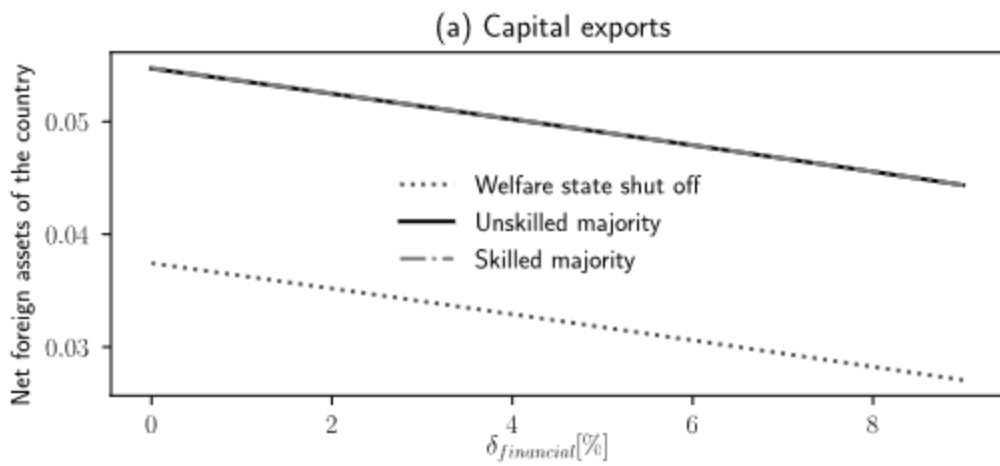
6.1 Capital Exports

We consider first the case of capital exports.

Figure 6(a)   suggests, as expected, that a decline in δ_k increases unambiguously the export of capital. The mirror image of this graph is illustrated in Figure 6(b) where we can see that the higher volume of capital exports decreases the stock of domestic capital. This result holds no matter whether the skilled-rich or unskilled-poor form the majority; or whether the welfare state is present.

Figure 6: Capital Exports and Domestic Capital

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[18] Furceri et al (2019), using industry- level data, for the empirical significance of this distinction. They demonstrate that industry-level output gains associated with capital account liberalization are small and not statistically different between sectors with low external financial dependence – a key channel through which financial globalization may enhance firms' investment (Rajan and Zingalez (1998)). In contrast, the declines in industry labor shares following liberalization are economically and statistically significant and long lasting. They also find that the decline in labor shares is higher the more substitutable are labor and capital in the production process, and the greater are firms' natural layoff rates – a proxy for the (lack of) bargaining power of labor – in response to idiosyncratic shocks.

(a) Capital exports

(b) Stock of domestic capital

(c) Volume of domestic savings

(a) Volume of capital exports

(b) Stock of domestic capital

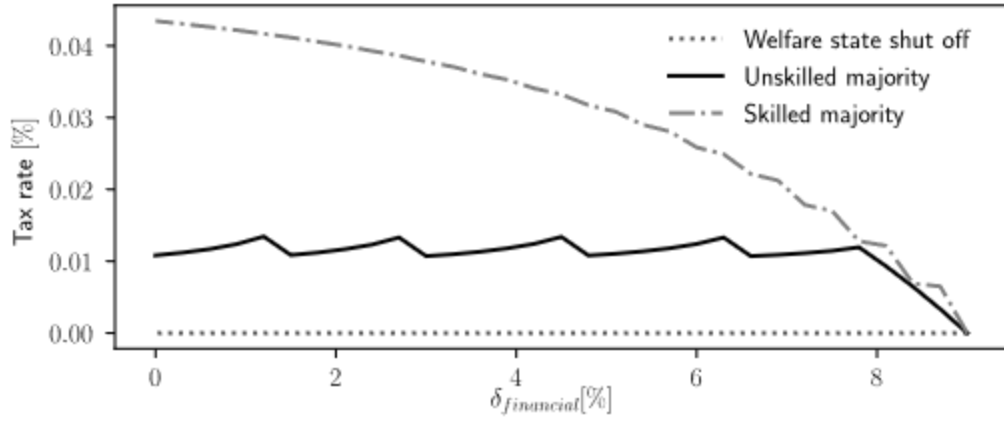(c) Savings; Note: For parameter values, see Appendix.

Interestingly, both the skilled-rich and the unskilled-poor increase the level of capital exports,

relative to the case of no-welfare-state, for all levels of δ_k . As expected, with source based capital

taxation in the welfare state, which exempts capital exported abroad from taxes, while levying

taxes on capital invested at home, the incentive to export capital is amplified. One may wonder

why, notwithstanding   the fact that the welfare state encourages capital exports, the domestic

stock of capital is nevertheless still larger in the presence of the welfare state, relative to the case

of no-welfare-state. The reason is that the welfare state enhances wellbeing and boosts domestic

saving (see Figure 6(c). Naturally, when the capital-labor ratio falls, as the result of capital exports,

pre-tax return to capital return to capital rises and the pre-tax wage falls.

Figure 7 presents the effect of increased globalization on the taxes and the social benefit.
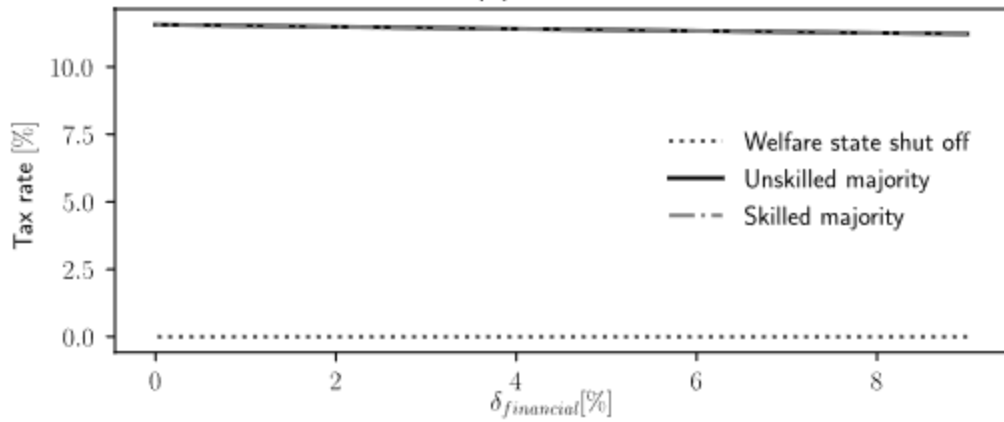
Both when the skilled-rich form the majority, or the unskilled-poor form the majority they levy

taxes on both capital and labor. As globalization intensifies and the capital tax base shrinks, as a

result of capital outflows, both types of majority raise taxes on labor and capital. The social benefit,

B, being essential, consisting of some goods and services that the market does not provide(e.g.,

job security, health care, etc.) rise moderately as δ_k falls and wellbeing is ameliorated .

(a) Capital tax

(b) Labor tax

(c) Social benefit
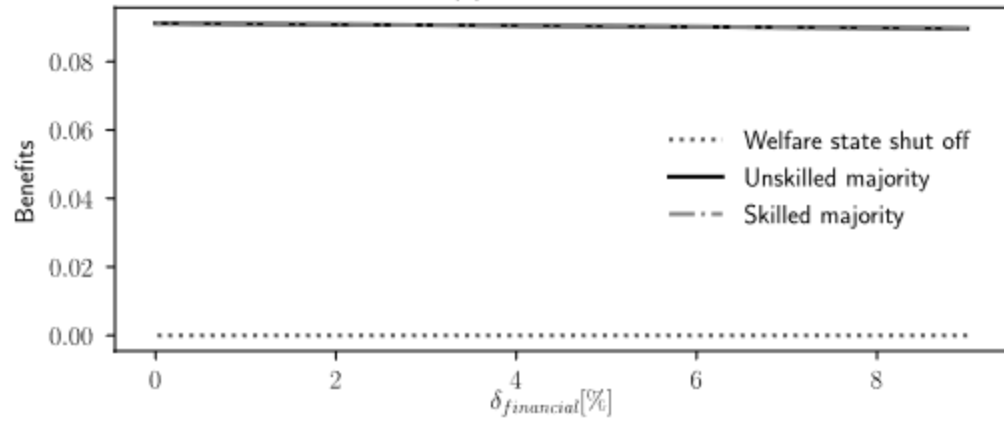
Figure 7 (The capital-export case): Taxes and Social Benefits

(a) Capital tax rate

(b) Labor tax rate

(c) The volume of social benefits

Note: for parameter values, see Appendix.

Naturally, the welfare state, which provides the social benefit B, raises utility for all, independently of who form the majority and of the degree of globalization.

6.2 Capital Imports

We turn now to the case of capital imports.

Figure 8(a) suggests, as expected, that a decline in δ_k increases unambiguously the imports of capital, in the absence of a welfare state (where market forces work alone). The mirror image of this graph is illustrated in Figure 8(b), where we can see that the higher volume of capital imports increases, naturally, the stock of domestic capital. Note also that when the stock of domestic capital increases, then the return to capital falls and the wage rate rises. Naturally, very high values

of δ_k deter capital imports altogether, and the small open economy is in a financial autarky. Note that as δ_k falls the economy moves out of the autarky state first in the case of no welfare state; second, when the skilled-rich form the majority; and third, when the unskilled-poor form the majority.[19]

Interestingly, the unskilled-poor lower the level of capital imports more than the skilled-rich; the both reduce capital imports relative to the case of no-welfare-state. As expected, with source based capital taxation, which taxes capital imported from abroad, the incentive of foreigners to invest in the small open economy are dampened by the existence of the welfare state. One may wonder why the domestic stock of capital is nevertheless still larger when the skilled-rich form the majority, relative the no welfare state case, even though they discourage capital imports (see Figure 8(b)). The reason is that the welfare state in this case boosts domestic saving sufficiently (see Figure 8(c)) to compensate for the squeezed capital inflow.
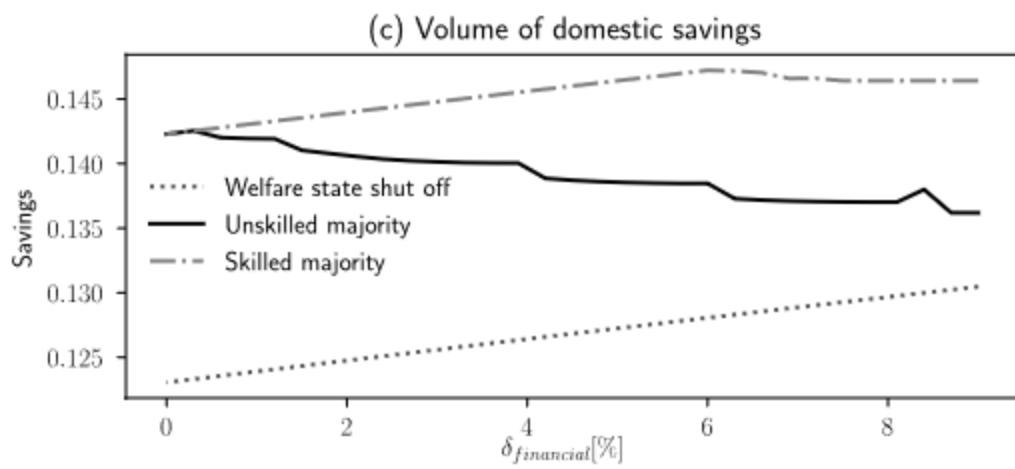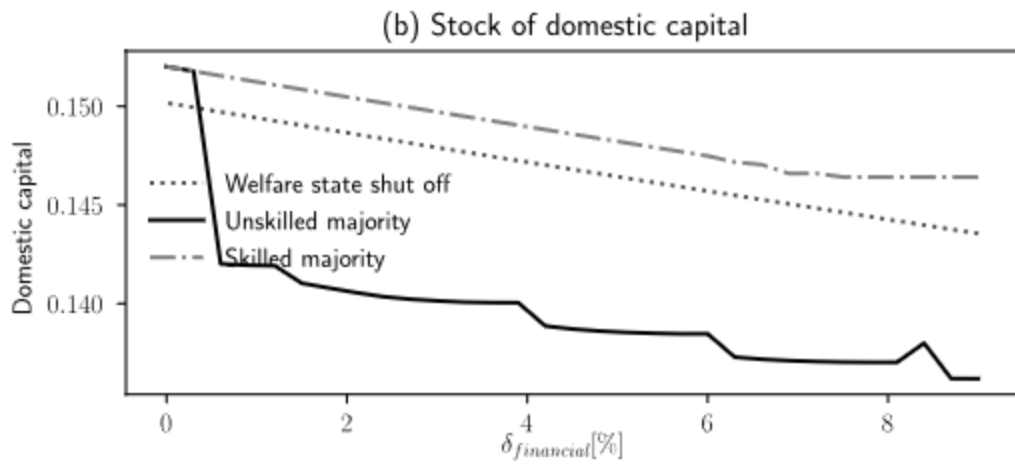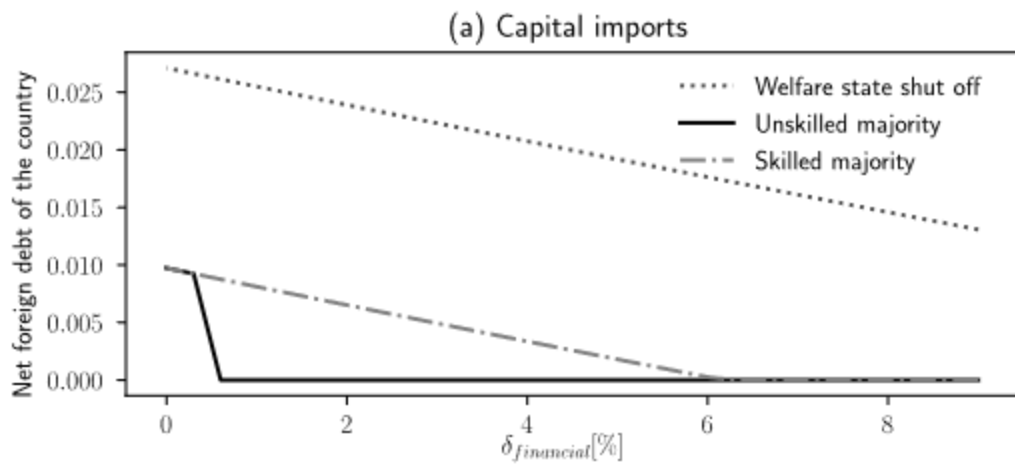
Figure 8: Capital imports and the stock of domestic capital

(a) The volume of capital imports

(b) The stock of domestic capital

(c) The volume of savings

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[19] One may wonder why there are still changes in the economy in the financial autarky state as δ_k falls, for the welfare state regime. The reason is that the pure market forces (indicated by the graph of when the welfare state is shut off) are leading to capital imports. The welfare state reacts in the presence of such market pressures by levying taxes and providing social benefits which curtail imports of capital for a range of values of δ_k , until its value is sufficiently low. At this point the welfare state gives in to the "market forces" , and capital start coming in.

(a) Capital imports

(b) Stock of domestic capital

(c) Volume of domestic savings
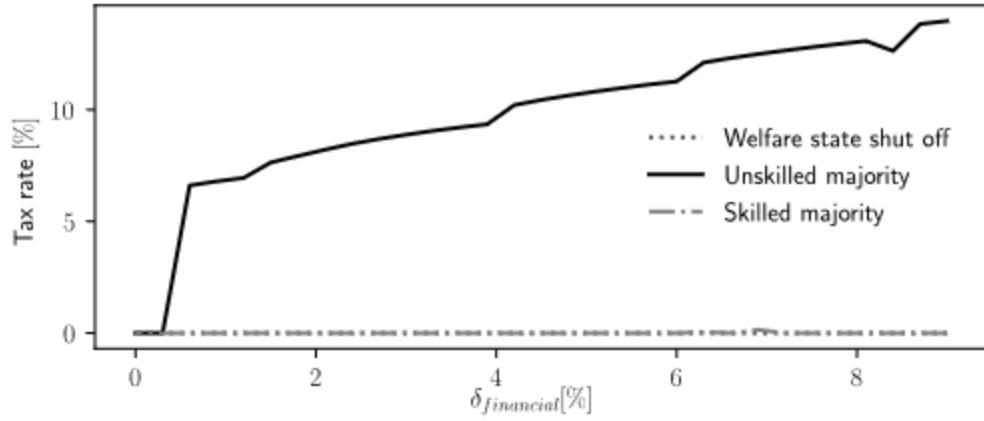
Note: For parameter values, see Appendix.

Figure 9 presents the rates of taxes and the volume of social benefits when the small open economy imports capital from the rest of the world. When the skilled-rich form the majority, they choose to impose no taxes on capital. They lower moderately the tax rate on labor as δ_k falls. Interestingly, when the unskilled-poor form the majority, they increase the tax on labor (though still this tax is at a lower rate than when the skilled-rich form the majority), and lower sharply the tax on capital once they depart from financial autarky and start to import capital. When the skilled-rich form the majority the social benefit follows a similar pattern as the labor tax rate does (recall that they levy no tax on capital): as δ_k falls, they lower moderately the volume of the social benefits.

Figure 9 (The capital import case): taxes and social benefits
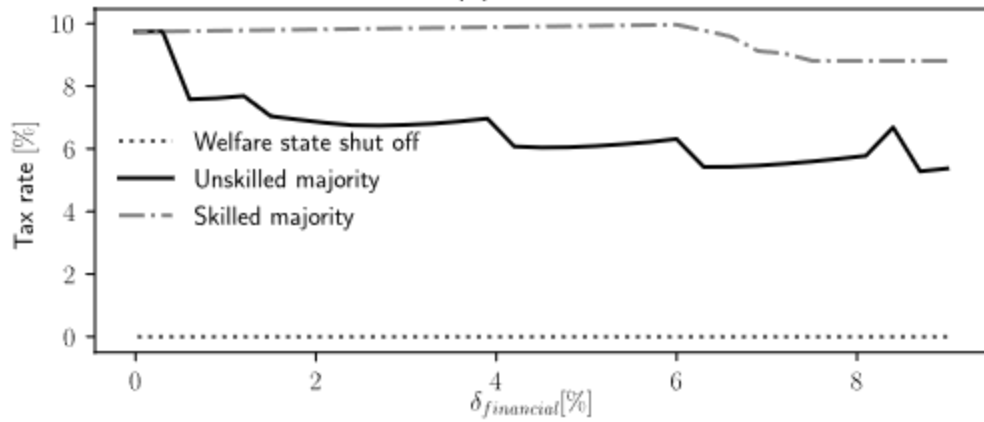
    (a) Tax rate on capital

    (b) Tax rate on labor

    (c) The volume of social benefits
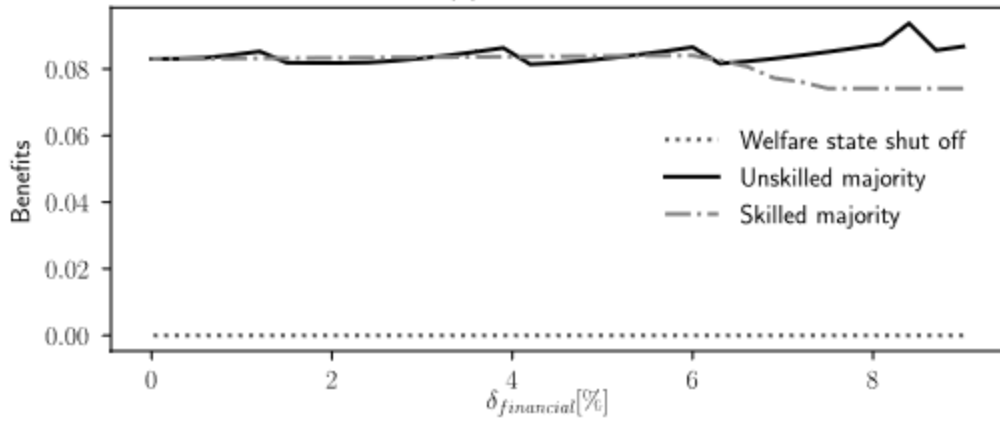
       Note: for parameter values, see Appendix.

(a) Capital tax

(b) Labor tax

(c) Social benefit

7. Conclusion

Concerning trade DE globalization and the provision of social benefits, the main predictions of the model depend on relative factor abundance. If the economy is relatively capital-abundant compared to the rest of the world, as the degree of trade globalization weakens and outward capital flows recede, the provision of social benefit declines. In contrast, if the economy is relatively labor-abundant economy compared to the rest of the world, as the degree of globalization weakens and inward capital flows recede, the provision of social benefit rises.

I

Appendix: Parameter Values

Cross regime common parameter values

α_1	0.25
$P\alpha_2$	0.45
β	0.6
Γ	0.5
γ	0.05
A_1	5
A_2	5
T	2
λ	0.5
t_k^*	0.4
Z	0.05
ζ	2
U^*	1.5
a_c	0.5
a_k	0.5
$\underline{x}_u$	0.5
ρ	1
$\underline{x}_s$	0.5

Regime-specific parameter values

Trade			
parameter	value	Figures	
p^*	1.56	K-specialization	
p^*	0.70422535	L-specialization	=1/1.42
δ_{trade}	0–9%		
Financial liberalization			
R^*	3.5	K-export	
R^*	3.02	K-import	
$\delta_{financial}$	0–9%		

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