Technical Note of the Article

"Globalisation and the Inequality-Unemployment Trade-off"

In this technical note, we successively provide:

1. The simulations showing that $u_I - u_E > 0$ for $1 \leq \bar{w}_E < \bar{w}_I \leq 5$, as indicated in Proposition 2.

2. Some of the simulations implemented to illustrate the model's findings (as mentioned in the introduction of section 4).

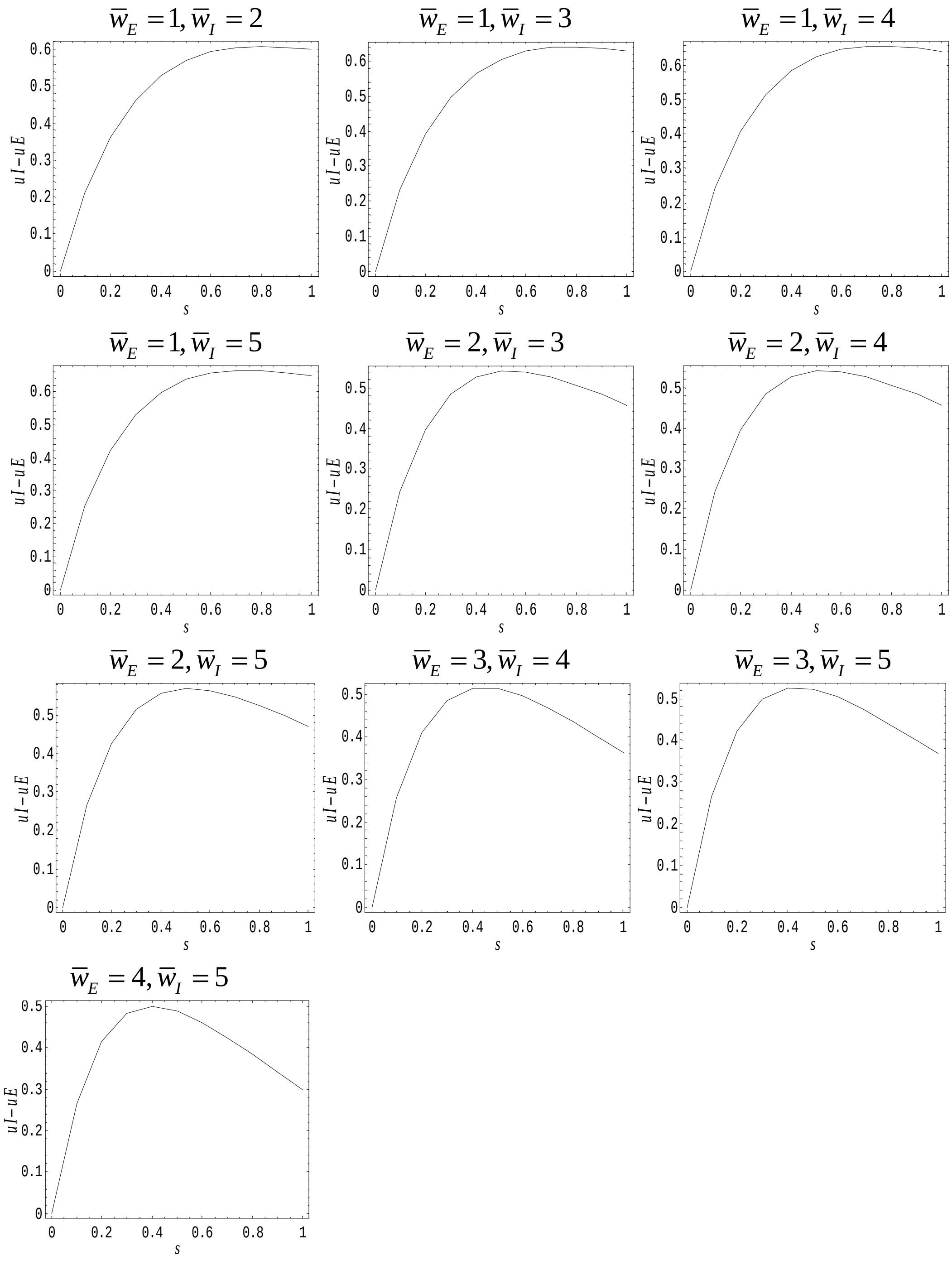
3. The method and successive steps of the simulation of the European case (section 4).

4. The simulations that show that $\partial f / \partial s < 1$ when the adjustment operates through the skill endowment, as indicated in Appendix B.

5. The simulations that show that $\partial f / \partial s < 1$ when the adjustment operates through the skill premium, as indicated in Appendix B.

1. Simulation to verify that $u_I - u_E > 0$ for $1 \le \overline{w}_E < \overline{w}_I \le 5$ (Proposition 2)

We simulate the difference $u_I - u_E = \dfrac{1-f}{1+f}\overline{w}_E\overline{\lambda}_E - \dfrac{2-s-f}{s+f}\overline{w}_I\overline{\lambda}_I + (\overline{\lambda}_E - \overline{\lambda}_I)$ (calculated from equation (6) in the article) for all the <u>*constant*</u> couples $(\overline{w}_E, \overline{w}_I)$ such as $1 \le \overline{w}_E < \overline{w}_I \le 5$ and for each value of $s \in [0,1[$, and the related value of *f* calculated from equation (11) in the text. We only display the integer values of $\overline{w}_E$ and $\overline{w}_I$, in-between values producing the same profiles. In all cases, we find that $u_I > u_E$.



2. Illustration of the model findings

We simulate the impact of a growing South (globalisation) on the three types of adjustment, i.e., the adjustments through the skill endowments, the skill premia and the unemployment rates.

We suppose that at time 0, (i) the size of the South is nil ($s=0$), (ii) the Northern skill premia $\overline{w}_E$ and $\overline{w}_I$ are given and (iii) both Northern countries are at full employment. We then calculate the initial value of f from equation (10) in the article, i.e. $\frac{1-f^2+(1-f)^2\overline{w}_E}{f^2-s^2+(f-s)\left(2-(f+s)\right)\overline{w}_I}-\left(\frac{\overline{w}_E}{\overline{w}_I}\right)^{1-f}=0$, and the initial relative factor endowments $\overline{\lambda}_i$ from equation (6) in the article: $u_i=1-\frac{(2-a_i)w_i+a_i}{a_i}\lambda_i=0,\ i=E,I$.

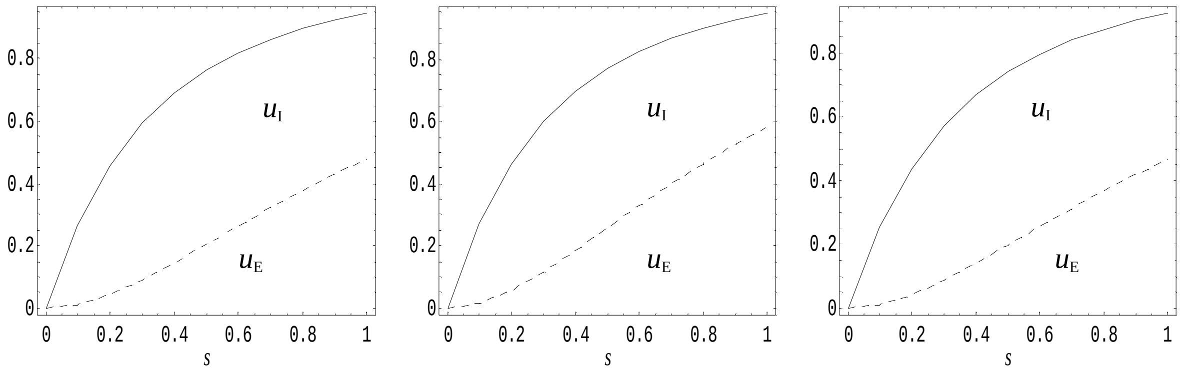
Three sets of simulations are implemented, corresponding to three possible couples of Northern countries in terms of differences in inequality. We therefore consider three types of countries that broadly portray the situation of the US, Continental Western Europe (CE) and Scandinavia (Scan) in terms of inequality, i.e. in terms of skill premium. The initial values of the skill premia are chosen so as to be consistent with the earnings inter-decile ratios of these three countries in the first half of the nineties (OECD): $\overline{w}_{US}=4,\ \overline{w}_{CE}=3,\ \overline{w}_{Scan}=2$. The developments induced by globalisation are then calculated by successively considering the three sets of couple formed by these countries taken two-by-two. Obviously, these are only simulation exercises because (i) the North comprises more than 2 areas, (ii) Scandinavia is very small compared to both the US and Continental Europe, and (iii) other factors, such as technological change and productivity differences between Northern countries produce key impacts on both inequality and unemployment.

The selected exogenous variables ($\overline{w}_E$, $\overline{w}_I$ and $\overline{N}$) and the (calculated) related initial relative endowments ($\overline{\lambda}_E$, $\overline{\lambda}_I$) and skill intensities ($\overline{h}_E$ and $\overline{h}_I$) are depicted in Table 1.

Table 1: Skill premia and factor endowments at the time 0

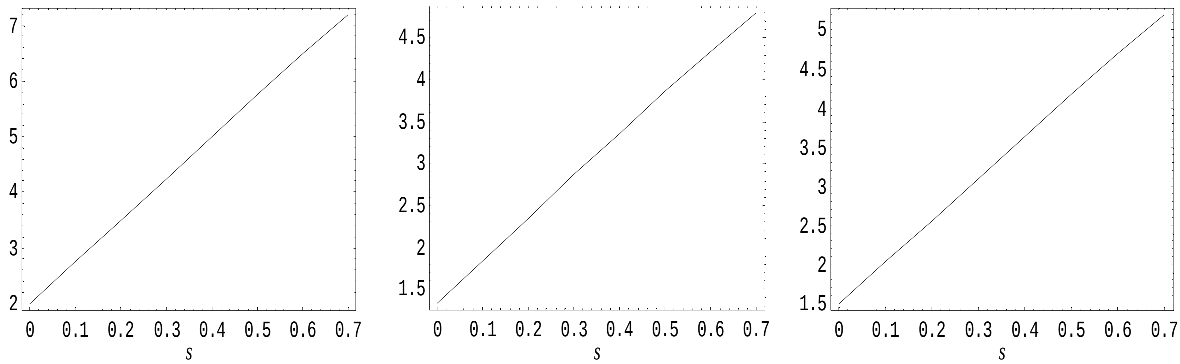
	$\overline{w}_E$	$\overline{w}_I$	$\overline{N}$	$\overline{H}_E$	$\overline{H}_I$	$\overline{\lambda}_E$	$\overline{\lambda}_I$	$\overline{h}_E$	$\overline{h}_I$
Scan vs US	2	4	10^6	5,21595x10^6	539000	0.52	0.054	1.09	0.057
CE vs US	3	4	10^6	4,16137x10^6	524732	0.42	0.052	0.71	0.055
Scan vs CE	2	3	10^6	5,32758x10^6	747843	0.53	0.075	1.14	0.081

We consider the three adjustment factors acting alone. We thereby successively calculate the impact of globalisation (i) on unemployment rates when the skill premia and the skill endowments remain unchanged, (ii) on the skill premia corresponding to full employment for given (constant) skill endowments, and (iii) on the change in skill endowments required to maintain full employment without change in the skill premia.



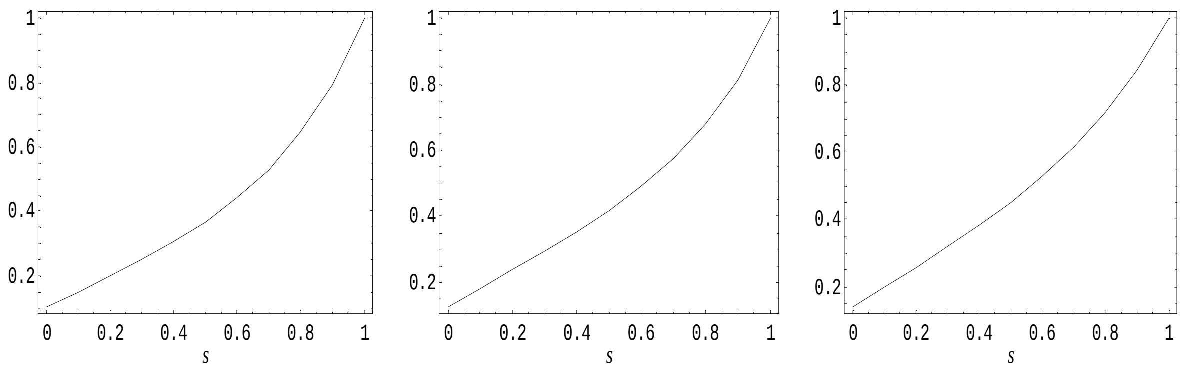
a. Scandinavia vs US   b. CE vs US   c. Scandinavia vs CE

Figures1: Adjustment through unemployment (u_I and u_E)



a. Scandinavia vs US   b. CE vs US   c. Scandinavia vs CE

Figure 2: Adjustment through the skill premia (ratio w_I / w_E)



a. Scandinavia vs US   b. CE vs US   c. Scandinavia vs CE

Figure 3: Adjustment through the skill endowments (ratio λ_I / λ_E)

Figures 1, 2 and 3 respectively picture and compare the adjustments through unemployment (the changes in ratio u_I and u_E), through the skill premia (change in the ratio w_I / w_E of the skill premia) and through the skill endowment (ratio of the relative skill endowments λ_I / λ_E) for the three possible couples of countries. In the three configurations, the adjustment process results in an increase in unemployment, in the skill premium and the skill endowment that is substantially higher in the inequality-oriented country than in the egalitarian country.

3. Simulations for 3 European areas: Methodology

We present the construction of the model with 5 areas (the South, 3 European areas, and US+Japan) and the method utilised to implement the simulations.

3.1. General framework

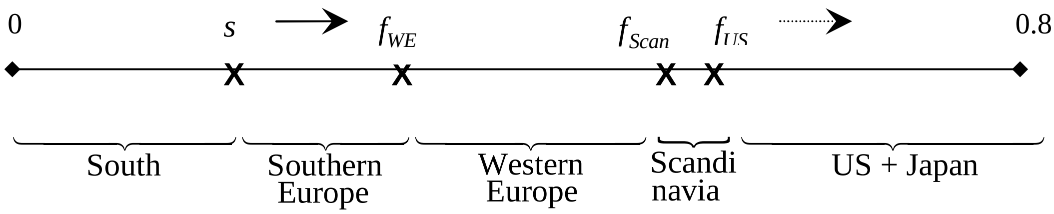
Goods are uniformly distributed over the segment $[0, 0.8]$.

The US and Japan altogether account for 60% of the goods produced in the North, and their production concentrates in the most skilled intensive goods.

There are 3 European areas of different weight. Western Europe (*WE*) accounts for 60% of the European population, Southern Europe (*SE*) for 30%, and Scandinavia (*Scan*) for 10%,

We start from a situation where the South makes up 15% of the produced goods ($s_0 = 0.12$), and we make this proportion grow until 50% (s = 0.40).

The initial values of the skill premia for the three European areas are: $w_{SE} = 3.7,\ w_{WE} = 3,\ w_{Scan} = 2.2$.



The Globalisation process with 3 European Areas

3.2. Factor utilisation in the European countries

In country i (i = *SE, WE*) *Scan* and industry j the production of which is located in this country, the firm's profit maximisation determines the following relation between the skill intensity $h_{ij} \equiv H_{ij} / L_{ij}$ and the skill premium w_i :

$$h_{ij} = \frac{j}{1-j} w_i^{-1} \tag{1}$$

For any pair of goods (j,k) that are produced by the same country i, we have for the same reason as in the three-country model:

$$H_{ij} = \frac{j}{k} H_{ik} \tag{2}$$

$$L_{ij} = \frac{1-j}{1-k} L_{ik} \tag{3}$$

For any country i that produces goods $\left[f_{i,\min}, f_{i,\max} \right]$, the skill intensity in total production $h_i \equiv H_i / L_i$ is (see Appendix 1 in the text):

$$h_i = \frac{a_i}{2-a_i} w_i^{-1} \tag{4}$$

With $a_i = f_{i,\min} + f_{i,\max}$, and thereby: $a_{SE} = s + f_{WE}$, $a_{WE} = f_{WE} + f_{Scan}$, and $a_{Scan} = f_{Scan} + f_{US}$ with $f_{US} = 0.32 + 0.6 \times s$;

3.3. Inequality, unemployment and the skill relative endowment

Let $\tilde{H}_i$ and $\tilde{L}_i$ be respectively country i's endowments of skilled and unskilled labour, and H_i and L_i country i' s utilisation of skilled and unskilled labour. The countries' endowments can vary, in contrast with the total labour force $\bar{N}_i = \tilde{H}_i + \tilde{L}_i$ that is constant over time in the European countries.
The proportion of skilled labour in country i's total labour force is $\lambda_i \equiv \tilde{H}_i / \bar{N}_i$.
Skilled labour is always fully employed whereas unskilled labour can be underemployed, and unemployment is thereby: $u_i = (\tilde{L}_i - L_i) / \bar{N}_i$.
By inserting $L_i = \frac{2-a_i}{a_i} w_i H_i$ (from relation 4) into the unemployment rate $u_i = \frac{\tilde{L}_i - L_i}{\bar{N}_i}$, we obtain:

$$u_i = 1 - \frac{(2-a_i)w_i + a_i}{a_i} \lambda_i \tag{5a}$$

Equation (5a) provides a relation between the rate of unemployment u_i, the skill premium w_i, and the relative endowment in skilled labour λ_i, for a given productive structure of the country (a_i). This relation is exactly the same as in the three-country model. This equation can also be written:

$$w_i = \frac{a_i}{2-a_i} \frac{1-u_i-\lambda_i}{\lambda_i} \tag{5b}$$

3.4. Determination of the relations between the thresholds

a) Balanced trade

The total nominal incomes of countries i (R_i) and k (R_k) can be expressed in terms of the World total income R_W. As $R_i = \int_{f_{i,\min}}^{f_{i,\max}} p_j Y_j dj$, $R_k = \int_{f_{k,\min}}^{f_{k,\max}} p_j Y_j dj$, and $R_W = \int_0^{0.8} p_j Y_j dj$, and since $p_j Y_j = p_k Y_k \quad \forall j,k \in [0,0.8]$, we have: $R_i = (f_{i,\max} - f_{i,\min}) R_W / 0.8$, $R_k = (f_{k,\max} - f_{k,\min}) R_W / 0.8$. In addition, country i's exports to country k (X_{ik}) represents a proportion $(f_{i,\max} - f_{i,\min})/0.8$ of country k's total demand and income: $X_{ik} = (f_{i,\max} - f_{i,\min}) R_k / 0.8$ $\Rightarrow X_{ik} = (f_{i,\max} - f_{i,\min})(f_{k,\max} - f_{k,\min}) R_W \times 0.8^{-2}$. Likewise, country i's imports from country k (M_{ik}) accounts for the proportion $(f_{k,\max} - f_{k,\min})/0.8$ of its own total income: $M_{ik} = (f_{k,\max} - f_{k,\min}) R_i / 0.8 = (f_{k,\max} - f_{k,\min})(f_{i,\max} - f_{i,\min}) R_W \times 0.8^{-2}$. As a consequence, the bilateral trade between any pair of countries (i,k) is always balanced: $X_{ik} = M_{ik}$.

Balanced trade $X_{ik} = M_{ik}$ can also be written $(f_{i,\max} - f_{i,\min}) R_k = (f_{k,\max} - f_{k,\min}) R_i$. By inserting $R_i = w_{Li}(L_i + w_i H_i)$ and $R_k = w_{Lk}(L_k + w_k H_k)$ into the preceding relation, we obtain:

$$\frac{f_{i,\max} - f_{i,\min}}{f_{k,\max} - f_{k,\min}} (L_k + w_k H_k) = \frac{w_{Li}}{w_{Lk}} (L_i + w_i H_i)$$

And, for any pair of countries (i, i+1) that follow each other:

$$\frac{f_{i,\max} - f_{i,\min}}{f_{i+1,\max} - f_{i,\max}} (L_{i+1} + w_{i+1} H_{i+1}) = \frac{w_{Li}}{w_{Li+1}} (L_i + w_i H_i) \quad (6)$$

Equation (6) provides a relation between countries i and (i+1) frontier goods $(f_{i\min}, f_{i\max}, f_{i+1,\max})$ that depends on their skill premia w_i and w_{i+1}, on their factor utilisations, and on the ratio w_{Li} / w_{Li+1} of the wages (in the same currency) of unskilled labour in the North countries.

b) Ratio w_{Li} / w_{Li+1} and the rewriting of equation (6)

Countries i and i+1 are equally competitive for the production of good $f_{i,\max} = f_{i+1,\min} \equiv f_{i,i+1}$. Consequently, the price of $f_{i,i+1}$ ($p_{fi,i+1}$) is the same when produced by i $\left(p_{fi,i+1}(i)\right)$ and by i+1$\left(p_{fi,i+1}(i+1)\right)$. Because of the Cobb-Douglas technology: $p_{f_{i,i+1}}(i) = \frac{1}{A}\left(\frac{w_{Li}}{1-f_{i,i+1}}\right)\left(\frac{1-f_{i,i+1}}{f_{i,i+1}} w_i\right)^{f_{i,i+1}}$ and $p_{f_{i,i+1}}(i+1) = \frac{1}{A}\left(\frac{w_{Li+1}}{1-f_{i,i+1}}\right)\left(\frac{1-f_{i,i+1}}{f_{i,i+1}} w_{i+1}\right)^{f_{i,i+1}}$. The law of one price for good $f_{i,i+1}$ in the same currency ($p_{fi,i+1}(i) = p_{fi,i+1}(i+1)$) entails after simplifying:

$$w_{Li} / w_{Li+1} = \left(w_{i+1} / w_i\right)^{f_{i,i+1}} \quad (7)$$

By inserting (7) into (6), we obtain:

$$\frac{f_{i,\max} - f_{i,\min}}{f_{i+1,\max} - f_{i,\max}}(L_{i+1} + w_{i+1}H_{i+1}) = \left(\frac{w_{i+1}}{w_i}\right)^{f_{i,\max}} (L_i + w_i H_i) \qquad (8)$$

Equation (8) provides the relation that binds the three frontier goods $(f_{i,\min}, f_{i,\max}, f_{i+1,\max})$ of any couple of neighbour countries *i* and (*i*+1), depending on their skill premia and factor utilisations.
The successive frontier-goods are: *s*, f_{WE}, f_{Scan}, $f_{US} = 0.32 + 0.6 \times s$. To determine f_{WE} and f_{Scan}, we can write relation (8) for both country pairs (*SE, WE*) and (*WE, Scan*).

1. *Southern Europe – Western Europe:*

$$\frac{f_{WE} - s}{f_{Scan} - f_{WE}}(L_{WE} + w_{WE}H_{WE}) = \left(\frac{w_{WE}}{w_{SE}}\right)^{f_{WE}} (L_{SE} + w_{SE}H_{SE})$$

This may be written :

$$f_{Scan} = (f_{WE} - s)\frac{L_{WE} + w_{WE}H_{WE}}{L_{SE} + w_{SE}H_{SE}}\left(\frac{w_{SE}}{w_{WE}}\right)^{f_{WE}} + f_{WE} \qquad (9)$$

2. *Western Europe – Scandinavia:*

$$\frac{f_{Scan} - f_{WE}}{f_{US} - f_{Scan}}(L_{Scan} + w_{Scan}H_{Scan}) = \left(\frac{w_{Scan}}{w_{WE}}\right)^{f_{Scan}} (L_{WE} + w_{WE}H_{WE})$$

This may be written:

$$f_{WE} = f_{Scan} - (f_{US} - f_{Scan})\frac{L_{WE} + w_{WE}H_{WE}}{L_{Scan} + w_{Scan}H_{Scan}}\left(\frac{w_{Scan}}{w_{WE}}\right)^{f_{Scan}} \qquad (10)$$

It can be noted that relations (9) and (10) that bind f_{WE} and f_{Scan} to *s* depend on the values of $L_i + w_i H_i$, *i = SE, WE, Scan*.

c) Calculation of $L_i + w_i H_i$

By combining $h_i \equiv \tilde{H}_i / L_i$ and $\bar{N}_i \equiv \tilde{H}_i + L_i + U_i$, we can express L_i and H_i in terms of u_i, h_i and $\bar{N}_i$:

$$L_i = \frac{1 - u_i}{1 + h_i}\bar{N}_i; \qquad H_i = \frac{1 - u_i}{1 + h_i}h_i\bar{N}_i$$

By inserting (4) into the preceding relations, we obtain:

$$L_i = \frac{(2 - a_i)(1 - u_i)w_i\bar{N}_i}{(2 - a_i)w_i + a_i}; \qquad H_i = \frac{a_i(1 - u_i)\bar{N}_i}{(2 - a_i)w_i + a_i}$$

And:

$$L_i + w_i H_i = \frac{2w_i(1-u_i)\overline{N}_i}{(2-a_i)w_i + a_i} \tag{11a}$$

By inserting equation 5b ($w_i = \frac{a_i}{2-a_i}\frac{1-u_i-\lambda_i}{\lambda_i}$) into (11a), it comes:

$$L_i + w_i H_i = \frac{2(1-u_i-\lambda_i)\overline{N}_i}{2-a_i} \tag{11b}$$

By inserting equation 5a ($u_i = 1 - \frac{(2-a_i)w_i + a_i}{a_i}\lambda_i$) into (11a), it comes:

$$L_i + w_i H_i = \frac{2w_i\lambda_i\overline{N}_i}{a_i} \tag{11c}$$

Applying the relations above to the three countries *SE, WE* and *Scan* for $a_i = f_{i,\min} + f_{i,\max}$ yields:

SE:

$$L_{SE} + w_{SE}H_{SE} = \frac{2w_{SE}(1-u_{SE})\overline{N}_{SE}}{(2-s-f_{WE})w_{SE} + s + f_{WE}} \tag{12a}$$

$$L_{SE} + w_{SE}H_{SE} = \frac{2(1-u_{SE}-\lambda_{SE})\overline{N}_{SE}}{2-s-f_{WE}} \tag{12b}$$

$$L_{SE} + w_{SE}H_{SE} = \frac{2w_{SE}\lambda_{SE}\overline{N}_{SE}}{s+f_{WE}} \tag{12c}$$

WE:

$$L_{WE} + w_{WE}H_{WE} = \frac{2w_{WE}(1-u_{WE})\overline{N}_{WE}}{(2-f_{WE}-f_{Scan})w_{WE} + f_{WE} + f_{Scan}} \tag{13a}$$

$$L_{WE} + w_{WE}H_{WE} = \frac{2\left(1-u_{WE}-\lambda_{WE}\right)\overline{N}_{WE}}{2-f_{WE}-f_{Scan}} \tag{13b}$$

$$L_{WE} + w_{WE}H_{WE} = \frac{2w_{WE}\lambda_{WE}\overline{N}_{WE}}{f_{WE}+f_{Scan}} \tag{13c}$$

Scan:

$$L_{Scan} + w_{Scan}H_{Scan} = \frac{2w_{Scan}(1-u_{Scan})\overline{N}_{Scan}}{(2-f_{Scan}-f_{US})w_{Scan} + f_{Scan} + f_{US}} \tag{14a}$$

$$L_{Scan} + w_{Scan}H_{Scan} = \frac{2\left(1-u_{Scan}-\lambda_{Scan}\right)\overline{N}_{Scan}}{2-f_{Scan}-f_{US}} \tag{14b}$$

$$L_{Scan} + w_{Scan}H_{Scan} = \frac{2w_{Scan}\lambda_{Scan}\overline{N}_{Scan}}{f_{Scan}+f_{US}} \tag{14c}$$

d) The equations providing f_{WE} and f_{Scan} in relation to s

We determine the relations that provide f_{WE} and f_{Scan} in the 3 possible adjustment processes, i.e., (i) the adjustment through λ_i (w_i and u_i remaining unchanged), (ii) the adjustment through w_i (λ_i and u_i remaining unchanged), and (iii) the adjustment through u_i (w_i and λ_i remaining unchanged). In each case, the two equations that determine f_{WE} and f_{Scan} must not integrate the adjustment variable; they only integrate the constant adjustment tools and *s*.

1. The adjustment through λ_i

By inserting (12a) and (13a) into (9), and (13a) and (14a) into (10), and provided that $u_{SE} = u_{WE} = u_{Scan} = 0$ since λ_i is the adjustment variable, we obtain:

Equation (15a):

$$(f_{Scan} - f_{WE})\left(2w_{WE} - (w_{WE}-1)(f_{WE} + f_{Scan})\right)\frac{w_{SE}\bar{N}_{SE}}{w_{WE}\bar{N}_{WE}}\left(\frac{w_{WE}}{w_{SE}}\right)^{f_{WE}} - (f_{WE} - s)\left(2w_{SE} - (w_{SE}-1)(s + f_{WE})\right) = 0$$

Equation (16a):

$$\frac{w_{WE}\bar{N}_{WE}}{w_{Scan}\bar{N}_{Scan}}(f_{US} - f_{Scan})\left(2w_{Scan} - (w_{Scan}-1)(f_{Scan} + f_{US})\right)\left(\frac{w_{Scan}}{w_{WE}}\right)^{f_{Scan}} - (f_{Scan} - f_{WE})\left(2w_{WE} - (w_{WE}-1)(f_{WE} + f_{Scan})\right) = 0$$

2. The adjustment through w_i

By inserting (5b), (12b) and (13b) into (9), and (5b), (13b) and (14b) into (10), and provided that $u_{SE} = u_{WE} = u_{Scan} = 0$ since w_i is the adjustment variable, we obtain:

Equation (15b):

$$f_{Scan} = (f_{WE} - s)\frac{(2 - s - f_{WE})(1-\lambda_{WE})\bar{N}_{WE}}{(2 - f_{WE} - f_{Scan})(1-\lambda_{SE})\bar{N}_{SE}}\left(\frac{(1-\lambda_{SE})\lambda_{WE}}{(1-\lambda_{WE})\lambda_{SE}}\,\frac{s + f_{WE}}{2 - s - f_{WE}}\,\frac{2 - f_{WE} - f_{Scan}}{f_{WE} + f_{Scan}}\right)^{f_{WE}} + f_{WE}$$

Equation (16b):

$$f_{WE} = f_{Scan} - (f_{US} - f_{Scan})\frac{(2 - f_{Scan} - f_{US})(1-\lambda_{WE})\bar{N}_{WE}}{(2 - f_{WE} - f_{Scan})(1-\lambda_{Scan})\bar{N}_{Scan}}\left(\frac{(1-\lambda_{Scan})\lambda_{WE}}{(1-\lambda_{WE})\lambda_{Scan}}\,\frac{f_{Scan} + f_{US}}{2 - f_{Scan} - f_{US}}\,\frac{2 - f_{WE} - f_{Scan}}{f_{WE} + f_{Scan}}\right)^{f_{Scan}}$$

3. The adjustment through u_i

By inserting (12c) and (13c) into (9), and (13c) and (14c) into (10), we obtain:

$$f_{Scan}^{\ 2} - f_{WE}^{\ 2} - (f_{WE}^{\ 2} - s^2)\frac{w_{WE}\lambda_{WE}\bar{N}_{WE}}{w_{SE}\lambda_{SE}\bar{N}_{SE}}\left(\frac{w_{SE}}{w_{WE}}\right)^{f_{WE}} = 0 \qquad (15c)$$

$$f_{Scan}^{\ 2} - f_{WE}^{\ 2} - (f_{US}^{\ 2} - f_{Scan}^{\ 2})\frac{w_{WE}\lambda_{WE}\bar{N}_{WE}}{w_{Scan}\lambda_{Scan}\bar{N}_{Scan}}\left(\frac{w_{Scan}}{w_{WE}}\right)^{f_{Scan}} = 0 \qquad (16c)$$

3.5. Simulations

a) Simulation of the initial position

At period 0 (initial position), we have: $s_0 = 0.12$, $w_{SE} = 3.7$, $w_{WE} = 3$, $w_{Scan} = 2.2$, $\overline{N}_{WE} / \overline{N}_{SE} = 2$, $\overline{N}_{WE} / \overline{N}_{Scan} = 6$ and $u_{SE} = u_{WE} = u_{Scan} = 0$. We can thereby calculate the values f_{WE} and f_{Scan} at time 0 from relations (15a), (16a) and $f_{US} = 0.32 + 0.6 \times s_0$.
We calculate the initial value of λ_i ($\lambda_i(0)$) from equation (5a) provided that $u_i = 0$, i = *SE, WE, Scan*.

b) The adjustment through the skill endowments

The skill premia are unchanged ($w_{SE} = 3.7$, $w_{WE} = 3$, $w_{Scan} = 2.2$) and $u_{SE} = u_{WE} = u_{Scan} = 0$ all over the globalisation process. We can thus calculate the values f_{WE} and f_{Scan} for each value of s from relations (15a), (16a) and $f_{US} = 0.32 + 0.6 \times s$.
Since unemployment is always nil, we can calculate the λ_i for each country and each value of s by inserting the related values of f_{WE}, f_{Scan} and f_{US} into relation (5a) with $u_i = 0$ (given that $a_i = f_{i,\min} + f_{i,\max}$).

c) The adjustment through the skill premia

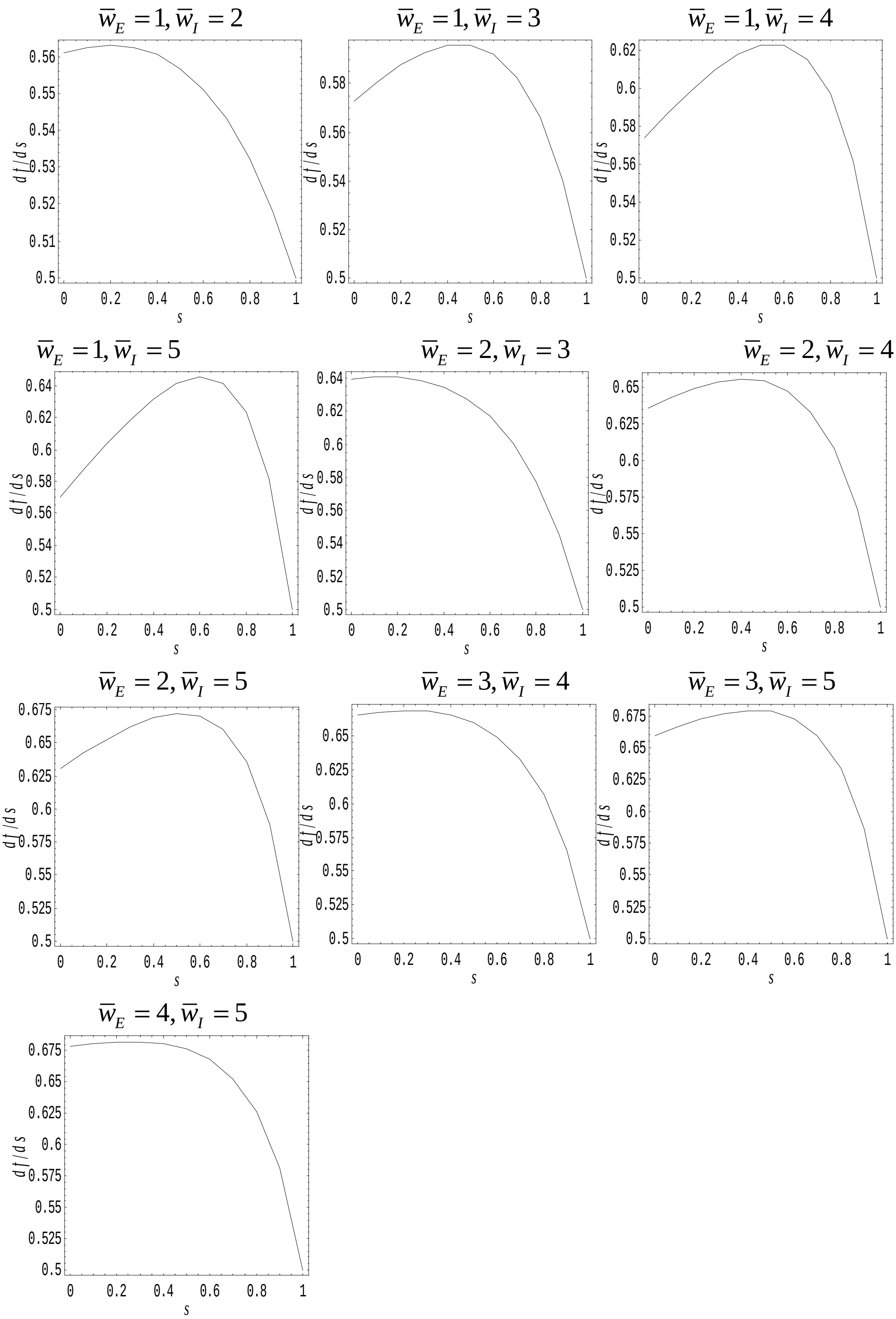
The skill endowments λ_i remain at their initial values and unemployment is nil in the three European areas all over the globalisation process. We can thus determine f_{WE} and f_{Scan} for each value of s from equations (15b) and (16b).
Inserting these values in (5b) for $u_i = 0$ and $\lambda_i = \lambda_i(0)$ determines the equilibrium skill premium for each country and each stage of the globalisation process.

d) The adjustment through unemployment

The skill premia w_i and the relative skill endowments λ_i remain at their initial values all over the globalisation process.
We can thus calculate the values f_{WE} and f_{Scan} for each value of s from relations (15c) and (16c) and $f_{US} = 0.32 + 0.6 \times s$.
We can subsequently calculate u_i for each country and each value of s by inserting the related values of f_{WE}, f_{Scan} and f_{US} into relation (5a) (given that $a_i = f_{i,\min} + f_{i,\max}$).

4. $\partial f / sf < 1$ when the adjustment operates through the skill endowment (in Appendix B)

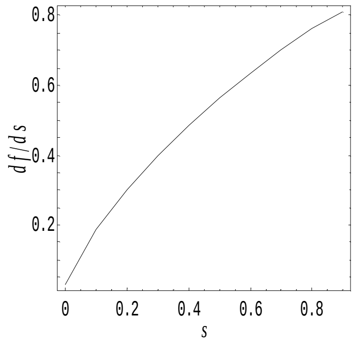
We simulate the values of $\partial f / \partial s$ for all the $s \in [0,1[$ and all the *constant* couples $(\overline{w}_E, \overline{w}_I)$ such as $1 \leq \overline{w}_E < \overline{w}_I \leq 5$. We only display the integer values of $\overline{w}_E$ and $\overline{w}_I$, in-between values producing the same profiles. In all cases, we find that $\partial f / \partial s < 1$.



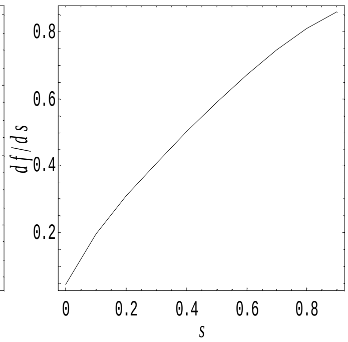
5. $\partial f / sf < 1$ in case of adjustment through the skill premium (Appendix B)

We simulate the values of $\partial f / \partial s$ for all the $s \in [0,1[$ and all the *initial* couples (w_E, w_I) such that $1 \leq w_E < w_I \leq 5$ (afterwards, w_E and w_I vary unlike the factor endowments that remain at their initial values). We only display the integer values of w_E and w_I, in-between values producing the same profiles. In all cases, we find that $\partial f / \partial s < 1$.

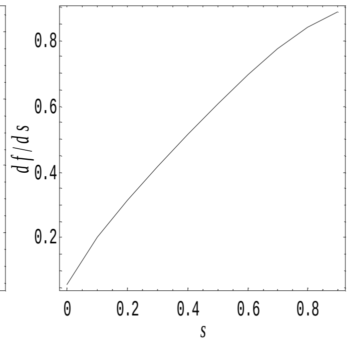
$\bar{w}_E = 1, \bar{w}_I = 2$



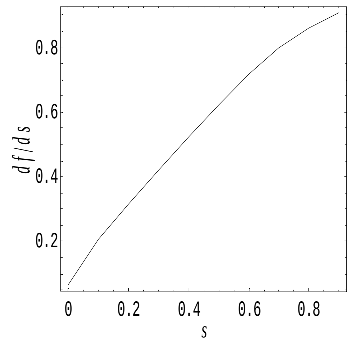
$\bar{w}_E = 1, \bar{w}_I = 3$



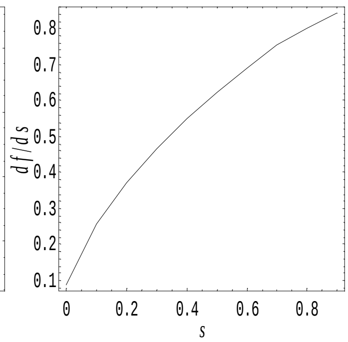
$\bar{w}_E = 1, \bar{w}_I = 4$



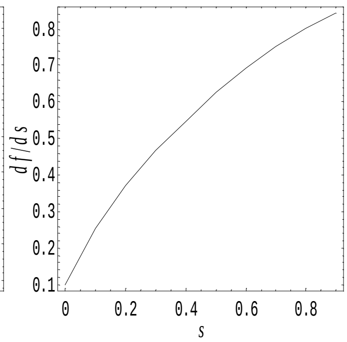
$\bar{w}_E = 1, \bar{w}_I = 5$



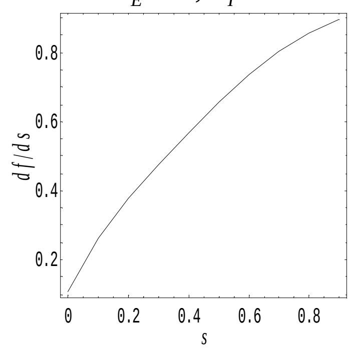
$\bar{w}_E = 2, \bar{w}_I = 3$



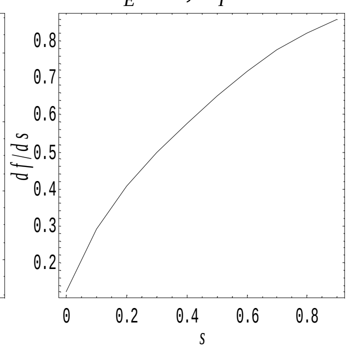
$\bar{w}_E = 2, \bar{w}_I = 4$



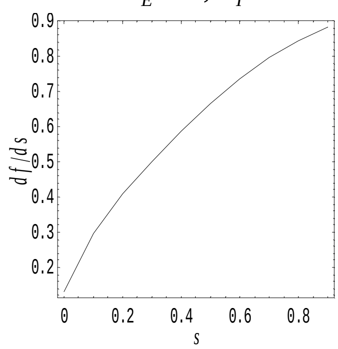
$\bar{w}_E = 2, \bar{w}_I = 5$



$\bar{w}_E = 3, \bar{w}_I = 4$



$\bar{w}_E = 3, \bar{w}_I = 5$



$\bar{w}_E = 4, \bar{w}_I = 5$