Working Paper Series

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ECINEQ 2023 634

ECINEQ 2023 634
2023 January
www.ecineq.org

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Joel Hellier
LEM-CNRS (UMR 9221), Lille Univ. and LEMNA, Nantes Univ.

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This paper proposes a new explanation for the rise in top performers' income based on an asymmetry in globalization, with one country producing globalized non-rivalrous performances (music, films, series, entertainment programmes etc.) whereas other countries produce purely domestic ones. In the country with globalized performances, the globalization dynamics (growing number of countries involved in the global market) entails an increase in the number and incomes of performers and an increase in inequality by the top. In countries with purely national performances, the participation in the global economy reduces the number and incomes of performers and lessens inequality by the top. In contrast, when globalization is symmetric (all countries producing globalized performances), there is no change in the number and incomes of performers in all countries compared to cultural autarky. These results are in line with several characteristics observed in activities directly impacted by the cultural supremacy of American and English speaking countries in the global economy: 1) the share of Anglo-Saxon countries in the top 100 richest is substantially higher for actresses, actors, singers and TV show and film producers than for other occupations (CEOs, businessmen etc.), 2) the increase in the share of top incomes is significantly higher in Anglo-Saxon countries, and 3) the increase in inequality is greater in those countries.

Keyword: Asymmetry, Globalization, Inequality, Performers, Superstars.

JEL Cassification: F66, J31, J44, L82.

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This paper proposes a new explanation for the rise in top performers' income based on an asymmetry in globalization, with one country producing globalized non-rivalrous performances (music, films, series, entertainment programmes etc.) whereas other countries produce purely domestic ones. In the country with globalized performances, the globalization dynamics (growing number of countries involved in the global market) entails an increase in the number and incomes of performers and an increase in inequality by the top. In countries with purely national performances, the participation in the global economy reduces the number and incomes of performers and lessens inequality by the top. In contrast, when globalization is symmetric (all countries producing globalized performances), there is no change in the number and incomes of performers in all countries compared to cultural autarky. These results are in line with several characteristics observed in activities directly impacted by the cultural supremacy of American and English speaking countries in the global economy: 1) the share of Anglo-Saxon countries in the top 100 richest is substantially higher for actresses, actors, singers and TV show and film producers than for other occupations (CEOs, businessmen etc.), 2) the increase in the share of top incomes is significantly higher in Anglo-Saxon countries, and 3) the increase in inequality is greater in those countries.

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Corresponding author:

Joël Hellier, LEM-CNRS (UMR 9221), University of Lille, FRANCE. *joel.hellier@univ-lille.fr* / *joel.hellier@univ-nantes.fr*

Pers. address: 28 rue de Sévigné. 75004. Paris. FRANCE.

1. Introduction

This paper proposes a new explanation for the rise in top performers' income. The explanation relies on an asymmetry in globalization, with one country producing globalized performances whereas other countries produce purely domestic ones. Based on the supremacy of the Anglo-Saxon language and culture at the World level,[1] this explanation principally applies to the analysis of the incomes of singers, actresses/actors and media producers.

In the last forty years, the income share of the top of the income ladder has dramatically risen in most advanced economies and the increase has been particularly high in the US and Anglo-Saxon countries. The emergence of superstars with considerable pays has been observed in several occupations such as top managers, top athletes, actresses and actors, singers and performers in general. Moreover, in certain occupations such as singers, TV shows and film producers, actresses and actors, the shares of American and Anglo-Saxon professionals in the World top performers is far higher than in other professions.

Several theoretical models have been proposed to explain the huge increase in superstars' incomes, particularly for top managers. In this respect, the impact of globalization is typically based on the related market enlargement combined with technological progress which lessens the cost of performing and/or selling abroad.

We present here an explanation in which the substantial increase in performers' income is generated by an asymmetry with only one country producing global performances because of its cultural supremacy, the other countries producing purely domestic performances but consuming both global and domestic ones. We assume non-rivalrous performances and the globalization dynamics is characterised by a growing number of countries involved in the global economy. Without asymmetry (i.e., all countries producing global performances) globalization has no impact on the number and income of performers in each country. In contrast, an asymmetric globalization significantly modifies the market for performances. First, the proportion of performers in the population augments in the culturally dominating country whereas it shrinks in other countries, particularly in small countries. Second, the performers' incomes increase in the culturally dominating country and they decrease in other countries. Third, this generates growing inequality in the global (World) performance sector as well as in the country with globalized performances, whereas it reduces inequality in other countries.

[1] The terms 'cultural supremacy' and 'culturally dominating' should in not be understood as indicating a cultural superiority; they signify that the culture is adopted by other countries, in contrast with purely national ones.

The paper is original in that (i) it assumes an asymmetry in globalization in the sector producing non-rivalrous services, reproducing thereby a key characteristic of cultural performances, and (ii) it shows that this asymmetry is a key factor of growing inequality at the top of the income spectrum. The mechanisms presented in this paper permit to explain both (i) the outstanding weight of American and Anglo-Saxon countries among the richest performers in popular cultural activities compared to other activities and (ii) the substantial increase in those performers' income and wealth. It finally provides an additional explanation for the observation that Anglo-Saxon countries have known a higher increase in inequality than most other countries, particularly at the top of the income spectrum.

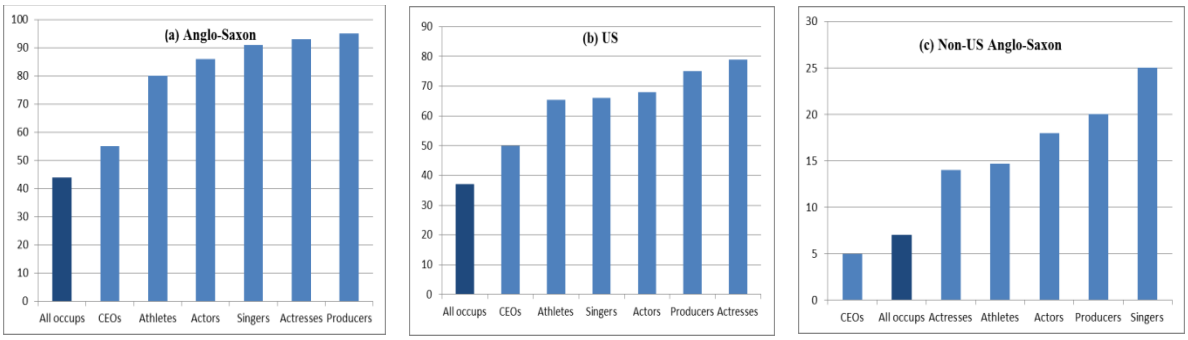
Section 2 briefly exposes some stylised facts and the literature on the subject. We present the model general framework in Section 3. The models with symmetric globalization and with asymmetric globalization are respectively analysed in Section 4 and 5. The main findings are discussed, possible extensions are mentioned and we conclude in Section 6.

2. Stylised facts and Literature

2.1. Some facts

Figs. 1 draw the shares of Anglo-Saxon countries, in which we distinguish the US and the non-US Anglo-Saxon, in the top 100 richest persons by occupation. On top of all occupations, we distinguish four professions: Chief Executive Officers (CEOs), athletes (all sports, both genders), actors and actresses (differentiated by gender), singers (both genders) and (TV shows and film) producers (both genders). Fig. 1 shows an Anglo-Saxon supremacy among the richest which is substantially larger for singers, actresses/actors and TV shows and film producers than for other occupations.

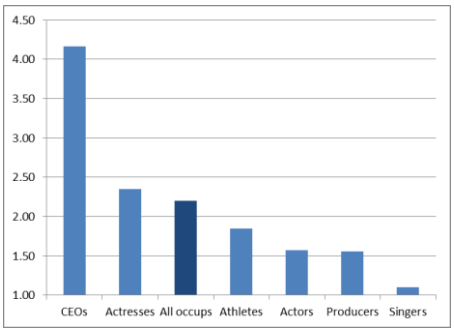
Figs. 1. Country shares (%) in the top 100 richest (net wealth) by occupation



Source: The Richest 2022. www.therichest.com. Non-US Anglo-Saxon = Australia, Canada, Ireland, New Zealand, United Kingdom.

Fig. 2 pictures the ratio $\frac{US\ Citizen\ in\ the\ category\ /\ non\text{-}US\ Anglo\text{-}Saxon\ citizen\ in\ the\ category}{US\ population\ /\ non\text{-}US\ Anglo\text{-}Saxon\ population}$ for the top 100 richest in the six selected occupations. When this ratio is higher than 1, it indicates American (US) supremacy in relation to other Anglo-Saxon countries in the related occupation. Fig. 2 clearly shows that the American supremacy amongst Anglo-Saxon counties is substantially higher for top managers than for cultural performers.

Fig. 2. Supremacy of the US upon other Anglo-Saxon countries by occupation*



Source: The Richest 2022.

* Ratio $\frac{US\ Citizen\ in\ the\ category\ /\ non\text{-}US\ Anglo\text{-}Saxon\ citizen\ in\ the\ category}{US\ population\ /\ non\text{-}US\ Anglo\text{-}Saxon\ population}$, 7 categories of top 100 richest.

As the earnings of actresses and actors and their ranking deeply fluctuate from one year to the next, the net wealth can be seen as an indicator of their incomes throughout their careers. In addition, in the last years, *Forbes* has published the lists of the 10 highest-paid actors and actresses based on total earnings over the year from June to June. To smooth the already mentioned fluctuations, we consider all those who are in the list from 2018 up to 2020 (3 years). As expected, the weight of American and Anglo-Saxon performers is disproportionately high, since they respectively account for 73.3% and 90% of the top 10 in the considered period.

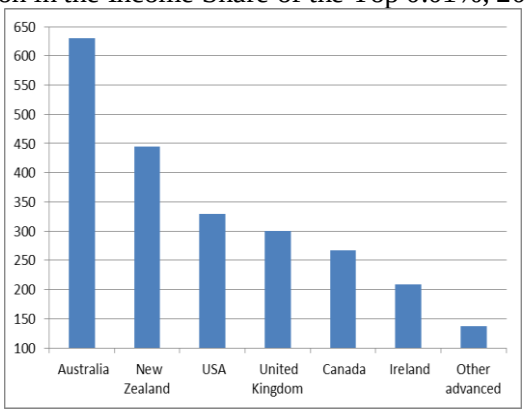
Three major lessons can be learnt from the above figures and data:

1) The weights of American and Anglo-Saxon citizen in the highest-paid actors are extraordinary high.
2) The weights of American and Anglo-Saxon among the richest are significantly larger for singers, actresses/actors and for TV shows and film producers than for other occupations. This suggests an American and Anglo-Saxon supremacy which is particularly high in popular cultural occupations.
3) Among Anglo-Saxon countries, the American supremacy is evident for economic superstars (CEOs) but lower for athletes, actors and producers, and there is no US

supremacy for singers. This suggests an integration of the Anglo-Saxon popular music occupations and to a lesser extent of the Anglo-Saxon actor and producer activities.

Long term comparative data on performers' incomes and wealth in different countries are unfortunately not available. So as to measure and compare the evolution in superstars' income in the countries, we select the variation in the income share of the top 0.01% from 1980 up to 2015 (Fig. 3).

Fig. 3. Variation in the Income Share of the Top 0.01%, 2015, 1980=100.



Source: WID. Adults. Pre-tax national income share. Equal split. Ireland has been inserted in the group of Anglo-Saxon countries. Other advanced countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland. For other advanced countries, the share is a non-weighted average.

All English-speaking advanced countries have known an increase in the income share of the Top 0.01 which is substantially higher than other advanced economies. If we consider 15 non-Anglo-Saxon advanced economies (list under Fig. 3), only two countries exhibit variations in their shares which are higher than that of certain Anglo-Saxon countries (Denmark and Portugal, with indices of respectively 344 and 278 in 2015). In 2018, the top 0.01% exhibits an income which is forty times higher than the average income in the US, 35 times higher in Australia, and 21 times higher in United Kingdom, but only 14 times in other advanced economies on average.

2.2. Literature

The substantial increase in the share of top incomes in the last forty years has generated a large economic literature.

According to Rosen (1981), superstars are the few persons who concentrate in their hands a very large amount of the income generated by the activity in which they engage.[2] Two major explanations have been given to this phenomenon. The first shows that, in those

[2] The term 'superstar' is also utilised for firms, sectors and cities (general presentation in Manyika et al., 2018).

activities, the differences in talent are magnified by earnings. The second focuses on the dynamics of learning, knowledge and selection specific to those activities.

Rosen (1981) assumed differences in talent across individuals. Centred on top managers, his analysis also applies to top performers. He showed that the differences in income are substantially amplified compared to the differences in talent (convex income function). This derives from (i) the weak substitutability between different levels of talent and (ii) the production cost which does not increase in proportion to the sales. MacDonald (1988) developed an approach based on revealed talent by assuming a dynamics of the probability of performances to be 'good' (alternatively 'bad') based on the performer's success in the past. He shows that only the young enter the performance occupation, only the successful remain in the occupation (hence, former success is determining), and success is rare and highly rewarded. Differences in talent are also assumed by Borghans & Groot (1998) but those differences are not sufficient to explain the superstars' overpayment. In their model, the key element is the monopoly power which makes the best performers to control a market share far larger than their talent advantage.

In contrast with the preceding approaches, Adler (1985) showed that a large divergence in earnings and the emergence of superstars can exist even when individuals do not differ in talent. This outcome relies on (i) the learning process which makes that the appreciation of performers rises with knowledge, (ii) the transmission of knowledge across performance consumers, and (iii) the fact that consumers are limited in diversifying both their activities and the number of performers they follow in each activity. The same diagnosis that superstardom can be independent from differences in talent is made by Chung & Cox (1994). In their approach, the emergence of superstars is a stochastic process which concentrates the artistic activities in the hands of a few lucky individuals.

As regards top managers, the huge increase in their earnings in the last two decades has prompted economists to present additional explanations such as a growing demand for general managerial skills at the expense of firm-specific skills (Murphy & Zabojnik, 2007; Frydman, 2019), the firms' size (Gabaix & Landier, 2008) and an increase in wage competition between managers (Subramanian, 2013).

Four globalization-related factors tend to raise the top managers' earnings: 1) the increase in the market size; 2) a larger size of firms; 3) the emergence of a global market for managers; 4) the increase in capital utilisation when capital and managerial skills are complementary. Based on the first three factors and on a definition of globalization which combines the integrations of both product markets and managerial pools, Gersbach & Schmutzler (2014)

generate an increase in the heterogeneity of managerial earnings and a rise in top executives' wages. Capital and talent complementarity is the main driver in Haskel et al. (2012). Their explanation does not only apply to top managers but also to performers as actresses, actors and singers. The authors present an extended HOS approach with workers differing in talent and talent-capital complementarity in one sector but not in the other (in this second sector, talent has no impact on labour productivity). An increase in capital productivity then increases both the return to capital and the wages of the most talented workers because of capital-talent complementarity, and it lessens the wage of the less talented.

There is no general empirical confirmation or invalidation of the explanations for superstardom. Rosen's approach is refuted by Hamlen (1991, 1994) who studies the music recording industry. Chung & Cox (1994) calculations confirm their stochastic approach whereas this approach is refuted by Giles (2006). Hofmann & Opitz (2018) confirm both Rosen's and Adler's approaches by making a distinction between 'talent stars' who refer to the first explanation and 'publicity stars' who refer to the second.

Finally, several papers have investigated the careers, behaviours and earnings of performers such as singers, actresses and actors, and of entertainment programmes and films directors.[3] Those analyses are essentially descriptive and institutional. From the mid-2000s, the rapid development of streaming has substantially changed both the transmission of music, films, series and TV programmes and the way performers are paid (Kübler et al.,2021, for a general presentation; Hadida et al., 2021, and Hennig-Thurau, 2021, for the cases of film making and filmed entertainment). By permitting an immediate access to those entertainments at a limited cost, streaming has made them become fully non-rivalrous but still excludable. In addition, performers are paid by royalties linked to amount of streams of their performances. Because of the large audience of streaming platforms, streaming has become a major source of income for performers. Streaming is directly linked to digital technological progress.

In summary, most of the explanations of the growing income share of superstars are based on mechanisms which amplify the difference in talent and/or on dynamics of knowledge and popularity. The most recent literature has stressed the impact of new technologies, particularly digitalisation. The model developed here is different in that it takes those technological advances as given and it analyses the impact of globalization defined as an extension of the number of countries involved in the global market for performances upon performers' earnings, assuming a between-country asymmetry in performance globalization.

[3] See Connolly & Krueger (2006) for the economics of popular music before the advent of streaming and Kübler et al. (2021) for a presentation of the impact of streaming.

3. The model framework

Consider an economy with a continuum of individuals working either in a sector of goods or in a sector of *performances*. The individuals working in the goods sector are called *workers* and those producing performances are called *performers*.

All individuals possess one unit of working time. The income from work is utilised to buy goods and performances.

An individual decides to be a worker or a performer depending on the utility provided by each position.

The price of the good is chosen as numeraire. In the sector of goods, one unit of time produces one unit of good and there is no productivity difference across individuals. Assuming perfect competition in this market, the zero profit condition makes the wage (per working time unit) be equal to the unit price of goods, i.e. equal to 1. As a consequence the price of performances as well as the performers' earnings are expressed in terms of the price of goods (and workers' wage).

The performances are *non-rivalrous*, *performer-specific* and they *differ in quality*. Those three assumptions depict specificities of the entertainment activities modelled in this paper.

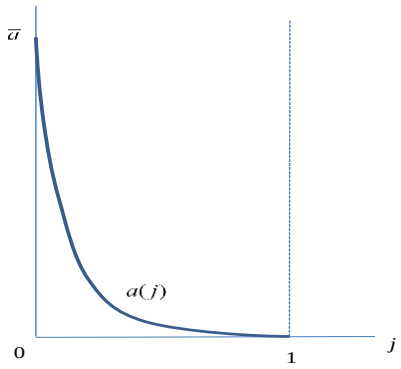
Performers differ in talent and the quality of a performance is equal to its performer's talent. We further assume that, in contrast with workers, performers have a free access to performances. This last assumption is firstly justified because it is a common feature in the activities which are modelled here. In addition, it simplifies the model without modifying its outcomes.

For a '*unit population*' (continuum of individuals forming a population of size 1), we rank the population by *decreasing* order of talent and we define the following monotonous, continuous and derivable talent function which makes correspond a talent level to each individual:

$$a: \quad j \in [0,1] \;\mapsto\; a_j = a(j) \in [0, \bar{a}], \; \frac{\partial a(j)}{\partial j} < 0, \; \frac{\partial^2 a(j)}{\partial j^2} > 0, \; a(0) = \bar{a}, \; a(1) = 0 \qquad (1)$$

So as to replicated the observed fact that the number of performers accounts for a limited proportion of the population with some of them benefiting from earnings well above the average, we assume that function $a(j)$ is sharply downward sloped at its start and rapidly attains the level such that individuals prefer to be workers than performers. This is depicted by features $\partial a(j)/\partial j < 0$ and $\partial^2 a(j)/\partial j^2 > 0$ as portrayed in Fig. 4.

Fig. 4. Functions $a(j)$



Note that a measures both the performer's talent and her/his performance quality.[4]

The individuals' utility function is:

$$u = (1-\alpha)\log c + \alpha \log f \qquad (2)$$

where c and f are respectively the consumptions of goods and performances.

Let n be the number of performers in the *unit population* (hence, n is also the proportion of performers). Performances enter the utility function in the form of a C.E.S. with the elasticity of substitution $\sigma > 1$ and each performance being weighted by its quality. Then:

$$f = \left(\int_0^n a(i)x(i)^{\frac{\sigma-1}{\sigma}} di \right)^{\frac{\sigma}{\sigma-1}}$$

where $x(i)$ is the individual's consumption of the performance with quality $a(i)$.

So as to represent the pricing rule linked to new technologies, we assume that the price of a performance is the same whatever its quality so that the income difference across performers depends on the number of times their performances are consumed. This rule covers a large range of pricing techniques. It directly corresponds to the situation in which consumers pay for the number of downloaded performances (music, films, series, shows etc.), which also determine the performers' incomes. It can also represent the older technique of buying CDs. It can finally indirectly depict the case in which customers pay a fixed fee to have access to a large set of performances, performers being paid according to the amount of their streamed performances.[5] This pricing rule does not apply to more traditional types of performances as live concerts or theatre plays for which the price depends more directly on the reputation of the performers.

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[4] In addition, since $j \in [0,1]$, $a(j)$ is also the inverse of the distribution function of talent, with a skewed distribution.

[5] In this case, the calculation of the fixed fee is based on the customers' average number of streams.

In summary, all performances have the same price denoted *p* and the demand for each of them then depends on its quality. A higher quality means more demand which ensures a higher income to the performer.

Finally, the companies (e.g., streaming platforms) providing performances are assumed to be in perfect competition (no barriers to entry and no sunk costs) and we suppose to simplify that the cost of bringing performances from their producers (performers) to the consumers is small enough to be considered as nil. This market structure implies that the zero profit condition is fulfilled and that the whole of the prices paid for performances are given to performers. A broader model with additional cost is discussed and presented in Appendix C.

In the following analyses, an area (country, set of countries forming the globalized economy) will consist of a sum of unit populations, each unit population being characterised by the above-defined features: individuals are identical in productivity for the production of goods, and differentiated in terms of talent, depicted by function $a(j)$, for the production of performances. The globalization dynamics is defined by an exogenous increase in the number of countries involved in the global economy. The modelling of this dynamics will however depend on the type of globalization which is considered, symmetric or asymmetric. Free and costless trade of goods is always assumed between globalized countries. In contrast, trade in performances will totally differ in the two types of globalization.

We finally compare the two types of globalization and the case of *cultural autarky* in which each country only consumes domestic performances.

4. Symmetric globalisation

A situation of symmetric globalization is characterised by (i) all countries' consumers having access to all countries' performances, and (ii) a performance with quality *a* in its country of origin has the same quality in other countries.

Consequently, globalization can be defined as the sum of *N* unit populations as presented in Section 3, *with N increasing over time*. This is a simple way to make augment the number of countries (and hence the population) involved in the global market for performances by assuming an identical distribution of talents per unit of population in each country. This globalization dynamics clearly involve the case in which the countries (or regions) participating in the global economy have populations larger than one.

As workers are identical, they all consume the same amount of performances. In addition, since performers do not pay for performances, the number of performances (and of performers) as well as the proportion of performers in the population depend on the sole workers' demand.

As n is the proportion of performers in the population (this proportion is determined hereafter), the number of performers (and performances) in the global economy is $n \times N$, the proportion of workers in the population is $(1-n)$ and the number of workers $(1-n)N$.

All workers have the same consumption of performances $f = \left(\int_0^n Na(i)x(i)^{\frac{\sigma-1}{\sigma}} di \right)^{\frac{\sigma}{\sigma-1}}$ and the same number of performances is freely consumed by performers. Hence, whatever her/his type (worker or performer) the individual's utility function is:

$$u = (1-\alpha)\log c + \alpha \log \left(N \int_0^n a(i)x(i)^{\frac{\sigma-1}{\sigma}} di \right)^{\frac{\sigma}{\sigma-1}} \quad (3)$$

As performances are non-rivalrous and since the sole $(1-n)N$ workers pay for performances, the income of performers with talent a_j is:[6]

$$\omega(a_j) = (1-n)N \times p \times x(j) \quad (4)$$

An individual chooses to be a performer if and only if the related utility is higher than the utility of being a worker. Consequently, the least talented performer has the same utility as a worker. Since workers and performers have the same consumption of performances, the least talented performer has the same consumption of goods as a worker. A worker's consumption of goods is $1-\alpha$ (Eq. 3 with p = 1). The least talented performer's consumption of good is equal to her/his income, i.e. $\omega(a_n) = (1-n)N \times p \times x(n)$. Equalising both consumptions yields:

$$(1-n)N \times p \times x(n) = 1-\alpha \quad (5)$$

Eq. 5 determines a supply constraint on the number of performances (the performances with the lowest quality supplied in the market determines the share of performers in the population n and thereby the number of performances $n \times N$).

All workers maximise the utility (3) subject to the income constraint $c + N\int_0^n p \times x(i)di \leq 1$ and to the supply constraint (5). Because of the utility function, each worker spends the

[6] Note that there are N performers with the same performance price and hence the same earning.

income share $(1-\alpha)$ for the purchase of goods ($c=1-\alpha$) and the income share α for the purchase of performances, which yields $N\int_0^n p\times x(i)di=\alpha$. The demand for performances can then be defined by maximising $N\int_0^n a(i)x(i)^{\frac{\sigma-1}{\sigma}}di$ subject to $N\int_0^n p\times x(i)di=\alpha$ and condition (5). This determines the following relations:

$$x(i)=\frac{b_i}{b_j}x(j),\ \forall i,j\in[0,n] \tag{6}$$

$$x(i)=\frac{b_i}{B(n)}\frac{\alpha}{pN} \tag{7}$$

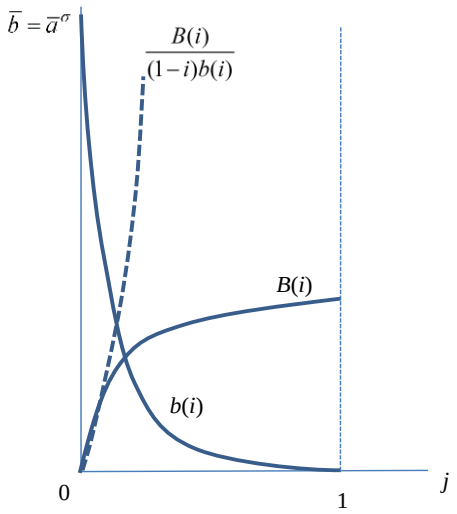
with $b_i=b(i)=a_i^{\sigma}$ and $B(j)=\int_0^j b(i)di=\int_0^j\left(a(i)\right)^{\sigma}di\Rightarrow B(n)=\int_0^n\left(a(i)\right)^{\sigma}di$.

Given the characteristics of the talent function $a(i)$ depicted by relations (1), the functions $b_i=\left(a(i)\right)^{\sigma}$ and $B(j)=\int_0^j\left(a(i)\right)^{\sigma}di$ are such that:

$$B(i)=\int_0^i a(x)dx\text{, with }\frac{\partial B(i)}{\partial i}=b(i)>0,\ \frac{\partial^2 B(i)}{\partial i^2}=\frac{\partial b(i)}{\partial i}<0,\ \frac{\partial^2 b(i)}{\partial i^2}>0. \tag{8}$$

Fig. 5 portrays the curves $b(i)$, $B(i)$ and $\frac{B(i)}{(1-i)b(i)}$.

Fig. 5. Functions $b(i)$, $B(i)$ and $B(i)/(1-i)b(i)$.[7]



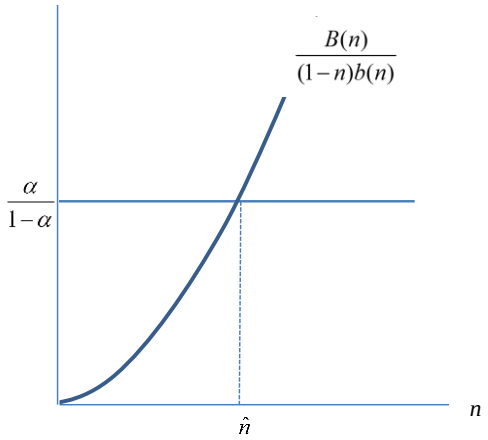
[7] The second derivative of function $B(j)/b(j)$ can be either negative and subsequently positive, or always positive. Fig.5 depicts the second most likely case. In both cases, the analysis is identical.

Combining Eqs. (5) and (7), we obtain:

$$\frac{B(n)}{(1-n)b(n)} = \frac{\alpha}{1-\alpha} \tag{9}$$

Relation (9) determines the share $\hat{n}$ of performers in the global economy as depicted in Fig. 6. As $\hat{n}$ is independent from *N*, this relation applies to both symmetric globalization and to any country being in *cultural autarky* (situation in which only domestic performances are demanded in each country).

Fig. 6. Determination of the share $\hat{n}$ of performers in the global population



An indicator of inequality between performers is *the talent premium* $\rho(a_i) = \omega(a_i)/\omega(a_n)$ which measures the premium linked to the talent above the least talented performer(s), i.e. for an individual with talent a_i (with symmetric globalization):[8]

$$\hat{\rho}(a_i) = \frac{\omega(a_i)}{\omega(a_{\hat{n}})} = \left(\frac{a_i}{a_{\hat{n}}}\right)^{\sigma} = \frac{b_i}{b_{\hat{n}}} \tag{10}$$

It can be noted that, as in Rosen (1981), the between-performer difference in income is amplified compared to the between-performer difference in talent (since $\sigma > 1$).

Finally as $\omega_n = 1-\alpha$, the income of a performer with talent a_i is:

$$\hat{\omega}(a_i) = (1-\alpha)\left(\frac{a_i}{a_{\hat{n}}}\right)^{\sigma} = (1-\alpha)\frac{b_i}{b_{\hat{n}}} \tag{11}$$

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[8] $\frac{\omega(a_i)}{\omega_n} = \frac{(1-n)N \times p \times x(i)}{(1-n)N \times p \times x(n)} = \frac{x(i)}{x(n)} = \left(\frac{a_i}{a_n}\right)^{\sigma}$. As $\omega_n = (1-n)N \times p \times x(n) = 1-\alpha$, then $\hat{\omega}(a_i) = (1-\alpha)\left(\frac{a_i}{a_{\hat{n}}}\right)^{\sigma}$.

Proposition 1. *Symmetric globalisation (increase in N) entails:*

1) *No change in the proportion* $\hat{n}$ *of performers in the global economy and in the countries' population compared to cultural autarky, and hence an increase in the number of performers and performances* $\hat{n} \times N$ *which is proportional to the increase in the globalised population.*
2) *No change in the earning of performers* $\omega(a_i) = (1-\alpha)\left(a_i / a_{\hat{n}}\right)^{\sigma}$, $a_i \in \left[a_{\hat{n}}, \bar{a}\right]$, *with a talent premium* $\omega(a_i) / \omega(a_{\hat{n}})$ *which is magnified compared to the talent ratio* $a_i / a_{\hat{n}}$ *in symmetric globalisation as well as in cultural autarky.*

5. Asymmetric globalization

Section 4 has analysed a situation in which the before-globalization talent of national performers is fully maintained in the globalized market. Such a framework typically refers to a situation in which countries are culturally identical in globalization. In the real world, globalization has come with one country (the US) or more broadly a set of countries (Anglo-Saxon countries) benefiting from cultural supremacy at the world level. We now develop a model which takes this characteristic into account.

5.1. Asymmetry

We propose a simplified approach which intends to model the supremacy of Anglo-Saxon countries in popular cultural occupations such as singers, actresses, actors and entertainment and film producers.

The globalized culture is that of one country called Home. Home produces performances which are demanded throughout the globalised World whereas the other countries produce performances which are only demanded by their nationals. Thus, Home individuals only demand for Home performances and individuals in other countries demand for both Home and domestic performances. In addition, Home performances have the same quality in Home and in other countries.

As usual, in each country, (i) individuals are ranked in decreasing order of talent and the talent function has the properties described by relations (1), (ii) all performers have a free access to the performances sold in the country where they live, and (iii) the technology in the sector of goods is such that one unit of time produces one unit of good.

Let $K \in \mathbb{N}$ be the number of countries with non-globalised performances. We select *K* as a natural number (and not a continuum in $\mathbb{R}$) because it simplifies the presentation for countries with different sizes (populations).

The population size is N_H in Home and N_k, $k = 1...K$ in the other *K* countries.

The *K* countries with purely domestic performances are ranked in decreasing order of size (population). Hence Country 1 has the largest population and Country *K* the lowest.

The *globalization dynamics is now defined by an increase in the number K of countries with non-globalized performances*.

Because of the CES utility function, all the performances in the market are demanded in all countries. Hence, in any country *k*, $k = 1, \cdots, K$, workers consume (i) all the domestic performances in the national market and (ii) all the Home performances which are in the global market.

Let n_H be the share of performers in the Home population and n_k the share of performers in Country *k* population, $k = 1, \cdots, K$. We denote $x_H(a_i)$ and $x_k(a_i)$ the demand for a performance with quality a_i in Home and in Country *k* respectively, and $\omega_H(a_i)$ and $\omega_k(a_i)$ the income of a performer with talent a_i in Home and in Country *k*. When referring to the share in the population of performers with talent a_i, $x(a_i)$ and $\omega(a_i)$ are denoted $x(i)$ and $\omega(i)$.

If performances with quality a_i are produced in one of the *K* countries, performances with the same quality are *ipso facto* produced in Home. This is because for quality a_i to be produced in Country *k*, the income of a *k*-performer with talent a_i, $\omega_k(a_i) = (1-n_k)N_k \times p \times x_k(a_i)$ must be higher or equal to $1-\alpha$. But then, the income of a Home performer with talent a_i, $\omega_H(a_i)$, is higher than $1-\alpha$ since it includes, on top of $(1-n_k)N_k\omega \times x_k(a_i)$, all the demands from all other countries (including Home). Hence, all Home individuals with talent a_i choose to be performers and supply performances with quality a_i. As the production of *k*-performances with quality a_i entails the production of Home performances with the same quality, we have:

$$n_H \geq \max\{n_k,\ k = 1, \cdots, K\} \tag{14}$$

Since Home workers consume Home performances only whereas other countries' workers consume both their national performances and Home performances, the utility functions are:

$$u=(1-\alpha)\log c+\alpha\log\left(N_H\int_0^{n_H}a(i)x_H(i)^{\frac{\sigma-1}{\sigma}}di\right)^{\frac{\sigma}{\sigma-1}} \quad \textit{in Home}$$
$$u=(1-\alpha)\log c+\alpha\log\left(N_H\int_0^{n_H}a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}di+N_k\int_0^{n_k}a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}di\right)^{\frac{\sigma}{\sigma-1}},\ n_H>n_k \ \textit{in Country } k \tag{15}$$

5.2. Proportion of performers in the countries' population

5.2.1. *Countries with non-global performances*

Consider Country k, $k = 1, \ldots, K$, which produces purely national performances. The utility function (15) shows that each worker allocates the income share α to the consumption of performances. Hence, a k-worker's consumption of performances can be determined by maximising $N_H\int_0^{n_H}a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}di+N_k\int_0^{n_k}a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}di$, $n_k\le n_H$, subject to the income constraint $\alpha=N_H\int_0^{n_H}p\times x_k(i)di+N_k\int_0^{n_k}p\times x_k(i)di$.

This maximisation programme yields the following relations (proofs in Appendix A):

$$\frac{x_k(i)}{x_k(j)}=\frac{b(i)}{b(j)},\ i,j\in[0,n_H],\ k=1,\cdots,K. \tag{16}$$

$$x_k(i)=\frac{b(i)}{b(n_k)}x_k(n_k),\quad k=1,\cdots,K. \tag{17}$$

$$x_k(i)=\frac{b(i)}{N_kB(n_k)+N_HB(n_H)}\frac{\alpha}{p},\quad k=1,\cdots,K \tag{18}$$

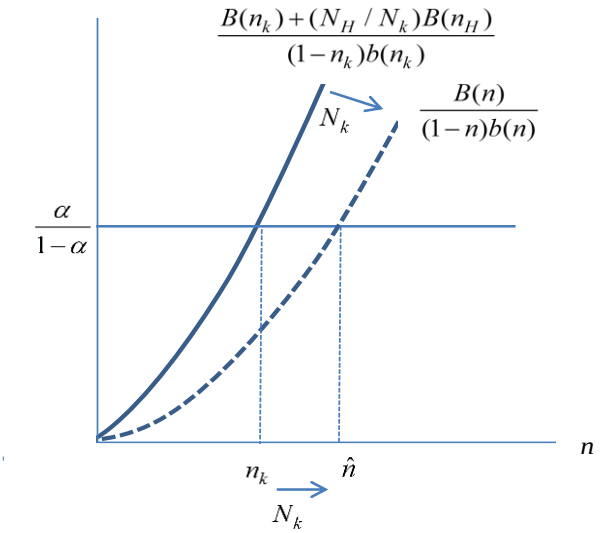
The least talented k-performer (with talent a_{n_k}) has the same consumption of goods as a k-worker. The consumption of good of a k-performer with talent a_{n_k} is equal to her/his income $\omega_k(a_{n_k})=(1-n_k)N_k\times p\times x_k(n_k)$ and this consumption is $1-\alpha$ for a worker. We thus have:

$$(1-n_k)N_k\times p\times x_k(n_k)=1-\alpha \tag{19}$$

Combining (18) for $i=n_k$ and (19), we obtain:

$$\frac{B(n_k)+(N_H/N_k)B(n_H)}{(1-n_k)b(n_k)}=\frac{\alpha}{1-\alpha} \tag{20}$$

Fig. 7. The share of performers in Country k, $k = 1,...,K$.



Relation (20) and the related Fig. 7 show that the share n_k of performers in the population and the related number of national performance qualities $n_k N_k$ increase with the country size. In addition, Fig. 7 shows that $n_k < \hat{n}$, $\forall k = 1,\cdots,K$. Hence, the share of performers in the population in all the countries with non-globalized performances decreases compared to the situations of cultural autarky and symmetric globalization (where this share is $\hat{n}$).

5.2.2. *Home*

Home workers consume Home performances only. Hence, their consumption of performances is obtained by maximising the function $N_H \int_0^{n_H} a(i) x_H(i)^{\frac{\sigma-1}{\sigma}} di$ subject to the income constraint $\alpha = N_H \int_0^{n_H} p \times x_H(i) di$, which yields at the consumer's optimum (Appendix B):

$$x_H(i) = \frac{b_i}{b_j} x_H(j), \ \forall i, j \in [0, n_H] \tag{21}$$

$$x_H(i) = \frac{b_i}{B(n_H)} \frac{\alpha}{pN_H} \tag{22}$$

$$x_H(n_H) = \alpha \frac{b(n_H)}{B(n_H)} \frac{1}{N_H p} \tag{23}$$

Within the globalized economy, the income of a Home performer with talent a_i is:

$$\omega(a_i) = (1-n_H) N_H \times p \times x_H(i) + \sum_{k=1}^{K} (1-n_k) N_k \times p \times x_k(i) \tag{24}$$

As the least talented Home performer has an income equal to a worker's consumption:

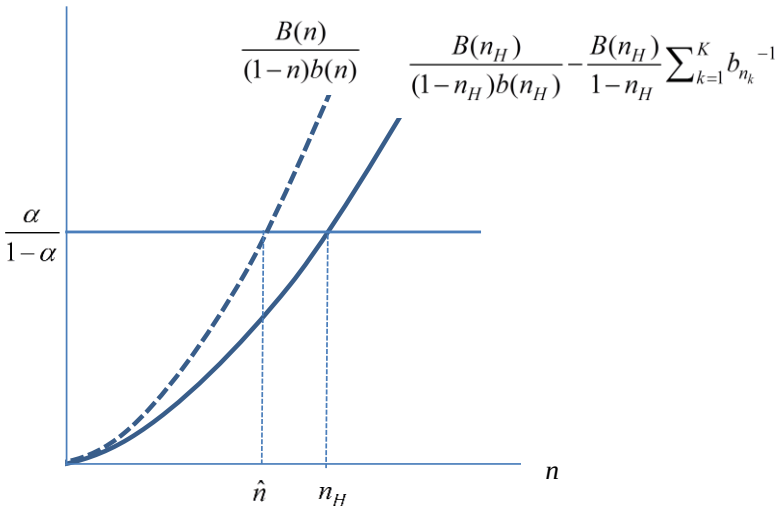
$$\omega_H(a_{n_H}) = (1-n_H)N_H \times p \times x_H(n_H) + \sum_{k=1}^{K}(1-n_k)N_k \times p \times x_k(n_H) = 1-\alpha \qquad (25)$$

Rewriting $x_k(n_H)$ in terms of $x_k(n_k)$, inserting (23) in (24), and since $(1-n_k)N_k \times p \times x_k(n_k) = 1-\alpha,\ \forall k = 1,\cdots,K$, we obtain:[9]

$$\frac{B(n_H)}{(1-n_H)b(n_H)} - \frac{B(n_H)}{1-n_H}\sum_{k=1}^{K} 1/b_{n_k} = \frac{\alpha}{1-\alpha} \qquad (26)$$

Eq. 26 and the related Fig. 8 determine the share n_H of performers in the Home population in the case of asymmetric globalization. Fig. 8 clearly shows that (i) this share is larger than in cultural autarky and symmetric globalization, and (ii) this share increases when the number *K* of countries with non-global performances increases. In addition, if the newly globalized country is large, the new b_{n_k} is small and the increase in n_H is higher.

Fig. 8. The share of performers in Home



[9] $\omega_H(a_{n_H}) = (1-n_H)N_H p x_H(n_H) + \sum_{k=1}^{K}(1-n_k)N_k p x_k(n_H) = 1-\alpha,\ x_k(n_H) = \frac{b(n_H)}{b(n_k)}x_k(n_k)$ and $(1-n_k)N_k p x_k(n_k) = 1-\alpha$

$$\Rightarrow (1-n_H)N_H \times p \times x_H(n_H) + (1-\alpha)b(n_H)\sum_{k=1}^{K} 1/b_{n_k} = 1-\alpha, \text{ and } x_H(n_H) = \alpha\frac{b(n_H)}{B(n_H)}\frac{1}{N_H p}$$

$$\Rightarrow (1-n_H)\alpha\frac{b(n_H)}{B(n_H)} + (1-\alpha)b(n_H)\sum_{k=1}^{K} 1/b_{n_k} = 1-\alpha \Leftrightarrow \frac{B(n_H)}{(1-n_H)b(n_H)} - \frac{B(n_H)}{1-n_H}\sum_{k=1}^{K} 1/b_{n_k} = \frac{\alpha}{1-\alpha}$$

From the results established for the different countries, we can state the following proposition:

Proposition 2. *Compared to cultural autarky and symmetric globalization, asymmetric globalization entails:*

1) A reduction in the share of performers in the population in all the countries with non-global performances, this reduction being all the greater as the country size is small.

2) An increase in the share of performers in the Home population.

3) These reductions (in countries k = 1, ... , K) and rise (in Home) broaden with the number and size of countries k involved in the globalisation economy.

5.3. Earnings and inequality

5.3.1. *Countries with non-global performances*

A *k*-performer with talent a_i earns $\omega_k(a_i) = (1-n_k)N_k\, p \times x_k(a_i)$ and the least talented *k*-performer earns $(1-\alpha)$. Because of (17), we thus have (with $b_i = a_i^{\sigma}$):

$$\omega_k(a_i) = \frac{b_i}{b_{n_k}}(1-\alpha) \tag{27}$$

$$\rho_k(a_i) \equiv \frac{\omega_k(a_i)}{\omega_k(a_{n_k})} = \frac{b_i}{b_{n_k}} \tag{28}$$

As (i) all countries have the same share of performers $\hat{n}$ when being in autarky or symmetric globalization, (ii) $n_k < \hat{n}$ and n_k decreases when the country size shrinks, and (iii) b_{n_k} decreases with n_k, then *k*-performers are less paid in asymmetric globalization than in cultural autarky and symmetric globalization whatever their talent, and this income cut is all the greater as the country size is small.

5.3.2. *Home*

A Home performer with talent a_i meets the demands from both Home and all the countries $k \in [1 \cdots K]$. Her/his income is thus: $\omega(a_i) = (1-n_H)N_H\, p \times x_H(i) + \sum_{k=1}^{K}(1-n_k)N_k\, p \times x_k(i)$.

Inserting $x_H(i) = \frac{b_i}{b_{n_H}} x_H(n_H)$, $x_k(i) = \frac{b_i}{b_{n_k}} x_k(n_k)$ and $\omega_H(a_{n_H}) = \omega_k(a_{n_k}) = 1-\alpha$, $k = 1, \cdots, K$ in this relation, we obtain:[10]

$$\omega_H(a_i) = \frac{b_i}{b_{n_H}}(1-\alpha) \tag{29}$$

$$\rho_H(a_i) \equiv \frac{\omega_H(a_i)}{\omega_H(a_{n_H})} = \frac{b_i}{b_{n_H}} \tag{30}$$

Since $n_H > \hat{n} \Rightarrow b_{n_H} < b_{\hat{n}}$, asymmetric globalization makes all the Home performers' incomes to increase in the proportion $\frac{b_{\hat{n}}}{b_{n_H}}$ and the talent premium $\rho(a_i)$ increases in the same proportion. Note that, as $\frac{b_{\hat{n}}}{b_{n_H}} = \left(\frac{a_{\hat{n}}}{a_{n_H}}\right)^{\sigma}$, the inequality multiplier is magnified in relation to the talent proportion.

We summarise the above findings in the following proposition:

Proposition 3. *Compared to cultural autarky and symmetric globalization, asymmetric globalization entails:*

1) In the countries with non-global performances, a reduction in both the income and the talent premium of all performers, this cut being all the greater as the country is small.

2) In Home, an increase in both the income and the talent premium of all performers.

5.3.3. *Comparison*

We now compare the variations in earnings and inequality in the sector of performances according to the type of international relations (cultural autarky, symmetric globalization,

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[10] $\omega_H(a_i) = (1-n_H)N_H \times \frac{b_i}{b_{n_H}} \times p \times x_H(n_H) + \sum_{k=1}^{K}(1-n_k)N_k \times p\left(b_i / b_{n_k}\right) x_k(n_k)$

Inserting $p \times x_H(n_H) = \frac{b(n_H)}{B(n_H)} \frac{\alpha}{N_H}$ and $\omega_k(a_{n_k}) = (1-n_k)N_k \times p \times x_k(n_k) = 1-\alpha$:

$$\omega_H(a_i) = \left(\alpha(1-n_H)\frac{b_{n_H}}{B(n_H)} + (1-\alpha)\sum_{k=1}^{K}\frac{b_{n_H}}{b_{n_k}}\right)\frac{b_i}{b_{n_H}} \Rightarrow \omega_H(a_{n_H}) = \alpha(1-n_H)\frac{b_{n_H}}{B(n_H)} + (1-\alpha)\sum_{k=1}^{K}\frac{b_{n_H}}{b_{n_k}}$$

$$\omega_H(a_{n_H}) = 1-\alpha \Rightarrow \omega_H(a_i) = \frac{b_i}{b_{n_H}}(1-\alpha) \Rightarrow \rho(a_i) \equiv \frac{\omega_H(a_i)}{\omega_H(a_{n_H})} = \frac{b_i}{b_{n_H}}$$

asymmetric globalization) and the country (Home and countries *k* according to their size). To simplify, we assume four countries with non-global performances.

Fig. 8. Talent premia in the different countries according to the type of globalization

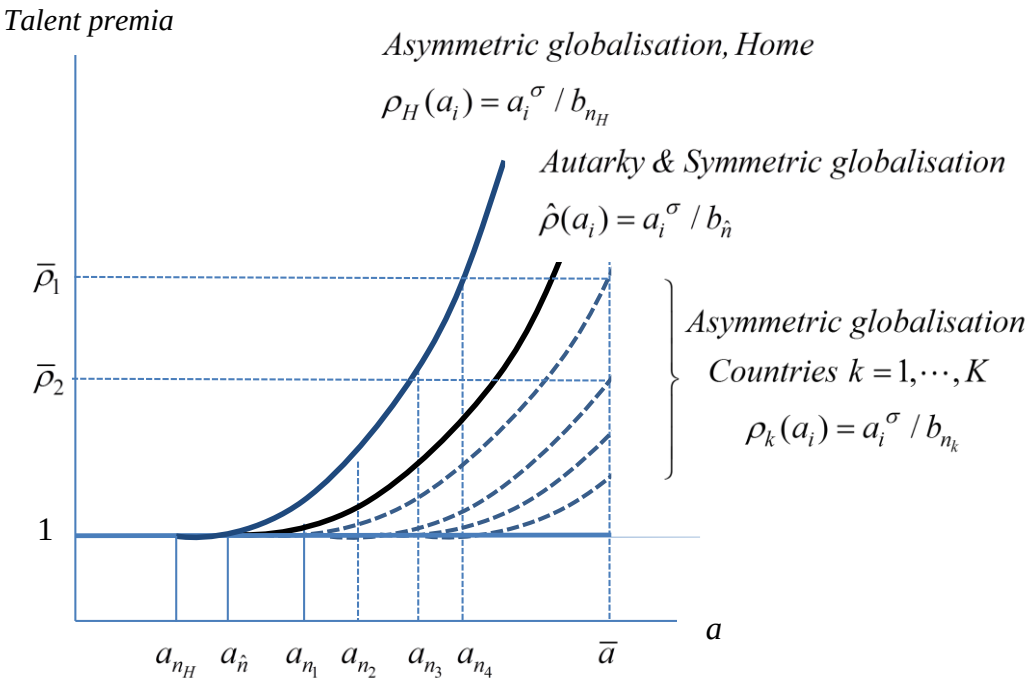

Fig. 8 draws the talent premia corresponding to each talent level in Home and in the other four countries when being (i) in cultural autarky and symmetric globalization and (ii) in asymmetric globalization. The black curve depicts the talent premia in autarky and symmetric globalization, similar in all countries, given by Eq. 10. The blue curve depicts the talent premia in Home (Eq. 20) and the dashed curves the talent premia in the other four countries (Eq. 25) when globalization is asymmetric. The curves picturing the income related to talent in each country are similar since all premia are then multiplied by $(1-\alpha)$.

As $n_H > \hat{n}$, $n_k < \hat{n}$, $\forall k = 1, \cdots, K$, and n_k decreases with the country size, we have:

$$n_H > \hat{n} > n_1 > n_2 > \cdots > n_K \tag{31}$$

And thus:

$$a(n_H) < a(\hat{n}) < a(n_1) < a(n_2) < \cdots < a(n_K) \tag{32}$$

Home has the largest share of performers in its population, and for other countries this share becomes increasingly small when the country size (population) diminishes. These results logically derive from the magnitude of the demand met by performers in each country.

Home performers benefits from a large (global) demand which increases their income. Consequently, even performers with limited talents can attain an income which permits to reach the value $1-\alpha$ which makes them achieve the workers' utility level. In other countries, a smaller size entails a lower demand for domestic performances since they are demanded by the sole country's workers and since a worker's demand for Home (global) performances is the same in all countries whatever their size. Consequently, each talent is paid less and a higher talent is necessary to achieve the income ensuring the workers' utility.

Asymmetric globalization generates a large difference in earning and inequality between Home performers and performers in other countries. The former are substantially better paid than the latter, with earnings increasing in Home and decreasing in other countries. In addition, between-performers earnings inequality increases in Home and shrinks in other countries. Finally, in the latter countries, the reduction in between-performers earnings and inequality is all the larger as the country is small.

5.4. Trade

The results in the case of asymmetric globalization generate a surplus in Home and a deficit in other countries in the trade of performances. At the same time, a higher proportion of individuals work in the sector of goods in the countries with purely national performances. At the general equilibrium of the global economy, it is straightforward that Home exports performances and imports goods whereas all other countries do the opposite, with all current accounts being balanced.

6. Discussion, extensions, conclusions

Most explanations of superstars' rising incomes have focused on factors which magnify the impact on earnings of differences in talents and on specific characteristics of the consumption of performances, without exploring countries' asymmetry. The contribution developed in this paper is original by assuming an asymmetry in globalization with one country producing global performances whereas others produce only national ones. This assumption aims at picturing the American and Anglo-Saxon supremacy in popular cultural occupations (music, films, series, entertainment etc.). The asymmetry in globalization is here the key explanation for the globalization-driven increase in inequality in the sector of performances since earnings and inequality remain unchanged in the model without asymmetry. It can nevertheless be noted that, if we add a global fixed cost for the provision of performances, symmetric

globalization entails an increase in performers' earnings, but this increase remains limited (see Appendix C and the discussion below). In addition, inserting in the model talent-biased technological change would obviously increase between-performer inequality even without asymmetry.

The model fits with observed developments as regards inequality. It firstly shows that the culturally dominant country's performers are significantly better paid than those from other countries, which is one of the major facts highlighted in Section 2. This feature expands between-performer inequality at the global level. Second, asymmetric globalization increases the share in total income of the top of the income ladder in the culturally dominant country whereas it reduces this share in other countries, boosting in this way inequality by the top in the former and reducing it in the latter. One can nevertheless note that (i) other factors can increase the share of top incomes in the latter countries and (ii) this reduction are then only narrowed by the limited share of performers' earnings in total income in those countries. Those mechanisms contribute to the observed between-country divergence in rising inequality and in inequality at the top, which have been substantial in the culturally dominant Anglo-Saxon countries and much lower in most other advanced economies (Fig. 3).

The model also fits with the fact that the weight of performers both in their country's population and in the World set of performers is far greater for the culturally dominant countries than for other countries. The share in the World performers of the countries with cultural supremacy is particularly high at the top of the earnings distribution. In Fig. 8 with asymmetric globalization, only Home performers have a talent premium higher than $\bar{\rho}_1$, only those from Home and Country 1 have a talent premium higher than $\bar{\rho}_2$, and so on. And the hierarchy of earnings is identical to that of the talent premia.[11] This is in line with the weight of Anglo-Saxon countries in the richest performers as depicted by Fig. 1.

The model developed here is stylised and synthetic and several restrictive assumptions were made to simplify the analysis: 1) the usual factors explaining the increase in superstars' incomes are not considered; 2) the performers' earnings are the only cost in the production of performances; 3) there is only one country with global performances; 4) all workers producing the consumption good are identical in skill and productivity; 5) when a country enters the globalised economy, the Home and domestic performances immediately have the same quality for identically talented performers. We now consider possible extensions of this approach by relaxing these assumptions and discuss how this can modify our results.

[11] The hierarchy of talent premia is the same as the hierarchy of earnings since the income of the less talented performer is equal to the workers' consumption of goods, which is the same in all countries.

First, the model is tailored to focus on the impact of between-country asymmetry, other factors increasing the superstars' income being ignored. Extending the model by inserting those factors would of course reinforce the increase in the incomes of the most talented and make them rise even without asymmetry. Consequently, the model must not be interpreted as an alternative explanation of the superstars' increasing earnings, but as an additional explanation which is centred on occupations as singers, actresses and actors, and media producers.

Second, we have assumed that the performers' pay is the only cost for the production of performances. In fact, performances require additional costs for all the technical activities linked to their production and provision. The introduction of an additional cost for the production of each performance corresponding to activities implemented by workers would not modify the model (see Appendix C). In contrast, adding a fixed cost for the technical provision of all performances (e.g., for the setting of a streaming platform) would modify the equivalence between cultural autarky and symmetric globalization because the latter entails an expansion of the market which reduces the fixed cost per consumption of performances. Then, this reduction lowers the price of performances and symmetric globalization entails an increase in their demand and thereby in the share of performers in the population (Appendix C). This impact remains nevertheless limited when the number of demanders is high compared to the fixed cost, and hence the fixed cost per demander very small, which is usually the case.

Third, as shown in Section 2, the benefit of cultural supremacy does not concern the sole United States, but all Anglo-Saxon countries. If we assume several countries of different size with global performers, it is clear that all global performances from those countries are bought throughout the World. Then, our Home country can just represent the sum of those countries which are here considered as a unique area producing global performances. The results determined in Section 5 are then relevant for all those countries.

Fourth, introducing differences in skill and productivity among workers in the sector of goods would change the model if skill and talent are independent variables because it modifies the frame of individual choice between being a worker or a performer. Logically, choosing to be a performer would necessitate more talent for skilled than for unskilled individuals. In this case, the independence between skill and talent logically leads to an average skill of performers which is lower than the average skill of the population. It would nevertheless not change the results presented in propositions 1, 2 and 3, which are the core of our analysis.

Finally, Home and domestic performances have immediately the same quality for equally talented performers when a new country enters the globalised economy. At the equilibrium, this generates the same demand for identical Home qualities and *k*-qualities within any country *k*, $k = 1,...,K$. This outcome is questionable because it does not fit with the observed fact that the demand for domestic performances is larger than that for global (Anglo-Saxon) performances in certain countries (e.g., films in India) whereas other countries show a larger demand for global than for domestic performances (e.g., the market for popular music, films and series in most non-Anglo-Saxon European countries), even if the size of their market is equivalent. A way to remove this inadequacy consists in introducing a coefficient applied to the quality of global performances which is lower than 1 for countries which are culturally feebly globalised and higher than 1 for countries culturally highly globalised. In this case, the countries which are feebly globalised would buy more domestic performances, and the culturally highly globalised countries would consume less domestic performances. Such a model would not change the results highlighted by Proposition 3, but it would typically moderate the performers' income losses in the feebly globalised countries and expand those losses in the highly globalised ones.

Centred on popular cultural and media activities, the model developed here highlights a new channel to explain both the increase in superstars' earnings and the between-country differences in inequality by the top. Based on the cultural supremacy of certain countries, it provides an additional explanation to the observed divergence between Anglo-Saxon and other advanced countries in terms of inequality at the top.

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Appendix A. The consumer's optimum in country $k = 1, \ldots, K$.

The Lagrangian corresponding to the maximisation programme is:

$$\mathcal{L} = \left(N_H + N_k\right)\int_0^{n_k} a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}\,di + N_H\int_{n_k}^{n_H} a(i)x_k(i)^{\frac{\sigma-1}{\sigma}}\,di - \mu\begin{pmatrix}\alpha - \left(N_H + N_k\right)\int_0^{n_k} p\times x_k(i)di \\ -N_H\int_{n_k}^{n_H} p\times x_k(i)di\end{pmatrix}$$

$$\left.\begin{aligned} &1)\ \frac{\partial\mathcal{L}}{\partial x_k(i)} = \left(\bar{N}+N_k\right)\frac{\sigma-1}{\sigma}a(i)x_k(i)^{-\frac{1}{\sigma}} - \mu\left(N_H+N_k\right)p = 0,\ i\in\left[0,n_k\right] \\ &2)\ \frac{\partial v}{\partial x_k(i)} = N_H\frac{\sigma-1}{\sigma}a(i)x_k(i)^{-\frac{1}{\sigma}} - \mu N_H p = 0,\ i\in\left]n_k,n_H\right] \end{aligned}\right\} \Rightarrow \frac{\sigma-1}{\sigma}\frac{a(i)}{p}x_k(i)^{-1/\sigma} = \mu,\ \ i\in\left[0,n_H\right]$$

Hence:

$$\frac{x_k(i)}{x_k(j)} = \frac{b(i)}{b(j)},\ i, j \in [0, n_H],,\ k = 1, \cdots, K \tag{A1}$$

$$x_k(i) = \frac{b(i)}{b(n_k)} x_k(n_k),\ i \in [0, n_H],\ k = 1, \cdots, K \tag{A2}$$

By inserting (A1) and (A2) in the income constraint $(N_H + N_k)\int_0^{n_k} p \times x_k(i)di + N_H \int_{n_k}^{n_H} p \times x_k(i)di = \alpha$, it comes:

$$x_k(i) = \frac{b_i}{N_k B(n_k) + N_H B(n_H)} \frac{\alpha}{p} \tag{A3}$$

$$x_k(n_k) = \frac{b_{n_k}}{N_k B(n_k) + N_H B(n_H)} \frac{\alpha}{p} \tag{A4}$$

Appendix B. The consumer's optimum in Home

The Lagrangian corresponding to the maximisation programme is:

$$\mathcal{L} = N_H \int_0^{n_H} a(i) x_H(i)^{\frac{\sigma-1}{\sigma}} di - \mu\left(\alpha - N_H \int_0^{n_H} p \times x_H(i)di\right)$$

$$\frac{\partial \mathcal{L}}{\partial x_H(i)} = N_H \frac{\sigma - 1}{\sigma} a(i) x_H(i)^{-\frac{1}{\sigma}} - \mu N_H p = 0 \Rightarrow \frac{\sigma - 1}{\sigma} \frac{a(i)}{p} x_H(i)^{-\frac{1}{\sigma}} = \mu,\ \forall i \in [0, n_H]$$

Hence:

$$\frac{x_H(i)}{x_H(j)} = \left(\frac{a(i)}{a(j)}\right)^{\sigma} = \frac{b(i)}{b(j)},\ i, j \in [0, n_H] \tag{A5}$$

$$x_H(i) = \frac{b(i)}{b(n_H)} x_H(n_H),\ i \in [0, n_H] \tag{A6}$$

Inserting (A5) and (A6) in the income constraint:

$$N_H \int_0^{n_H} p \times x_H(i)di = \alpha \Rightarrow N_H \int_0^{n_H} p \frac{b(i)}{b(n_H)} x_H(n_H)di = \alpha \Rightarrow N_H p \frac{B(n_H)}{b(n_H)} x_H(n_H) = \alpha$$

Finally:

$$x_H(i) = \frac{b(i)}{B(n_H)} \frac{\alpha}{N_H p} \tag{A7}$$

$$x_H(n_H) = \alpha \frac{b(n_H)}{B(n_H)} \frac{1}{N_H p} \tag{A8}$$

Appendix C. The model with fixed costs

All the assumptions utilised in the analysis of symmetric globalization are maintained, except those defining the production of performances.

On top of one performer's unit of labour, producing one performance now requires a fixed cost equal to φ_1 units of worker's labour. This fixed cost linked to the production of each performance covers the technical cost of production and the cost of recording. In addition, the firm which distributes performances has a fixed general cost φ_2 which does not depend on the number of distributed performances. Finally, we assume no barrier to entry and no sunk cost in the production and the supply of performances. Because of those assumptions, only one firm supplies the performances and the zero profit condition holds.

So as to represent the pricing and pay rules linked to new technologies, we assume that the firm which distributes performances (i) determines a price of each unit of consumed performance which is the same whatever its quality and (ii) gives to performers a pay which is proportional to the number of times their performance is consumed.

Then, the distributing firm's revenue generated by a performance with quality a_i is $p \times X(a_i)$, where $X(a_i)$ is the number of times this performance is consumed. A performer with talent a_i produces one performance of quality a_i and is paid $\omega \times X(a_i)$ where ω is the performer's payment for one consumption unit of her/his non-rivalrous performance.

C.1. Symmetric globalization

As in Section 4, the consumption of performances by each worker is defined by Eqs. 6 and 7.

The income and consumption of goods of a performer with talent a_i is $\omega(a_i) = (1-n)N \times \omega \times x(i)$ and hence for the least talented performer whose income and consumption are equal to a worker's consumption $(1-\alpha)$:

$$(1-n)N \times \omega \times x(n) = 1-\alpha \qquad \text{(A9)}$$

As $x(n) = \dfrac{b(n)}{B(n)} \dfrac{\alpha}{pN}$ (Eq. 7), we have:

$$\frac{p}{\omega} = \frac{\alpha}{1-\alpha} \frac{b(n)}{B(n)} (1-n) \qquad \text{(A10)}$$

The revenue of the company distributing performances is equal to their consumption by the workers $(1-n)N^2\int_0^n px(i)di = (1-n)N\alpha$. The company's cost of production is equal to the sum of the performers' income $\omega(1-n)N^2\int_0^n x(i)di = \frac{\omega}{p}(1-n)N\alpha$ plus the sum of the fixed costs related to the production of each performance $nN\varphi_1$ and of the fixed general cost φ_2. By equalising the company's revenue and costs (zero profit condition), we obtain:

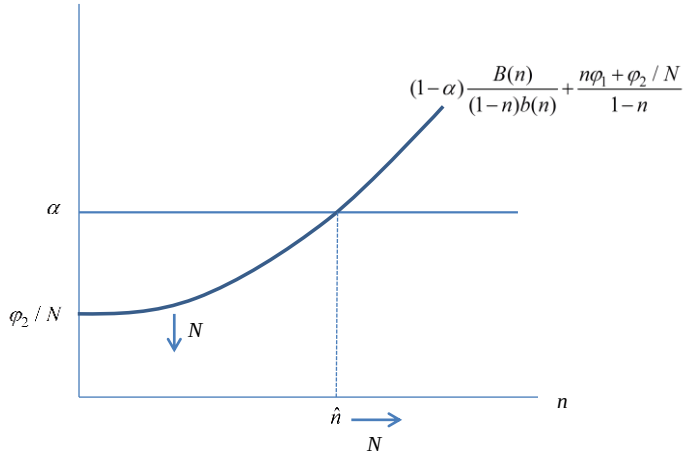
$$\frac{\omega}{p} = 1 - \frac{n\varphi_1 + \varphi_2 / N}{(1-n)\alpha} \tag{A11}$$

Combining Eq. (9) and (10) yields:

$$(1-\alpha)\frac{B(n)}{(1-n)b(n)} + \frac{n\varphi_1 + \varphi_2 / N}{1-n} = \alpha \tag{A12}$$

Eq. (11) determines the share $\hat{n}$ of performers in the global economy as depicted in Fig. A1. It can be easily shown that $\hat{n}$ increases with *N*.

Fig. A1. The share *n* of performers in the global population



Eq. A12 and Fig. A1 show that:

1) Globalization (increase in *N*) increases the share $\hat{n}$ of performers in the population and that this increase is fully attributable to the decrease in the fixed cost per number of consumers, $\frac{\varphi_2}{(1-n)N}$. When $\varphi_2 = 0$, $\hat{n}$ becomes independent from *N* and globalization has no impact on the share $\hat{n}$ which is the same as in cultural autarky.

2) When N is very large compared to φ_2, $\frac{\varphi_2}{(1-n)N}$ is very small and the effect of an increase in N is minor.

Since Relation (6) holds, $\omega(a_i) = \frac{b(i)}{b_{\hat{n}}}\omega(a_{\hat{n}}) = \frac{b(i)}{b_{\hat{n}}}(1-\alpha)$. This shows that the performers' hierarchy in incomes is not impacted by symmetric globalization. In contrast, as $\hat{n}$ increases in relation to autarky, $b_{\hat{n}}$ decreases and all the incomes increase in proportion to $1/b_{\hat{n}}$.

C.2. Asymmetric globalization

The building of the model with fixed costs in asymmetric globalization is available from the author upon request. We provide here the figure drawing the variation in performers' earnings and in talent premia in the different countries and in the three configurations (cultural autarky, symmetric globalization and asymmetric globalization).

Fig. A2 depicts the talent premia in Home and countries k, $k = 1, \ldots, K$, corresponding to cultural autarky (black curve), symmetric globalization (black bold curve), and asymmetric globalization (blue curve for Home and dashed curves for countries k. The earnings are inferred by multiplying each curve by $(1-\alpha)$.

Fig. A2 is very similar to Fig. 8 in the text, except that symmetric globalization now induces an increase in performers' earnings as explained in Section C1.

Fig. A2. Talent premia in the different countries and the three configurations