Globalization and Social Stratification

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Abstract
We analyse the impact of globalization upon social stratification in advanced economies from a model in which (i) households differ in their skill and capital endowments, and (ii) there is a minimal consumption under which they are excluded from the labour market. We make a distinction between North-North globalization (NNG) and North-South globalization (NSG). NNG generates tax competition and NSG changes income distribution in favour of skilled labour and capital owners. We show that the economy is divided between four types of households: the excluded, the rentiers, the ‘classical’ (whose working time increases with real wage) and the ‘non-classical’ (whose working time decreases with real wage). NNG makes the groups of rentiers and excluded to expand whereas NSG has an inverted-U impact on the dimension of these two groups. Finally, the model provides new explanations for the fast rise in the pay and stock option allocation to top executives.

Keywords. Capital mobility, Globalization, Social stratification, Tax competition.

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1. Introduction

We analyse the impact of globalization upon social stratification by focusing on the changes in income distribution and taxation resulting from North-South openness and capital mobility.

In the mid-eighties, advanced economies had already achieved most of their trade liberalization. Since then, the World has experienced a new and multidimensional globalization process characterised by two major features. Firstly, emerging economies (the South) have become key actors of international trade and production. The role of the South has been favoured by North-South trade liberalization and by the strategies of multinational firms (MNFs) that have transferred capital and technologies to less advanced countries. Secondly, the international mobility of capital has critically grown, and this mobility is now almost perfect across advanced economies (the North). In the North, North-South openness has led to a displacement of income in favour of capital and skill to the detriment of unskilled labour and capital mobility to corporate tax competition.

The impact of globalization upon the skill premium and thereby inequality between skilled and unskilled workers in advanced countries has given rise to an abundant theoretical and empirical literature (see the reviews by Chusseau et al., 2008, and Chusseau & Hellier, 2013). If this impact was considered as weak or negligible until the mid-nineties (Borjas et al., 1992; Katz and Murphy, 1992; Krugman and Lawrence, 1993; Lawrence and Slaughter, 1993), this early diagnosis has subsequently been reconsidered, particularly because of the huge increase in the weight of emerging countries in the world trade and production (Krugman, 2008). Empirical works have shown that imports of manufacturing from the South and offshoring and FDI outflows to the South have lessened the demand for unskilled workers and thus the skill premium in the North (Chusseau & Dumont, 2013, for a review). In addition, the increase in the share of capital in total income within advanced economies and the decrease in the labour share are now well documented (e.g., CB0, 2011, Bentolina & Saint-Paul, 2003).

The literature provides several ways to model the increase in the skill premium and the return to capital that derives from North-South openness. Within a simple neo-classical framework, this can be made from either a one-sector or a multi-sector framework with the North being relatively better endowed with capital and skill and the South with unskilled labour. In these cases, North-South openness leads to an increase in the returns to capital and skill in relation to the payment for unskilled labour in the North. This directly stems from the fact that the passage from North in autarky to North-South openness results in augmenting the
unskilled labour supply in relation to both capital and skill. In this vein, a numerous literature has developed Heckscher-Ohlinian frameworks to analyse the impact of North-South trade upon the skill premium and inequality in the North (reviewed in Hellier, 2013). Another modelling of the relationship between openness and inequality can be found in Melitz-type approaches (Melitz, 2003). By creating export-driven over-profits for the most productive firms, this type of model generates between-firm inequalities and possible changes in income distribution linked to labour market specificities: efficiency wages (Egger & Kreickemeier, 2012; Amiti & Davis, 2011), matching frictions (Helpman et al., 2010), bargaining (Felbermayr et al., 2008) etc. This type of model is however not centred on North-South globalization and it typically does not integrate capital.

In the economic literature, the impact of capital mobility upon corporate taxes has been essentially analysed through corporate tax competition (CTC). The basic idea of CTC is that capital mobility incites multinational firms to localise their capital, production and profits in the countries where the corporate tax is low. Consequently, governments are themselves incited to decrease the corporate tax rate so as to attract capital from abroad. This generates a ‘race to the bottom’ between countries in terms of taxation. Following the seminal work of Zodrow & Mieszkowski (1986), the analysis of tax competition has known a large development over the last 25 years, both theoretically and empirically. The major finding of Zodrow & Mieszkowski is that tax competition leads to sub-optimal situations in terms of social welfare characterised by low capital taxation and under-provision of public goods. This result was subsequently extended to different configurations (Wildasin, 1988; Bucovetsky & Wilson, 1991; Kanbur & Keen, 1991; Wilson, 1999 etc.). If the result in terms of optimality is conditioned by the hypothesis of a benevolent public planner, the decrease in the corporate tax rate is a general prediction, except when levies are utilised to improve firms’ profitability (Benassy-Quéré et al., 2007).

CTC has been tested and estimated in several ways. The results of the empirical literature critically depend on the method and indicators selected to measure corporate taxation. In summary, the CTC hypothesis is typically confirmed when focusing on strategic interactions (Devereux et al., 2008; Overesch & Rincke, 2009; Zodrow, 2010, for a review), on FDI (De Mooij & Ederveen, 2006, and Devereux & Maffini, 2007, for reviews; recent work by Barrios et al., 2012) and on statutory corporate tax rates (Benassy-Quéré et al., 2007; Cassette & Paty, 2008; Devereux & Fuest, 2012), and it is rejected when accounting for the corporate tax on GDP ratio and for the effective tax rate (Slemrod, 2004; Hines, 2005; Mendoza & Tesar, 2005; Dreher, 2006; Devereux et al., 2008; Devereux & Fuest, 2012). Finally, the last thirty
years have indisputably witnessed a downward convergence in corporate tax rates across countries.

In the recent economic literature on social stratification, two strands of approach can be broadly distinguished. The first starts from an exogenous definition of social stratification and tries to measure the level of stratification and its links with inequality (Yitzhaki & Lerman, 1991; Yitzhaki, 1994; Milanovic & Yitzhaki, 2002; Monti & Santoro, 2011). In the second, social stratification is endogenously generated. These approaches are centred on social mobility, and on educational and social polarization within intergenerational models (review by Chusseau and Hellier, 2013).

This article analyses the impact of globalization upon social stratification. We make a distinction between North-South globalization (NSG) and North-North globalization (NNG). NSG rests upon North-South trade and capital and technology transfers from the North to the South. Capital and technology transfers make both regions share the same technologies, and North-South trade results in changes in income distribution in the North in favour of skilled labour and capital at the detriment of unskilled workers. NNG covers perfect capital mobility across northern countries, which generates corporate tax competition and a downward shift in corporate tax rates. As we develop a model with three factors and two types of globalization, we select for the sake of simplicity a one-sector approach. Social stratification is endogenously generated by the labour supply behaviours of households who differ in terms of skill and capital endowments. By assuming a minimal consumption under which households are excluded from the labour market, we firstly show that the economy is divided between four types of households, namely, the excluded, the rentiers, the ‘classical’ and the ‘non-classical’. Classical households are characterised by a labour supply that increases with real wage whereas the non-classical display the opposite relationship. We analyse the impact of both NSG and NNG upon social stratification. Both increase the number of excluded and the number of rentiers. As regards the classical and non-classical, their weights tend to decrease with globalization, particularly the former. In addition, the simulations show that the top incomes with high capital endowments are incited to lessen their working intensity, which could lead to higher pay or capital transfers to their benefit.

Section 2 presents the bases of the model. Section 3 determines the derived social stratification and its characteristics. Section 4 analyses the impacts of globalization upon social stratification and the working time. Section 5 provides simulations of these impacts from plausible values of the parameters and of factor payments. The main findings are discussed and we conclude in Section 5.
2. The model

2.1. General framework

The economy comprises $M$ households and produces one good the price of which is 1. The production utilises simple labour $L$, skilled labour $H$ and capital $K$ with the Cobb-Douglas technology $Y = AL^{\alpha_L}H^{\alpha_H}K^{\alpha_K}$, $\alpha_L + \alpha_H + \alpha_K = 1$. With competitive markets, each factor is paid at its marginal productivity and the price of each factor is:

$$w_L = \alpha_L AL^{\alpha_L-1}H^{\alpha_H}K^{\alpha_K}; \quad w_H = \alpha_H AL^{\alpha_L}H^{\alpha_H-1}K^{\alpha_K}; \quad r = \alpha_K AL^{\alpha_L}H^{\alpha_H}K^{\alpha_K-1}$$ (1)

Each household $i = 1...M$ is endowed with one unit of simple labour, a certain skill $h_i$ and a certain amount of capital $k_i$. Skill embodies the different characteristics that determine the individual’s productivity: education, experience, effort/dynamism at work, membership of influential networks etc. Let $w_L$ be the wage per unit of simple labour and $w_H$ the wage per unit of skill. Then, household $i$’s real wage per unit of time (henceforth household $i$’s unit wage) is $w_i = w_L + w_H h_i$. Her/his wage is $W_i = (w_L + w_H h_i) t_i$ with $t_i$ her/his working time. Her/his income from capital is $r_i = r k_i$, with $r$ being the real return to capital. Both capital and skill are unevenly distributed across households, and household $i$ is thereby fully identified by the couple of endowments $(h_i, k_i)$, and thus the couple $(w_i, r_i)$ for given values of the real wages $w_L$ and $w_H$ and of the return to capital $r$. Finally, each household possesses one unit of time s/he can allocate to working and/or leisure.

Let $\bar{c}$ be the minimum consumption level that ensures the minimum health and means from which households have a ‘normal’ social life and can thereby participate in the labour market. The lack of access to certain basic goods and services is a usual definition of exclusion, which thus depends on deprivation (Sen, 2000; Perez-Mayo, 2005; Borooah, 2007; D’ambrosio et al., 2011; Devicienti & Poggy, 2011). This is depicted by the following C.E.S. utility function with deprivation$^1$:

$$u_i = b \left( c_i - \bar{c} \right)^{\sigma-1} \sigma + (1-t_i) \left( c_i \right)^{\sigma-1}$$ (2)

with $\sigma > 1$, $(1-t_i)$ being the leisure time, $c_i$ the consumption and $\bar{c}$ the consumption under which households are excluded from the labour market.

$^1$ The most general form of this type of function has been firstly analysed in Pollak (1971) and Wales (1971).
Household $i$ maximises the utility function (2) subject to the usual income constraint.

There is a corporate tax on the return to capital the rate of which is $\tau$. This tax is levied directly from the firm in the country of production. The related levies are utilised to provide households for the lump-sum transfer $r_G$. We thus have $M \times r_G = \tau \sum_{i=1}^{M} rk_i$, and hence:

$$r_G = \tau r\bar{k},$$

with $\bar{k} = M^{-1} \sum_{i=1}^{M} k_i$ being the average capital per household.

Finally, households $i$’s after tax total income $I_i$ is:

$$I_i = w_i t_i + (1-\tau)r_i + r_G = (w_L + w_H h_i) t_i + rk_i + \tau r(\bar{k} - k_i)$$

2.2. Working time

**Lemma 1**: The households such that $w + (1-\tau)r + r_G < \bar{c}$ are excluded from the labour market.

**Proof**: Because households who cannot buy the minimum consumption $\bar{c}$ are excluded from the labour market and given that $w_i$ is household $i$’s highest possible labour income.

Consider household $i$ who is not excluded ($w_i + (1-\tau)r_i + r_G > 0$). S/He maximises her/his utility $u_i = b \left( c_i - \bar{c} \right)^{-\frac{1}{\sigma}} + (1-t_i)^{-\frac{1}{\sigma}}$ such that $w_i t_i + (1-\tau)r_i + r_G \geq c$ and $t_i \geq 0$. This provides the following supply of working time (see Appendix 1):

$$t_i = \max \left\{ \left( \frac{b w_i)^{\sigma} - (1-\tau)r_i - r_G + \bar{c}}{w_i + (b w_i)^{\sigma}}, 0 \right) \right\}$$

(3)

**Lemma 2.** Consider working household $i$. Her/his working time $t_i$:

1) decreases with the return to capital $r$, the household’s capital endowment $k_i$ and the average capital endowment $\bar{k}$;

2) decreases with the corporate tax rate $\tau$ if $k_i < \bar{k}$ and increases with $\tau$ if $k_i > \bar{k}$;

3) decreases with $w_i$ if $w_i < \hat{w}$ and increases with $w_i$ if $w_i > \hat{w}$, with $\hat{w} = \hat{w}(r, k, \tau)$ being a function such that $\frac{\partial \hat{w}}{\partial r} < 0$, $\frac{\partial \hat{w}}{\partial k_i} < 0$ and $\frac{\partial \hat{w}}{\partial \tau} \geq 0$ if $k_i \geq \bar{k}$.

**Proof.** Appendix 2.
An increase in non-labour incomes reduces labour supply because it lessens the incentive to work. As a consequence, an increase in the return to capital $r$ reduces labour supply because it raises both the after tax private rents $(1-\tau)rk_i$ and the social transfers to the household $r_G = \tau rk$. A rise in the corporate tax $\tau$ lowers the labour supply of households who are poorly endowed with capital $(k_i < \bar{k})$ because this raises their total rents through the public transfers. In contrast, those who possess a rather large amount of capital $(k_i > \bar{k})$ suffer a decrease in their total rent, which incites them to work more. Finally, there is a wage threshold $\hat{w} = \hat{w}(r,k_i,\tau)$ below which the working time $t_i$ is a decreasing function of wage $w_i$ and above which $w_i$ increases $t_i$. In other words: the income effect dominates the substitution effect for $w_i < \hat{w}$ and the substitution effect dominates the income effect for $w_i > \hat{w}$. This result directly stems from the hypothesis of a minimum consumption necessary to be in the labour market. When $w_i < \hat{w}$, the income is low and the household must allow a large part of her/his available time to working so as to go beyond the minimum consumption $\bar{c}$. Then, a decrease in the wage per unit of time $w_i$ incites the household to work more so as to maintain her/his income above $\bar{c}$. In contrast, $w_i < \hat{w}$ corresponds to a situation in which the household's income is comfortably above the minimum consumption $\bar{c}$. Then, an increase in the unit wage $w_i$ is necessary to incite the household to work more.

3. Social stratification

Definition 1: We call:

1) **Excluded** the households who cannot attain the minimum consumption even when working during the whole of their disposable time;
2) **Rentiers** the households who are not excluded and choose not to work;
3) **Classical** the working households whose labour supply increases with their wage;
4) **Non-classical** the working households whose labour supply decreases with their wage.

It must be noted that the rentiers are not limited to very rich households whose capital income is so high that they prefer not to work. They gather all the household who can live without working and whose potential wage is not high enough to incite them to go to work. In particular, a number of valid retired workers belong to this category: their efficiency has
decreased because of skill obsolescence (and presumably loss of dynamism) and their rents are high enough to convince them to move out of work.

**Proposition 1:** Consider an economy with a corporate tax $\tau$ and a lump sum transfer to households $r_G = \tau r_k$. Then, individuals are distributed between four groups:

1) **the excluded** are such that $k_i < \frac{\bar{c} - r_G - w_i}{(1 - \tau)r}$,

2) **the non-classical** are such that $\frac{\bar{c} - w_i - r_G}{(1 - \tau)r} \leq k_i < \frac{\bar{c} - r_G}{(1 - \tau)r} - \frac{(\sigma - 1)b^\sigma w_i^\sigma}{(\sigma b^\sigma w_i^{\sigma - 1} + 1)(1 - \tau)r}$,

3) **the classical** are such that $\frac{\bar{c} - r_G}{(1 - \tau)r} - \frac{(\sigma - 1)b^\sigma w_i^\sigma}{(\sigma b^\sigma w_i^{\sigma - 1} + 1)(1 - \tau)r} < k_i < \frac{\bar{c} - r_G + b^\sigma w_i^\sigma}{(1 - \tau)r}$,

4) **the rentiers** are such that $k_i \geq \frac{\bar{c} - r_G + b^\sigma w_i^\sigma}{(1 - \tau)r}$.

Proof. Appendix 3.

Proposition 1 defines the relations that separate each group of households. From these relations, Figure 1 draws the frontiers between each social group in the quadrant $(h_i, k_i)$.

![Figure 1. Social spaces in the quadrant $(h_i, k_i)$](image)

**3.1 Social spaces**

We now assume that individuals are distributed in the interval $[0, h_{\text{max}}]$ in terms of human capital and $[0, k_{\text{max}}]$ in terms of capital. The space $[0, h_{\text{max}}] \times [0, k_{\text{max}}] \subset \mathbb{R}^2$ is called ‘Space of
households’. Figure 3 depicts each social space within the space of households. The values \( (k_E, k_C, k_R, h_E, h_C, h_R) \) as depicted in Figure 2 are described in Appendix 4.

![Figure 2. The four social spaces in the Space of household](image)

### 3.2. Social spaces dimensions

The dimensions of the spaces corresponding to the four social groups, defined as the surfaces of each space in the plan \((h, k)\), are depicted in Table 1 (calculations in Appendix 4).

**Table 1. Social Spaces Dimensions**

<table>
<thead>
<tr>
<th>Spaces</th>
<th>Dimension in the plan ((h_i, k_i))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space of exclusion</td>
<td>( S_E = \frac{(c - \tau r k - w_L)^2}{2(1 - \tau)rw_H} )</td>
</tr>
<tr>
<td>Space of rentiers</td>
<td>( S_R = k_{max}h_R - \frac{b^\sigma (w_L + w_H h_R)^{\sigma+1} - w_L^{\sigma+1}}{(1 - \tau)\sigma(\sigma + 1)w_H} ) - ( \tau r k h_R )</td>
</tr>
<tr>
<td>Non-classical households</td>
<td>( S_{NC} = \int_0^{h_{max}} \left( c - r_G - \frac{(\sigma - 1)b^\sigma (w_L + w_H h)^{\sigma}}{\sigma b^\sigma (w_L + w_H h)^{\sigma-1} + 1} \right) dh - S_E )</td>
</tr>
<tr>
<td>Classical households</td>
<td>( S_C = k_{max}h_{max} - (S_R + S_{NC} + S_E) )</td>
</tr>
</tbody>
</table>

It must be noted that the social spaces dimensions give no information about the proportion of households inside each space, which depends on the distribution of human and physical capital between households. However, if households are uniformly distributed in the
household space (which is not the case in the real economy), then dividing each dimension by $k_{\text{max}} \times h_{\text{max}}$ provides the exact proportion of households inside the corresponding space.

3.3. Incomes, corporate tax and social stratification

We shall henceforth assume that:

1) $w_L + \tau k < \bar{c}$, which signifies that the space of exclusion does exist.

2) All excluded households have a capital endowment lower than the average capital endowment: $k_i < \bar{k}$. The social transfer they receive is thus higher than the levies they pay, i.e., their rents $(1 - \tau)rk_i + \tau r \bar{k} = rk_i + \tau r(\bar{k} - k_i)$ increase with the tax rate $\tau$.

3) All the rentiers have a capital endowment higher than the average $k_i > \bar{k}$, which signifies that $r \bar{k} < \left( bw_i \right)^{a} + \bar{c}$, $\forall i \in S_k$.

We now analyse the impact of the three determinants of after-tax income of a household defined by its endowments $(k_i, h_i)$, i.e., the return to capital $r$, the corporate tax rate $\tau$ and the unit wages $w_H$ and $w_L$.

**Lemma 3.** An increase (decrease) in the return to capital $r$ expands (reduces) the space of the rentiers and reduces (expands) the space of exclusion.

**Proof:** Appendix 5.

The increase in capital income expands the space of rentiers because it reduces the incitation to work for capital owners. In addition, the increase in $r$ augments the redistribution to the excluded, which makes some of them escape from exclusion.

**Lemma 4.** An increase (decrease) in the corporate tax rate $\tau$ reduces (expands) both the space of the rentiers and the space of exclusion.

**Proof:** Appendix 5.

The increase in $\tau$ reduces the number of rentiers because it lowers the amount of rents. It also lowers the number of excluded because it increases the redistribution benefits.
Lemma 5. An increase (decrease) in the unit wages $w_L$ and $w_H$ reduces (enlarges) both the space of rentiers and the space of exclusion, and increases (decreases) thereby the active population.


As regards the spaces of classical and non-classical households, the impacts of changes in $w_H$, $w_L$, $r$ and $\tau$ depend on the initial factor payments and tax $(\bar{w}_H, \bar{w}_L, \bar{r}, \bar{\tau})$ and on the model parameters $(b, \sigma, \alpha_L)$. These impacts are simulated in Section 5.

4. Globalization and Social stratification

4.1. Globalization

We make a distinction between North-South and North-North globalization.

a) North-South Globalization

North-South globalization (henceforth NSG) is depicted by free trade between the North and the South, with the size of the South increasing throughout the globalization process, and by capital and technological transfers from the North to the South. Compared to the North, the South is assumed to display a high relative endowment of simple labour in relation to both skill and capital. North-South openness thus results (i) in the adoption by the South of the northern technology (the TFP can however remain lower in the South because of the lack of public equipment, of the time and cost necessary to adjust to the new technologies, etc.) , and (ii) by an increase in the world endowment of $L$ in relation to both $H$ and $K$. We assume to simplify that this causes both ratios $L/H$ and $L/K$ to be multiplied by the same coefficient $\lambda > 1$. Because of the Cobb-Douglas technology, the wage per unit of simple labour is multiplied by $\lambda^{\alpha_L - 1}$, the return to skill and the return to capital by $\lambda^{\alpha_L}$, and the price of the good remains equal to 1. We can thus represent the increase in the size of the South which defines the NSG dynamics by an increase in parameter $\lambda$ from an initial value $\lambda = 1$. The real wage per unit of simple labour×time is $w_L = \lambda^{\alpha_L - 1} \bar{w}_L$, the real wage per unit of skill×time $w_H = \lambda^{\alpha_L} \bar{w}_H$ and the real unit return to capital $r = \lambda^{\alpha_L} \bar{r}$, with $\bar{w}_L$, $\bar{w}_H$ and $\bar{r}$ being these values at the outset of globalization. The real lump sum redistribution benefit is $r_G = \lambda^{\alpha_L} \bar{r} \bar{K}$. 
We can finally determine the minimum skill from which NSG increases the unit wage.

**Lemma 6.** NSG increases (lowers) the unit wage $w_i$ of the households such that $h_i > (\leq) h(\lambda)$, with:

$$h(\lambda) = \frac{1 - \alpha_L}{\alpha_L} \frac{\bar{w}_L}{\bar{w}_H} \lambda^{-1}$$  \hspace{1cm} (4)

**Proof.** $w_i = \bar{w}_L \lambda^{\alpha_L - 1} + \bar{w}_H h \lambda^{\alpha_L}$ $\Rightarrow \frac{\partial w_i}{\partial \lambda} = (\alpha_L - 1)(\bar{w}_L \lambda^{\alpha_L - 2}) + \alpha_L \bar{w}_H h \lambda^{\alpha_L - 1}$. Hence: $\frac{\partial w_i}{\partial \lambda} > 0$ $\Rightarrow h_i \geq h(\lambda) = \frac{1 - \alpha_L}{\alpha_L} \frac{\bar{w}_L}{\bar{w}_H} \lambda^{-1}$.

**b) North-North globalization**

North-North globalization (henceforth NNG) is characterised by perfect capital mobility between northern countries resulting in tax competition and thereby in a reduction in the corporate tax rate. The decrease in the statutory corporate tax due to capital mobility is a general result of both the theoretical and empirical literature on corporate tax competition. This move can be inverted when corporate levies are utilised to improve the profitability of firms through the providing of public equipment, subsidies and transfers (Benassy-Quéré et al., 2007). As here corporate taxes are only utilised for redistribution (corporate levies that return to firms are ignored because we analyse social stratification) the hypothesis of a globalization driven decrease in $\tau$ is fully justified.

The reduction in the corporate tax rate that defines the NNG dynamics will be modelled by an increase in parameter $\eta$ from the initial value 1, with $\tau = \bar{\tau} / \eta$ being the corporate tax rate and $\bar{\tau}$ this rate at the outset of globalization. Consequently, $\tau_G = \bar{\alpha}_c \bar{\tau} / \eta$.

**4.2. Social stratification**

**a) North-South Globalization**

**Proposition 2.** The relation between the dimension of the space of exclusion $S_E$ and the size of the South $\lambda$ (i) is decreasing when $\bar{w}_L < \alpha_L c$, and (ii) has an inverted-U shape when $\bar{w}_L > \alpha_L c$.

**Proof.** Appendix 7.
Firstly note that \( w_L > \alpha_L \bar{c} \) is the most likely case. In fact, the share of simple work in total income is typically not higher than 1/3 in advanced economies, and the fact that someone endowed with simple labour only cannot buy such a low percentage of the minimal consumption is very improbable. Let us thus assume that \( w_L > \alpha_L \bar{c} \). Then, Proposition 2 indicates that the number of excluded is linked to NSG by an inverted-U relationship. This result is logical and mechanical. NSG causes an increase in \( r \) and \( w_H \), and a decrease in \( w_L \). As the incomes of the excluded as well as those of the poorest non-classical households essentially come from \( w_L \), NSG firstly lessens those incomes and make the poorest non-classical households move into exclusion. However, with the simultaneous rise in \( w_H \) and \( r \) and reduction in \( w_L \), a moment comes when these moves make the income of the most skilled (and capital owning) excluded to increase. From then, the rise in \( \lambda \) results in more and more excluded to be able to attain the minimum consumption \( \bar{c} \) when they spend all their time working, and thereby to escape from exclusion.

**Proposition 3.** If the space of rentiers expands with the NSG intensity at the outset of globalization \( (\partial S_R / \partial \lambda > 0, \lambda = 1) \), then there is an inverted-U relationship between the dimension of the space of rentiers and the NSG intensity. If the space of rentiers shrinks with the NSG intensity at the outset of globalization \( (\partial S_R / \partial \lambda < 0, \lambda = 1) \), then this space continuously shrinks throughout the globalization process (increase in \( \lambda \)).

Proof. Appendix 7.

NSG has several different impacts upon the space of rentiers. An increase in the wage per unit of time \( (w_L + w_H h_i) \) lessens the number of rentiers whereas increases in private rents \( r k_i \) and in net public rents \( \tau r (\bar{k} - k_i) \) augment it. Consequently, the decrease in \( w_L \) enlarges this space and the increase in \( w_H \) shrinks it. The increase in \( r \) enlarges the space of rentiers through the increase in \( r k_i \) whereas it reduces it through the decrease in \( \tau r (\bar{k} - k_i) \) provided that \( \bar{k} < k_i \) for the rentier households. Consequently, one can expect that NSG expands the space of rentiers at its bottom side (i.e, rentiers with low human and physical capital) and cut it at its top side (rentiers with high human capital). These results are shown in Appendix 7.
b) North-North Globalization (NNG)

NNG is modelled as a decrease in the country’s corporate tax. From Lemma 4, we infer

**Proposition 4.** North-North globalization expands the space of exclusion and the space of rentiers.

Finally, the impacts of NSG (increase in $\lambda$) and NNG (decrease in $\tau$) upon the dimensions of the spaces of classical and non-classical households cannot be analysed in a simple way. They depend on the set of initial values $(\widehat{w_H}, \widehat{w_L}, \widehat{r}, \widehat{\tau})$, on the model parameters $(b, \sigma, \alpha_L)$, and on the intensity of the shifts in $\lambda$ and $\eta$. These impacts will be simulated in Section 5 from plausible values of the parameters and factor payments.

c) Total impact of globalization

It is impossible to provide a simple analytical analysis of the impact of the combination of NSG and NNG upon each social space. This is due to the multiple dimensions of globalization (decrease in $w_L$ and $\tau$, increase in $w_H$ and $r$) and the complexity of their combined effect upon the households according to the share in their total gain of each type of income (wages for simple labour and human capital, capital income, social benefit), and thus according to their social group. The analysis will thereby be implemented in Section 5 by simulating different dynamics corresponding to plausible values of the income shares and the model parameters. From the above results of NSG and NNG, it is however possible to analyse the effects of globalization upon the spaces of exclusion and the space of rentiers.

In the case of excluded households, let us assume that $w_L > \alpha_L \overline{c}$, which means that NSG has an inverted-U shaped impact upon the space of excluded (Proposition 2). As long as $\lambda < \left(\frac{w_L}{\alpha_L \overline{c}}\right)^{1/(1-\alpha_L)}$, both NSG (increase in $\lambda$) and NNG (decrease in $\mu$) raise the number of excluded (Propositions 2 and 3). When $\lambda$ becomes higher than $\left(\frac{w_L}{\alpha_L \overline{c}}\right)^{1/(1-\alpha_L)}$, NSG and NNG have opposite impacts on the number of excluded. From then, it can be shown (see Appendix 8) that for the each couple of values $(\lambda, \eta)$ there is a minimum rate of increase in $\eta$, depending on the rate of increase in $\lambda$, from which the number of excluded expands. In other words, the decrease in the corporate tax must be sufficiently large to offset the lessening of the number of excluded due to NNG.
4.3. Working time

We can finally analyse the impacts of NSG and NNG upon working time in each working social group, i.e., the classical and non-classical. These impacts are not straightforward because:

1) NSG increases the unit wage \( w_i \) for individuals with rather high skill \( (h_i > h(\lambda)) \) and it decreases the unit wage of individuals with rather low skill \( (h_i < h(\lambda)) \), and the number of those being in the first case increase with time since \( \lambda \) rises (Lemma 6).

2) NSG increases the return to capital \( r = (1 - \tau)\lambda^{\alpha_L} \) and thus the rents \( \lambda^{\alpha_L}(1 - \tau)\bar{R}_i + \tau\lambda^{\alpha_L}\bar{R}_k \).

3) NNG decreases rents \( r_i + \tau r(\bar{k} - k_i)/\eta \) for the households with a capital endowment lower than the average, and it increases rents for those with a capital endowment higher.

4) Finally, the increase in rents lowers the working time of both classical and non-classical households, whereas the increase in the unit wage raises the classical households’ working time and lessens the working time of non-classical households.

Consequently, the impact of globalization upon the working time depends on the strength of each effect described above, which typically differs across households. We can however state the following

**Proposition 5.** North-North globalization induces a decrease in the working time of the households with a capital endowment higher than the average.

Proof. Because of Lemma 2 (feature 2) and provided that NNG lessens the corporate tax rate.

5. Simulations

Two series of simulations will be implemented. In the first, we choose plausible values of the parameters, of the labour shares and of \( h_{\text{max}} \) and \( k_{\text{max}} \), and we (i) draw the four social spaces, (ii) calculate the dimension of each space before globalization \( (\lambda = \eta = 1) \), and (iii) analyse the impacts of NSG and NNG upon these dimensions by making \( \lambda \) and \( \eta \) vary. Such calculations must be seen as illustrations of the theoretical findings since, as previously underlined, they cannot portray the globalization-driven changes in the weight of each social group because these weights depend on the distribution of individuals inside the space of
households, this distribution being typically not uniform. Consequently, a second series of simulations will be implemented to reveal the impacts of globalization upon the social groups from distributions of households in the space \((h,k)\) that correspond to what is observed in advanced countries. In this purpose, we shall make a difference between non-egalitarian countries such as the US and the UK, egalitarian countries such as Scandinavian economies, and countries in-between as continental Europe.

5.1. Social spaces and working time: numerical illustration

a) Pre-globalization social spaces

We firstly diagrammatically determine each social space at the outset of globalization, i.e., for \(\lambda = \mu = 1\). This simulation cannot portray the reality of income distribution and public redistribution since only corporate taxes are introduced and the distribution of households inside the space \([0,h_{\text{max}}]\times[0,k_{\text{max}}]\) is disregarded. The equations used for the determination of each space are those depicted in Figure 1. We select the following values of the model parameters:

<table>
<thead>
<tr>
<th>(\tilde{w}_H)</th>
<th>(\tilde{w}_L)</th>
<th>(\tau)</th>
<th>(\tau)</th>
<th>(h_{\text{max}})</th>
<th>(k_{\text{max}})</th>
<th>(\bar{k})</th>
<th>(\bar{c})</th>
<th>(b)</th>
<th>(\sigma)</th>
<th>(\alpha_L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>0.03</td>
<td>0.3</td>
<td>10</td>
<td>1000</td>
<td>100</td>
<td>5</td>
<td>0.6</td>
<td>2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

The values selected for \(\tilde{w}_L\), \(\tilde{w}_H\) and \(h_{\text{max}}\) make the earnings multiplier between the least skilled \((h_i=0)\) and the most skilled \((h_{\text{max}}=10)\) household to be 11. The value \(\alpha_L = 0.2\) signifies that simple labour accounts for 20\% of total income. The corporate tax rate \(\tau = 0.3\) is in-between the present rates (which are of about 20-25\%) and the rates of the eighties (about 40-50\%). Coefficient \(b\) is selected to have a little more than 90\% of the disposable time (equal to 1) to be allocated for working in the case of a household with the highest skill \((h_i=10)\) and no capital \((k_i=0)\). The minimal consumption \(\bar{c}\) is such that the space of exclusion does exist \((\tilde{w}_L + \bar{c} < \bar{c})\) and the average capital \((\bar{k} = 100)\) for redistribution \((\tau \bar{k} = 0.9)\) to be a little lower than the wage \(\tilde{w}_L\) of a household without any skill. Finally, the same simulations were carried out with different values of the parameters \((\sigma\) varying from 1.2 to 2.5, \(\tau\) from 0.1 to 0.5, \(\tau\) from 0.01 to 0.05, \(\alpha_L\) from 0.25 to 0.35, different values of...
b). All these simulations provide similar outcomes in terms of variation, with however differences in intensity.

Figure 3 draws the four social spaces at the outset of globalization, and Table 3 provides the dimensions and limit values of each space. The space of classical households is apparently much bigger than the other spaces. This can however not represent the weight of each type of households because, in the real economy, the large majority of households are concentrated in the South-West part of space \([0, h_{\text{max}}] \times [0, k_{\text{max}}]\).

![Figure 3. Pre-globalization social spaces](image)

| Table 3. Dimension and limits of each space before globalization |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| \(S_E\) | \(S_R\) | \(S_{NC}\) | \(S_C\) | \(h_E\) | \(h_R\) | \(k_E\) | \(k_R\) | \(h_C\) | \(k_C\) |
| 52.5 | 1056.1 | 263.5 | 8627.9 | 1.05 | 100 | 2.43 | 263.8 | 3.71 | 167.1 |

a) **North-South globalization**

We make \(\lambda\) move from 1 to 1.2, and we depict the impact of this move upon the dimension of each social space. This corresponds to an increase in \(w_H\) of 5.6%, a decrease in \(w_L\) of 12%, and an increase in \(w_H / w_L\) of 20%. In line with the empirical literature on the subject, NSG increases the return to skill and diminishes the wage of simple (unskilled) labour.

Figure 4 depicts the variations in the social spaces dimensions that derive from NSG. As expected, NSG increases both the space of excluded and the space of rentiers. Note that, if we make \(\lambda\) increase beyond 1.2, the curves display the expected inverted-U shape with the turning point occurring for \(\lambda = 2.3\) in the case of the space of exclusion, and 10.2 for the space of rentiers. Both spaces of non-classical and classical households shrink. These results
are verified for a large range of simulations implemented by making the parameters, factor payments and limit values to vary within plausible intervals. The turning points of the inverted-U curves are very rarely attained, except for a large impact of NST upon the factor payments and very high elasticity of substitution $\sigma$. In terms of rate of variation (Table 4), for a NSG that moves $\lambda$ from 1 up to 1.2, the increase in $S_E$ is the highest (+14.6%) and the rate of decrease in $S_C$ remains rather modest (-1.3%).

![Figure 4. NSG and the Social spaces dimensions](image)

**Table 4. Dimension and limits of each space at the end of NSG**

<table>
<thead>
<tr>
<th></th>
<th>$S_E$</th>
<th>$S_R$</th>
<th>$S_{NC}$</th>
<th>$S_C$</th>
<th>$h_E$</th>
<th>$k_E$</th>
<th>$h_R$</th>
<th>$k_R$</th>
<th>$h_C$</th>
<th>$k_C$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>60.5</td>
<td>1169.5</td>
<td>249</td>
<td>8521</td>
<td>1.13</td>
<td>107.3</td>
<td>2.55</td>
<td>236.1</td>
<td>3.67</td>
<td>164.7</td>
</tr>
<tr>
<td>% change/pre-glob.</td>
<td>+15.2</td>
<td>+10.7</td>
<td>-5.5</td>
<td>-1.24</td>
<td>+7.6</td>
<td>+7.3</td>
<td>+4.9</td>
<td>-10.5</td>
<td>-1.1</td>
<td>-1.4</td>
</tr>
</tbody>
</table>

b) North-North globalization

We make $\eta$ vary from 1 to 1.5, which corresponds to a shift in the redistributive component of the corporate tax rate $\tau$ from 30 down to 20%.

Figure 5 draws the variations in the dimension of each space that derive from NNG. As expected, the space of exclusion and the space of rentiers expand. In addition the space of non-classical slightly expands as well, which reveals the negative impact of the decrease in redistribution upon the poorest classical who must now increase their working time to maintain their post-tax and redistribution income.
Table 5. Dimension and limits of each space at the end of NNG

<table>
<thead>
<tr>
<th></th>
<th>$S_E$</th>
<th>$S_R$</th>
<th>$S_{NC}$</th>
<th>$S_C$</th>
<th>$h_E$</th>
<th>$k_E$</th>
<th>$h_R$</th>
<th>$k_R$</th>
<th>$h_C$</th>
<th>$k_C$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>60</td>
<td>1212</td>
<td>264.7</td>
<td>8463.3</td>
<td>1.2</td>
<td>100</td>
<td>2.69</td>
<td>243.3</td>
<td>4.01</td>
<td>158.7</td>
</tr>
<tr>
<td>% change/pre-glob.</td>
<td>+14.3</td>
<td>+14.8</td>
<td>+0.46</td>
<td>-1.91</td>
<td>+14.3</td>
<td>0</td>
<td>+10.7</td>
<td>-7.8</td>
<td>+8.1</td>
<td>-5.0</td>
</tr>
</tbody>
</table>

c) Combined NSG and NNG

We now make vary the couple $(\lambda, \eta)$ from $(1, 1)$ to $(1.2, 1.5)$ so as to combine North-South and North-North globalization.

Logically, both the space of exclusion and the space of rentiers expand. In addition, the space of non-classical decreases, which means that the negative effect of NSG dominates the positive effect of NNG. An important result is that the extension of the space of rentiers is higher than the reduction in the space of non-classical, which shows that globalization makes certain classical households to become non-classical. In other words: the former poorest classical have become non-classical; they now increase (decrease) their working time when their unit wage lessens (augments).
Figure 6. Total globalization (TG) and the Social spaces dimensions

Table 6. Dimension and limits of each space at the end of total globalization (NSG+NNC)

<table>
<thead>
<tr>
<th></th>
<th>$S_E$</th>
<th>$S_R$</th>
<th>$S_{NC}$</th>
<th>$S_C$</th>
<th>$h_E$</th>
<th>$k_E$</th>
<th>$h_R$</th>
<th>$k_R$</th>
<th>$h_C$</th>
<th>$k_C$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values</td>
<td>68</td>
<td>1324.7</td>
<td>250.7</td>
<td>8356.7</td>
<td>1.28</td>
<td>106.4</td>
<td>2.81</td>
<td>219.1</td>
<td>3.98</td>
<td>156.6</td>
</tr>
<tr>
<td>% change/pre-glob.</td>
<td>+29.5</td>
<td>+25.4</td>
<td>-4.9</td>
<td>-3.1</td>
<td>+21.9</td>
<td>+6.4</td>
<td>+15.6</td>
<td>-16.9</td>
<td>+7.3</td>
<td>-6.3</td>
</tr>
</tbody>
</table>

5.2. Changes in Households positions

In our second series of estimations, we distribute households within the space $[0,h_{\text{max}}] \times [0,k_{\text{max}}]$ according to what was observed in the early 90s in advanced economies. If the distribution by percentile of both labour incomes and financial wealth taken separately can be found for a large range of countries, the crossed distribution is typically not available. For the US, we however have the distribution of wealth per earnings level (intervals) with the weight of each earning interval in total earnings (Wolff, 2012).

From the available data, it is clear that no simple distribution function can be used to represent the distribution of households in the plan (labour income, financial wealth). We thereby construct three types of crossed distributions:
1) The first corresponds to inequality-oriented countries and is based upon the distributions in the US as revealed by the OECD (for earnings) and Wolff (2012) for financial wealth and the crossed distribution earnings × financial wealth.

2) The second intends to picture the combined distributions of labour income and financial wealth in egalitarian countries. Here, we do have the distributions of each component, but the crossed distribution is missing. Thus, we change the values of $h_{\text{max}}$ and $k_{\text{max}}$ as well as the distributions per decile so as to be consistent with the data available for Scandinavian countries. In addition, the distribution inside each percentile (decile × decile) of the crossed distribution is assumed similar as in the first case. This means that, compared to inequality-oriented countries, the overall distribution changes for both labour income and financial wealth, but not the distribution inside each crossed percentile.

3) Finally, we simulate a situation between the two first cases, which corresponds to Continental Europe (Austria, Belgium, France, Germany), Southern Europe being excluded.

It is clear that these simulations must be understood as illustrations of ideal-type distributions, and not as picturing the real world. In fact, most of the egalitarian countries become egalitarian after tax and redistribution. For instance, income inequality is not much different between Scandinavian and Anglo-Saxon countries before tax and redistribution, whereas it is huge after tax and redistribution. However, redistribution is essentially funded by income taxation, which is not analysed here. So, the simulations implemented here can in no way reveal the impact of globalization upon the existing countries because their institutional differences are not accounted for. They rather illustrate the impact of the modelled dimensions of globalization upon social stratification ceteris paribus, by differentiating between countries that were initially egalitarian, inequality-oriented, and in-between.

We assume 1,000 households initially distributed in the space \( \{(h,k)\} = \{(0,10) \times [0,1000]\} \) and we make $\lambda$ vary from 1 to 1.2 and $\eta$ from 1 to 1.5.

In what follows, we limit our simulation to the American case. The distribution of households is depicted in Table A2 and Figure A3 in Appendix 9. This distribution is in line (i) with the distribution of earnings in the US in the mid-2000s (OECD), and (ii) with the distribution of financial wealth per decile and per income group as provided by Wolff (2012).

The impacts of the changes in $\lambda$ and $\eta$ upon the space frontiers are depicted on Figure 7 below. The Figure are centred on the $h \in [0,3]$ so as to focus on the moves of the frontiers. As expected, both NSG and NNG enlarge the space of rentiers and the space of exclusion, and they both shrink the space of classical households.
(a) Pre-globalization: $\lambda = \eta = 1$

(b) NSG: $\lambda = 1.2 \ ; \ \eta = 1$

(c) NNG: $\lambda = 1 \ ; \ \eta = 1.5$

(d) NSG+NNG: $\lambda = 1.2 \ ; \ \eta = 1.5$

Figure 7. The four social spaces: pre-globalization, NSG, NNG and NSG+NNG.

Table 7 below depicts the share of each social group in the population at the initial time (no globalization: $\lambda = \eta = 1$), at the end of NSG acting alone ($\lambda = 1.2 \ ; \ \eta = 1$), at the end of NNG acting alone ($\lambda = 1 \ ; \ \eta = 1.5$) and at the end of combined NSG and NNG ($\lambda = 1.2 \ ; \ \eta = 1.5$).

<table>
<thead>
<tr>
<th>Social Group</th>
<th>$\lambda = \eta = 1$</th>
<th>$\lambda = 1.2 \ ; \ \eta = 1$</th>
<th>$\lambda = 1 \ ; \ \eta = 1.5$</th>
<th>$\lambda = 1.2 \ ; \ \eta = 1.5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluded</td>
<td>3.2</td>
<td>4.1</td>
<td>5.4</td>
<td>6.4</td>
</tr>
<tr>
<td>Rentiers</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Classical</td>
<td>73.4</td>
<td>73.4</td>
<td>72.8</td>
<td>72.7</td>
</tr>
<tr>
<td>Non classical</td>
<td>23.1</td>
<td>22.2</td>
<td>21.5</td>
<td>20.5</td>
</tr>
</tbody>
</table>
Three main outcomes can be put forward:

1) Both NSG and NNG increase the number of excluded.
2) Both NSG and NNG increase the number of rentiers.
3) Both NSG and NNG lessen the number of classical households.

6. Discussion and conclusion

From a model in which households differ in their skill and capital endowments, we have shown that labour supply (working time) behaviours generate four social groups, i.e., the excluded, the rentiers, the classical and the non-classical. Classical households are characterised by a working time that increases with their real wage whereas the non-classical display the opposite relationship. We have subsequently introduced globalization and made a distinction between North-North and North-South globalization. NNG creates corporate tax competition whereas NSG increases the return to capital and skill at the expense of the payment for simple labour. The combination of both types of globalization modifies social stratification. The space of excluded tends to increase. In addition, when selecting plausible values of the parameters and of factor payments, the space of rentiers increases as well. Consequently, globalization results in an enlargement of both extremities of the household space, i.e., those who do not work because they are too poorly endowed with skill and capital to attain the minimal consumption, and those who do not work because their capital endowment is sufficiently high to discourage them working for the wage corresponding to their skill.

The space of exclusion enlargement can be illustrated by the increase in the poverty rate experienced by a number of advanced countries in the thirty last years. Note that the positive impact of the decline in the corporate tax rate upon exclusion that derives from less redistribution can be counteracted (i) by higher levies on consumption or on labour incomes, and (ii) by an increase in public deficit. This last possibility is however not sustainable.

One of the most noticeable predictions is the enlargement of the space of rentiers, thus the rise in their weight in the population of households. As rentiers do typically not belong to the lower class or the lower middle class, this prediction essentially concerns the upper middle
class and the upper class. In the XXth century, one of the prominent evolutions in advanced economies is the vanishing of the rentiers (Piketty, 2003; Piketty & Saez, 2003). In addition, certain studies suggest that, albeit a huge increase in the income share of the very top of the income distribution in most advanced countries, the class of rentiers is not yet reconstituted (Kopczuk & Saez, 2004). One can thereby ask the following questions: What forms can take this recovery of the rentiers and is this prediction realistic?

Considering the upper middle class, the new rentiers can come from households whose return to capital has become high enough to incite them to retire earlier than expected. This behaviour results from the increase in their rents and the decrease in their skill (obsolescence, age-related decrease in dynamism etc.). Then, both the increase in the return to capital (rise in $r$ and reduction of $\tau$) and the decrease in the real unit wage $w_i$ incite older workers to retire earlier if they possess a sufficient amount of capital.

As regards the upper class, several types of rentiers can be distinguished. These can firstly be the children from rich families (who have inherited or received bequests) and whose efficiency level is not high enough to allow them having a high position in the professional hierarchy. They thus prefer to live of their rents rather than having a job they consider unattractive. There are also individuals who have accumulated a huge amount of capital because of very high pay at the beginning of their professional carrier due to both very high efficiency and very high working time. When their efficiency begins to decrease, they can choose to become rentiers because they possess a substantial amount of capital. This is the case of the so-called ‘golden boys’ of the nineties who became rentiers when their dynamism and efficiency decreased because of age.

Note that, as the group of rentiers comprises workers who retire earlier, its enlargement is typically not immediate and it needs a certain time to happen.

Finally note that, in contrast with a number of works on social stratification that utilize dynamic inter-generational modelling, our presentation is static. Social segmentation depends on the behaviour of households who are defined by their given endowments of skill and capital. This work thus focuses on the direct impact of globalization upon the respective returns to capital and labour, and thereby on working time and the incentive to work. In the longer term, this approach should be combined with a precise analysis of the impacts upon the formation and accumulation of skill (particularly education) and capital.

**APPENDIX 1. The optimal working time**
The maximum utility is given by:

$$u_i = b \left( c_i - \bar{c} \right)^{\frac{\sigma-1}{\sigma}} + (1-t_i)^{\frac{\sigma-1}{\sigma}}$$

subject to:

$$w_i t_i + (1-\tau)r_i + r_g \geq c_i, \quad t_i \geq 0$$

The derivative of the utility with respect to time is:

$$\frac{\partial u_i}{\partial t_i} = \frac{\sigma-1}{\sigma} b \left( w_i t_i + (1-\tau)r_i + r_g - \bar{c} \right)^{\frac{1}{\sigma}} w_i - \frac{\sigma-1}{\sigma} (1-t_i)^{\frac{1}{\sigma}} = 0$$

Hence:

$$t_i = \max \left\{ \left( \frac{(bw_i)^{\sigma} - (1-\tau)r_i - r_g + \bar{c}}{w_i + (bw_i)^{\sigma}} \right), 0 \right\}$$

**APPENDIX 2. Analysis of the working time function**

**Proof of Lemma 2.**

$$t_i = \frac{(bw_i)^{\sigma} - r_i - \tau(\bar{r} - r_i) + \bar{c}}{w_i + (bw_i)^{\sigma}} ; \quad \frac{\partial t_i}{\partial r_i} = -\frac{1-\tau}{w_i + (bw_i)^{\sigma}} < 0; \quad \frac{\partial t_i}{\partial \tau} = -\frac{(\bar{r} - r_i)}{w_i + (bw_i)^{\sigma}} > 0, \quad r_i < \bar{r} \iff k_i < \bar{k}$$

**Analysis of function**

$$t_i = t_i(w_i) = \frac{(bw_i)^{\sigma} - (1-\tau)r_i - r_g + \bar{c}}{w_i + (bw_i)^{\sigma}}, \quad (bw_i)^{\sigma} - r_i + \tau(r_i - \bar{r}) \geq \bar{c}$$

$$t_i \xrightarrow{w_i \to \infty} 1; \quad w_i + (1-\tau)r_i + r_g = \bar{c} \Rightarrow t_i = 1$$

$$\frac{\partial t_i}{\partial w_i} = \frac{\sigma b^\sigma w_i^{\sigma-1} \left( w_i + (bw_i)^{\sigma} \right) - (1+\sigma b^\sigma w_i^{\sigma-1}) \left( (bw_i)^{\sigma} - (1-\tau)r_i - r_g + \bar{c} \right)}{\left( w_i + (bw_i)^{\sigma} \right)^2}$$

$$\frac{\partial t_i}{\partial w_i} = \frac{(\sigma-1)(bw_i)^{\sigma} + (1+\sigma b^\sigma w_i^{\sigma-1}) ((1-\tau)r_i + r_g - \bar{c})}{\left( w_i + (bw_i)^{\sigma} \right)^2}$$

1) $$(1-\tau)r_i + r_g - \bar{c} > 0 \Rightarrow \partial t_i / \partial w_i > 0$$

2) $$(1-\tau)r_i + r_g - \bar{c} < 0 . \quad \frac{\partial t_i}{\partial w_i} \xrightarrow{w_i \to 0} 0 \iff (\sigma-1)b^\sigma w_i^{\sigma} \xrightarrow{w_i \to 0} (\sigma b^\sigma w_i^{\sigma-1} + 1)(\bar{c} - (1-\tau)r_i - r_g).$$

Hence:

$$\frac{\partial t_i}{\partial w_i} \xrightarrow{w_i \to 0} \frac{(\sigma-1)b^\sigma w_i^{\sigma}}{\sigma b^\sigma w_i^{\sigma-1} + 1} \leq \frac{\sigma-1}{\sigma b^\sigma w_i^{\sigma-1} + 1} \leq \bar{c} - (1-\tau)r_i - r_g.$$  

We denote: $z(w_i) = \frac{(\sigma-1)b^\sigma w_i^{\sigma}}{\sigma b^\sigma w_i^{\sigma-1} + 1}.$ Figure A1 depicts the position of function $z(w_i)$ in relation to $\bar{c} - (1-\tau)r_i - r_g.$
$z(w_i) = \frac{b^{\sigma} (\sigma - 1)}{b^{\sigma} \sigma w_i^{-\sigma} + w_i^{-\sigma}}$

$\bar{r}_i - r_i + \tau (r_i - \bar{r})$

$\hat{w}(r_i)$

$w_i$

**Figure A1.** Function $z(w_i)$

$\exists$ unique $\hat{w}(r_i)$ such that $w_i < \hat{w}(r_i, \bar{r}, \tau) \Rightarrow \partial t_i / \partial w_i < 0$ and $w_i > \hat{w}(r_i, \bar{r}, \tau) \Rightarrow \partial t_i / \partial w_i > 0$

On the curve $r_i = \frac{\bar{r} - r_G}{1 - \tau} \frac{b^{\sigma} (\sigma - 1)}{(1 - \tau)(b^{\sigma} \sigma w_i^{\sigma - 1} + w_i^{-\sigma})}$, $r_i = 0 \Rightarrow (\bar{r} - r_G)(b^{\sigma} \sigma w_i^{\sigma - 1} + 1) = b^{\sigma} (\sigma - 1) w_i^{\sigma}$.

**Figure A2.** The relation between the wage and the working time

Figure A2 depicts the working time $t_i$ depending on the wage $w_i = w_L + w_H h_i$ in the cases $(1 - \tau)r_i + r_G < \bar{r}$ and $(1 - \tau)r_i + r_G \geq \bar{r}$. In the first case (Figure A1a) the household works if $w_i + (1 - \tau)r_i + r_G \geq \bar{r}$ and s/he is excluded if $w_i + (1 - \tau)r_i + r_G < \bar{r}$ (see the analysis of function $t_i = t(w_i)$ in Appendix 2). When s/he works with a wage $w_i = w_L + w_H h_i$ lower than $\hat{w}_i$, the household is non-classical whereas s/he is classical in the case $w_i > \hat{w}_i$. In the second case (Figure 1b) the household decides to live from its sole rents when the wage $w_i$...
is smaller than \( ((1-\tau)r_i + r_G - \bar{c})^{\nu} \), this value being the reservation wage of the household. If \( w_i > ((1-\tau)r_i + r_G - \bar{c})^{\nu} \), then the household works and is classical.

**APPENDIX 3. Proof of Proposition 1: The four social spaces**

The distribution of households between the classical and the non-classical depends on the sign of the derivatives \( \frac{\partial t_i}{\partial w_i}, i = 1, \ldots, M \). In this respect, a first distinction can be made between two cases, i.e., \( (1-\tau)r_i + r_G - \bar{c} > 0 \) and \( (1-\tau)r_i + r_G - \bar{c} < 0 \). In the first case, the household’s rents \((1-\tau)r_i + r_G\) are sufficient to cover the minimum consumption \( \bar{c} \). In the second case, the household must work to attain the minimum consumption \( \bar{c} \).

**Lemma A1:** Consider household \( i \) such that \( (1-\tau)r_i + r_G - \bar{c} > 0 \). Household \( i \) has a reservation wage \( w_i = b^{-1}((1-\tau)r_i + r_G - \bar{c})^{\nu} \) and it is classical if \( w_i > w_i \) and rentiers if \( w_i \leq w_i \).

*Proof.* Suppose that \( (1-\tau)r_i + r_G - \bar{c} > 0 \). Since \( t_i = \frac{(bw_i)^\nu - ((1-\tau)r_i + r_G - \bar{c})}{w_i} \), then \( t_i > 0 \Leftrightarrow (bw_i)^\nu > (1-\tau)r_i - r_G + \bar{c} \), and thus \( t_i > 0 \Leftrightarrow w_i > b^{-1}((1-\tau)r_i - r_G + \bar{c})^{\nu} \). Hence, \( w_i = b^{-1}((1-\tau)r_i - r_G + \bar{c})^{\nu} \) is household \( i \)'s reservation wage. If \( w_i > w_i \), then \( t_i > 0 \) and \( \frac{\partial t_i}{\partial w_i} > 0 \), i.e., household \( i \) is classical.

From inequalities \( w_i \leq w_i \) and \( w_i > w_i \), we can state the following

**Corollary.** Consider household \( i \) such that \( (1-\tau)r_i + r_G - \bar{c} < 0 \). This household is rentier if \( k_i \geq \frac{\bar{c} - r_G + (bw_i)^\nu}{(1-\tau)r} \) and classical if \( k_i < \frac{\bar{c} - r_G + (bw_i)^\nu}{(1-\tau)r} \).

**Lemma A2:** Consider household \( i \) who is neither excluded nor a rentier. Then, this household is classical (non-classical) if \( k_i > \left( \frac{\bar{c} - r_G}{(1-\tau)r} - \frac{(\sigma - 1)b^\nu w_i^\nu}{(1-\tau)r(\sigma b^\nu w_i^{-\sigma - 1}) + 1} \right) \) and classical if: \( k_i < \frac{\bar{c} - r_G}{(1-\tau)r} - \frac{(\sigma - 1)b^\nu w_i^\nu}{(1-\tau)r(\sigma b^\nu w_i^{-\sigma - 1}) + 1} \).

*Proof.* Household \( i \) is non-classical if: \( \frac{\partial t_i}{\partial w_i} < 0 \Leftrightarrow k_i < \frac{\bar{c} - r_G}{(1-\tau)r} - \frac{(\sigma - 1)b^\nu w_i^\nu}{(1-\tau)r(\sigma b^\nu w_i^{-\sigma - 1}) + 1} \) and classical if: \( \frac{\partial t_i}{\partial w_i} > 0 \Leftrightarrow k_i > \frac{\bar{c} - r_G}{(1-\tau)r} - \frac{(\sigma - 1)b^\nu w_i^\nu}{(1-\tau)r(\sigma b^\nu w_i^{-\sigma - 1}) + 1} \).
Proposition 1. Feature 1) derives from Lemma 1. Features 2) and 3) from Lemma A2, and feature 4 from Lemma A1 (corollary).

APPENDIX 4. Limits and dimension of each social space

1) Space of exclusion
The space of exclusion is below the line \( k_i < \frac{\bar{c} - (w_L + w_H h) - r_G}{(1 - \tau) r} \). In Figure 2, this line cuts the y-axis \((h_i = 0)\) at \( k_E = \frac{\bar{c} - r_G - w_L}{(1 - \tau) r} \) and the x-axis \((k_i = 0)\) at \( h_E = \frac{\bar{c} - w_L - r_G}{w_H} \). Hence, the space of exclusion dimension is \( S_E = \frac{(\bar{c} - w_L - \tau r \bar{k})^2}{2(1 - \tau) r w_H} \).

2) Space of rentiers
The rentiers are such that \( k_i \geq \frac{b^\sigma (w_L + w_H h)^{\sigma} + \bar{c} - r_G}{(1 - \tau) r} \). In Figure 2, the curve \( k_i = \frac{\bar{c} - r_G + b^\sigma w_L^\sigma}{(1 - \tau) r} \) cuts the y-axis \((h_i = 0)\) at \( k_R = \frac{\bar{c} - r_G + b^\sigma w_L^\sigma}{(1 - \tau) r} \) and attains the value \( k_i = k_{\text{max}} \) for \( h_R = \frac{b^{-1} (1 - \tau) r k_{\text{max}} + r_G - \bar{c}^{1/\sigma}}{w_H} \).

The dimension of the space of the rentiers is \( S_R = k_{\text{max}} h_R - \int_0^{h_R} \left( \frac{b^\sigma (w_L + w_H h)^{\sigma} + \bar{c} - \tau r \bar{k}}{(1 - \tau) r} \right) dh \).

3) Space of non-classical households
The non-classical households are such that: \( \frac{\bar{c} - r_G - w_i}{(1 - \tau) r} \leq k_i < \frac{\bar{c} - r_G}{(1 - \tau) r} - \frac{(\sigma - 1) b^\sigma w_i^{\sigma}}{(\sigma b^\sigma w_i^{\sigma - 1} + 1)(1 - \tau) r} \).
The curve \( k_i = \frac{\bar{c} - r_G}{\tau} - \frac{(\sigma - 1)b^\sigma (w_L + w_H h_i)^\sigma}{(1 - \tau)r} \) cuts the y-axis \((h_i = 0)\) at
\[
k_c = k_E + \frac{w_L}{(1 - \tau)r} \left( b^\sigma w_L^{\sigma - 1} + 1 \right) \]
and the x-axis \((k_i = 0)\) at the value \( h_c \) which is the root of the equation in \( h \):
\[
(\bar{c} - r_G)\sigma b^\sigma (w_L + w_H h)^{\sigma - 1} - (\sigma - 1)b^\sigma (w_L + w_H h)^\sigma + (\bar{c} - r_G) = 0. 
\]

The dimension of the space of non-classical households \( S_{NC} \) is:
\[
S_{NC} = \int_0^k \left( \frac{\bar{c} - r_G}{(1 - \tau)r} - \frac{(\sigma - 1)b^\sigma (w_L + w_H h)^\sigma}{(1 - \tau)r} \sigma b^\sigma (w_L + w_H h)^{\sigma - 1} + 1 \right) \, dh - S_E = \frac{1}{(1 - \tau)r} \int_0^k \frac{\sigma b^\sigma (w_L + w_H h)^{\sigma - 1} + 1}{(1 - \tau)r} \, dh
\]

4) Space of classical households

The dimension of the space of classical households is thus: \( S_c = k_{\max} h_{\max} - (S_R + S_{NC} + S_E) \).

The table below provides the limit values of each space (except \( h_c \)).

<table>
<thead>
<tr>
<th>( h_E )</th>
<th>( k_E )</th>
<th>( h_R )</th>
<th>( k_R )</th>
<th>( k_C )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bar{c} - w_L - r_G )</td>
<td>( \bar{c} - r_G - w_L )</td>
<td>( (1 - \tau)r k_{\max} + r_G \bar{c} )</td>
<td>( b^\sigma w_L^{\sigma - 1} + w_L )</td>
<td>( k_E + \frac{b^\sigma w_L^{\sigma - 1} + w_L}{(1 - \tau)r} )</td>
</tr>
</tbody>
</table>

APPENDIX 5. Impacts of \( r \) and \( \tau \) on \( S_E \) and \( S_R \) (proofs of Lemma 6 and 7)

1) Space of exclusion: \( S_E = \frac{(\bar{c} - \tau r k - w_L)^2}{2(1 - \tau)rw_L} \)
\[
\frac{\partial S_E}{\partial r} = -\frac{(1 - \tau)w_L(\bar{c} - \tau r k - w_L)(\bar{c} - w_L)}{(2(1 - \tau)rw_L)^2} < 0; \frac{\partial S_E}{\partial \tau} = 2rw_L(\bar{c} - \tau r k - w_L)(\bar{c} - w_L - (2 - \tau)r k) < 0
\]

2) The rentiers are such that \( k_i \geq \frac{b^\sigma (w_L + w_H h_i)^\sigma + \bar{c} - r_G}{(1 - \tau)r} = \frac{b^\sigma (w_L + w_H h_i)^\sigma + \bar{c} - r_G}{(1 - \tau)r} \),
\[
\text{i.e.,} \quad k_i \geq z(r) = \frac{b^\sigma (w_L + w_H h_i)^\sigma + \bar{c} - r_G}{(1 - \tau)r} \frac{\tau k}{(1 - \tau)}. \quad \text{As} \quad \frac{\partial z}{\partial r} = \frac{b^\sigma (w_L + w_H h_i)^\sigma + \bar{c} - r_G}{(1 - \tau)r} \frac{\tau k}{(1 - \tau)} < 0, \quad \text{an increase in} \ r \text{augments the number of households that verify} \ k_i \geq z(r) \text{and enlarges thereby the space of rentiers} \ (\partial S_R / \partial r > 0).
\]

The rentiers are such that \( (b w_l)^\sigma - r k_i + \tau (r k_i - r k) + \bar{c} \leq 0 \). In the plan \((h_i, k_i)\), the curve \((b w_l)^\sigma - r k_i + \tau (r k_i - r k) + \bar{c} = 0\) separates the rentiers from the non-rentiers. By
differentiating we find \( \frac{dk_i}{d\tau} = \frac{(k_i - \bar{k})}{(1-\tau)} \). Since \( k_i > \bar{k} \) for all the rentiers, an increase (decrease) in \( \tau \) moves the curve \((bw_i)^{\sigma} - rk_i + \tau(rk_i - \bar{r}k) + \bar{c} = 0 \) upwards (downwards) in the plan \((h_i, k_i)\), i.e., a decrease (increase) in the space of rentiers \( \partial S_R / \partial \tau < 0 \).

**APPENDIX 6. Proof of Lemma 8: Impact of wage upon the social spaces**

1) The rentiers are such that \((bw_i)^{\sigma} \leq r\left((1-\tau)k_i + \tau\bar{k}\right) - \bar{c} \). Thus, an increase in \( w \) reduces the space of the rentiers.

2) The excluded are such that \(w_i < \bar{c} - r\left(k_i + \tau(k_i - k_i)\right)\). Thus, an increase in \( w \) reduces the space of exclusion.

**APPENDIX 7. Impacts of North-South globalization**

1) Impact of NSG on the space of exclusion

\[
S_E = \frac{(\bar{c} - \lambda^{-\alpha_L} \tau \bar{k} - \lambda^{\alpha_L - 1} \bar{w}_L)^2}{2(1-\tau)\lambda^{2\alpha_L - 1} \bar{w}_H} = \frac{(\lambda^{-\alpha_L} \bar{c} - \tau \bar{k} - \lambda^{-1} \bar{w}_L)^2}{2(1-\tau)r \bar{w}_H}
\]

\[
\frac{\partial}{\partial \lambda} \left[ \lambda^{-\alpha_L} \bar{c} - \tau \bar{k} - \lambda^{-1} \bar{w}_L \right] = -\alpha_L \lambda^{-\alpha_L - 1} \bar{c} + \lambda^{-2} \bar{w}_L
\]

Hence: \( \frac{\partial S_E}{\partial \lambda} > 0 \iff \lambda < \left( \bar{w}_L / \alpha_L \bar{c} \right)^{1/(1-\alpha_L)} \)

And finally:

\( \bar{w}_L / \alpha_L \bar{c} > 1 \Rightarrow \) inverted-U relationship between \( S_E \) and \( \lambda \).

\( \bar{w}_L / \alpha_L \bar{c} < 1 \Rightarrow \) decreasing relationship between \( S_E \) and \( \lambda \)

2) Impact of NSG on the Space of rentiers

In the space of households, the rentiers gathers all the households situated above the curve

\[
k = k_R(h) = \frac{b^\sigma \left( \lambda^{\alpha_L - 1} \bar{w}_L + \lambda^{\alpha_L} \bar{w}_H, h \right)^{\sigma} - \tau \lambda^{\alpha_L} \bar{k} + \bar{c}}{(1-\tau)\lambda^{\alpha_L} \bar{c}}.
\]

If \( \partial k / \partial \lambda < 0 \), then an increase in \( \lambda \) moves this curve downwards and enlarges the space of rentiers.
$$k = \frac{b^\sigma \left( \lambda^{-\alpha} \bar{w}_L + \lambda^{-\alpha} \bar{w}_H h \right)^\sigma - \tau \lambda^{-\alpha} \bar{r}k + \bar{c}}{(1-\tau)\lambda^{-\alpha} \bar{r}} \Leftrightarrow (1-\tau)rk = b^\sigma \left( \lambda^{-\alpha} \bar{w}_L + \lambda^{-\alpha} \bar{w}_H h \right)^\sigma - \tau \bar{r}k + \lambda^{-\alpha} \bar{c}$$

$$(1-\tau)\frac{\partial k}{\partial \lambda} = b^\sigma \lambda^{-\alpha} \left( \lambda^{-1} \bar{w}_L + \bar{w}_H h \right)^{\sigma-1} \frac{\partial}{\partial \lambda} \left( \left( (\sigma-1)\alpha_L - \sigma \right) \lambda^{-1} \bar{w}_L + (\sigma-1)\alpha_L \bar{w}_H h \right) - \frac{\alpha_L \bar{c}}{b^\sigma \left( \lambda^{-1} \bar{w}_L + \bar{w}_H h \right)^{\sigma-1}}$$

Firstly note that:

$$h \leq \frac{\sigma - (\sigma - 1)\alpha_L}{\lambda(\sigma - 1)\alpha_L} \frac{\bar{w}_L}{\bar{w}_H} \Leftrightarrow \left( (\sigma - 1)\alpha_L - \sigma \right) \lambda^{-1} \bar{w}_L + (\sigma - 1)\alpha_L \bar{w}_H h \leq 0 \Rightarrow \frac{\partial k}{\partial \lambda} \leq 0$$

Consequently, the portion of curve $k_R(h)$ corresponding to $h \in \left[ 0, \frac{\sigma - (\sigma - 1)\alpha_L}{\lambda(\sigma - 1)\alpha_L} \frac{w_L}{w_H} \right]$ moves downwards and enlarges the space of rentiers, whereas the portion corresponding to $h \in \left[ \frac{\sigma - (\sigma - 1)\alpha_L}{\lambda(\sigma - 1)\alpha_L} \frac{w_L}{w_H}, h_R = \frac{b^{-1} \left( (1-\tau)rk_{\max} + r_G - \bar{c} \lambda^{-\alpha} \bar{w}_L \right)^{1/\sigma} \lambda^{1-(\sigma - \alpha)/\sigma - 1} \bar{w}_L}{w_H} \right]$ goes upwards and shrinks this space.

Suppose now that at the outcome of globalization, i.e. for $\lambda = 1$, the space of rentiers expands with NSG ($\frac{\partial S_R}{\partial \lambda} > 0$, $\lambda = 1$). As the increase in $\lambda$ reduces the portion of curve $k_R(h)$ that enlarges the space of rentiers and augments the portion that shrinks this space, with the former tending towards 0 ($\frac{\sigma - (\sigma - 1)\alpha_L}{\lambda(\sigma - 1)\alpha_L} \frac{w_L}{w_H} \xrightarrow{\lambda \to \infty} 0$) then the space of rentiers shrinks from a certain value of $\lambda$ onwards. There is then an inverted-U relationship between the NSG intensity $\lambda$ and the dimension of the space of rentiers.

If the space of rentiers shrinks with $\lambda$ at the outcome of globalization ($\frac{\partial S_R}{\partial \lambda} < 0$, $\lambda = 1$), then this space will continuously shrink throughout the globalization process (increase in $\lambda$).

**APPENDIX 8.**

The space of exclusion gathers all the households situated below the curve

$$h = \frac{\bar{c} \lambda^{-\alpha} - \tau \bar{r}k - \bar{c}}{\bar{w}_H}$$

within the space of households.
Consider now the relation $\eta = \eta(\lambda)$ that links the variation in $\eta$ to the variation in $\lambda$ for the couple of values $(\lambda, \eta)$. We can write:

$$h = h(\lambda) = \frac{\bar{c} \lambda^{-\alpha_L} - \tau r(k - k)/\eta(\lambda) - \bar{k} - \lambda^{-1}w_l}{\bar{w}_H}.$$  

If this function is such that $\bar{w}_H \frac{\partial h}{\partial \lambda} > 0$, then the combination of the variations in $\lambda$ and $\eta$ enlarges $S_E$. Hence, $S_E$ enlarges if:

$$\frac{\partial h}{\partial \lambda} > 0 \iff -\alpha_L \lambda^{-\alpha_L-1} = \tau r(k - k) \frac{\partial \eta}{\eta^2} + \lambda^{-2} w_L > 0 \iff \frac{\partial \eta}{\eta \lambda} > \frac{\alpha_L \lambda^{1-\alpha_L} - w_L}{\tau r(k - k)} \frac{\eta}{\lambda}.$$ 

We place ourselves in the case where the increase in $\lambda$ makes the number of excluded to decrease, i.e., $\lambda > \left(\frac{w_L}{\alpha_L \bar{c}}\right)^{1/(1-\alpha_L)}$. Hence $\frac{\alpha_L \lambda^{1-\alpha_L} - w_L}{\tau r(k - k)} \frac{\eta}{\lambda} > 0$.

For the combination of the variations in $\lambda$ and $\eta$ to enlarge $S_E$, the rate of increase in $\eta$ must be higher than $\frac{\alpha_L \lambda^{1-\alpha_L} - w_L}{\tau r(k - k)} \frac{\eta}{\lambda}$.

**APPENDIX 9.**

**Table A2. Distribution of Financial wealth (stocks shares) by income level**

<table>
<thead>
<tr>
<th>Income level</th>
<th>% of households 2010</th>
<th>% Stock shares owned 2010</th>
<th>Cumulative 2010</th>
<th>Cumulative 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\geq 250,000$</td>
<td>3.6</td>
<td>50.3</td>
<td>50.3</td>
<td>40.6</td>
</tr>
<tr>
<td>[100,000, 250,000]</td>
<td>14.4</td>
<td>26.1</td>
<td>76.4</td>
<td>68.6</td>
</tr>
<tr>
<td>[75,000, 100,000]</td>
<td>10.1</td>
<td>6.5</td>
<td>82.9</td>
<td>77.4</td>
</tr>
<tr>
<td>[50,000, 75,000]</td>
<td>18.1</td>
<td>8.4</td>
<td>91.3</td>
<td>89.3</td>
</tr>
<tr>
<td>[25,000, 50,000]</td>
<td>27.7</td>
<td>5.5</td>
<td>96.8</td>
<td>97.6</td>
</tr>
<tr>
<td>[15,000, 25,000]</td>
<td>14.0</td>
<td>1.2</td>
<td>98.0</td>
<td>98.9</td>
</tr>
<tr>
<td>&lt;15,000</td>
<td>12.1*</td>
<td>2.0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>All</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Wolff (2012) p.80. *90% of these 12.1% households (i.e. 10.9% of households) have no stocks share.

**References**


