

International Trade and Cultural Identity

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Abstract: Economists emphasize the benefits from free trade due to international specialization, but typically have a narrow measure of what matters to individuals. Critics of free trade, by contrast, focus on the pattern of consumption in society and the nature of goods being consumed, but often fail to take into account the gains from specialization. This paper argues for and develops a new framework to study the effects of trade liberalization on cultural identity and trade in cultural goods by first describing the process of trade liberalization in the audiovisual sector with an emphasis on the movie picture industry. Traditional political economy approaches or increasing returns to scale models cannot account for the extent and type of state interventions throughout the world. In the theoretical model cultural identity emerges as the result of the interaction of individual consumption choices. In a Ricardian model of international trade the paper shows that (i) trade is not Pareto inferior to autarky, (ii) trade is not Pareto superior to autarky if the world is culturally diverse under free trade, (iii) and everybody in a country can lose from free trade if the country is culturally homogenous under autarky.

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1 Introduction

To most economists the benefits from international trade and the globalization process are clear and significant. Consumers gain when countries specialize according to their comparative advantage and factors flow to their most productive use. The general public and many politicians are often more skeptical. The doubts are not constrained to non-academics however. A casual look at other social sciences like sociology and political science, or more generally the humanities, shows deep concerns over globalization and trade liberalization.¹ Even superficial examination of the related literatures reveals an interesting, if little acknowledged fact. Economists and their critics seem to speak about different phenomena, even though they both refer to globalization.² For economists globalization and trade liberalization are good because physical output increases as the result of international specialization, which in turn enlarges the consumption set and hence makes individuals better off.

By contrast, many critics, academics and non-academics alike, are not so much concerned about the quantity of physical goods being consumed. Rather they fear that the globalization process erodes national cultures and individual identities. From that standpoint, the increase in physical consumption of mass produced goods of western origin like McDonalds hamburgers, Hollywood movies, and pop music, is seen as negative because it crowds out self-produced or locally manufactured goods. Traditional life-styles vanish.³ This argument is used both in developing countries and in industrialized countries like France. Whereas economists do not attach any value *per se* to consuming locally produced goods, this is

¹It is impossible to give an overview of the literature in other social sciences. Three books comprising articles from various authors may give an indication however; Lamberton (2002), Chan and McIntyre (2002), and McAnany and Wilkinson (1996).

²A simple search on www.jstor.com confirms the point. A full-text search for the term "gains from trade" generates 144 hits for 23 economics journals for the period 1990-1992, while the same search for 86 journals in Anthropology, Language and Literature, and Sociology generates only 15 hits for the entire period. Conversely, a full-text search for the term "cultural identity" generates 19 hits in economics journals for all years, but 155 hits in the other journals for 1990-1991. Similarly, a full-text search for the terms "globalization" and "culture" produces 15 hits among 22 economics journals for the entire period, but 145 hits in the other journals for the 1990-1995 period alone. Clearly, the results are explained partly by field-specific terminology and by differences in focus. Yet this is exactly the point.

³The following quote from Akande (2002) expresses this point very clearly. *...globalized "cultural" industries are taking over traditional forms of creation and dissemination of culture. Local culture's role as a spontaneous and integral part of people's life is eroded and it ceases to serve as the means of constructing societal values, reproducing group identity and building social cohesion. The end result becomes global integration at the expense of local disintegration.* See also Tardiff (2002).

an essential part for the survival of national or regional cultures, according to the critics' view. To risk oversimplification, one might say that economists do not care about what is consumed, but about how much, whereas many globalization critics care about society's pattern of consumption, and rank the amount of consumption as second order.

Is globalization and trade liberalization a good thing? The present paper argues that both sides have a valid point, but at the same time each side fails to acknowledge the other side's concern, leaving us in an unsatisfactory state because the effects of globalization cannot be properly addressed. This paper attempts to fill the gap. Economists are correct to emphasize the benefits from specialization and international exchange. These gains are real. Yet, it is also true that human beings are more than machines who are interested in maximizing physical consumption, a point that is central to the thinking of other social sciences and the humanities. Economists focus on individual welfare, but have a narrow measure of what matters for humans.⁴ Critics of trade liberalization point to the larger dimension of human nature. At the same time, however, they typically do not refute or even address the economist's argument of revealed preference. If consumers around the world choose to eat popcorn while watching a Hollywood movie, the observation suggests *prima facie* that consumers must be better off than when consuming a local movie and traditional food. The economist's argument about revealed preference is very powerful and goes hand in hand with gains from trade in standard neoclassical models of international trade. It is not clear, however, whether the argument still holds once we accept a wider notion of human nature, one that allows for cultural identity.

The present paper's contribution is to assess the gains from international trade when individuals have cultural identities. To formalize the notion of cultural identity, I adapt a version of Akerlof and Kranton (2000), who show that such a notion can explain many labor and other market phenomena better than traditional models. They do not consider aspects of international trade. For the present paper, individual identity is a function that involves an individual's own and all other individuals' consumption choices. I ignore the process of identification which is the term used by psychologists to describe the assertion of one own's norm if other violate the norm. The present identity function therefore is equivalent to a

⁴An exception is the literature on happiness and economics. See Frey and Stutzer (2002) for an overview of the topic and literature.

consumption externality, where the externality is zero if all individuals consume the same set of goods. This property allows me to avoid taking a normative stand as to whether consumption of local or Hollywood movies should be preferred. Nevertheless, I can compare welfare levels under autarky and free trade using the Pareto criterium. In the concluding section I comment on how the present framework can be enriched by allowing for more complex concepts of identity.

The conflicting views of economists and non-economists make a strong case for developing a theory of international trade in cultural goods to study the effects of globalization on national cultures and individual identities. To offer a more specific motivation, however, I describe and assess in section 2 the controversy over trade in audiovisual products in general, and movie pictures in particular. The debate over trade in films has old historic roots. Ulf-Moller (2001) describes how the transition from silent to modern films with tone shifted the market dominance from Europe and France to the U.S., and created fierce responses in the first decades of the twentieth century. More recently, the movie picture industry became a very contentious topic in the GATT's Uruguay round, leading to a confrontation between the EU and France on the one hand and the U.S. on the other hand. Hollywood dominates market shares in many countries around the world and thus has led to large trade imbalances in this sector (see Waterman and Lee (2003) for an excellent overview). France asked for a cultural exception (*l'exception culturelle*), while the U.S. viewed audiovisual products as regular commercial goods. The conflict could not be resolved and is now under consideration in the Doha round of trade negotiations. A consensus has recently emerged that views audiovisual products as dual assets, being both culture and commerce. Yet important differences among member states remain, relating to state subsidies to domestic film productions and domestic content restrictions. The section demonstrates why standard political economy considerations and concerns over increasing returns to scale cannot properly account for the stylized facts, and confirms the need to develop a theory of international trade in which consumption patterns matter.

In section 3 I develop a Ricardian model of international trade with cultural identities. The main results are as follows. First, trade is not Pareto inferior to autarky. This result is perhaps not surprising given the well-known gains from specialization in a Ricardian trade model. At least someone gains. However, not all conventional wisdoms from standard

Ricardian models carry over to the present framework. In particular, when the world is culturally diverse under free trade, trade is not Pareto superior to autarky except in a knife edge case. In other words, somebody loses when all cultural goods are produced. The result is fairly intuitive if we take into account that not all individuals can increase physical consumption of noncultural goods because the technology of producing these goods is unchanged and at least one country continues to produce that good. At the same time, the consumption pattern of cultural goods changes and affects some individuals negatively. Note, however, that the result leaves the possibility open that trade is Pareto superior if not all cultural goods are produced under free trade. The two previous insights characterize global results. Another result focuses on the effects in one country. While trade is not Pareto inferior to autarky, I show by way of an example that everybody in a country can lose. This happens when the country is culturally homogenous under autarky and taste heterogeneity is sufficiently small. The concluding section offers insights on how to extend the research in this area.

The theoretical literature on trade in and trade policy for cultural goods is fairly small. Two papers seem close to the present undertaking, but are at the same time different. Francois and van Ypersele (2002) argue that under certain conditions protection of cultural goods can be Pareto improving. Using trade in movie pictures as a starting point, they assume that all consumers have identical valuations for Hollywood produced movies, but differ in their valuations of local, non-Hollywood movies. A key assumption is that people of other countries have no interest in consumption for the latter. Since movie production requires spending of fixed costs, local non-Hollywood movies may be driven out of the market depending on the taste distribution and fixed costs. A tariff on Hollywood movies can be Pareto improving because it makes local, non-Hollywood movies viable in both markets. This generates additional consumer surplus and avoids monopoly pricing of Hollywood movies. The distribution of preferences plays an important role in the present model as well. However, unlike Francois and van Ypersele's model increasing returns to scale on the producer side are not required to induce losses from trade for some individuals. Because of gains from specialization, welfare results are also not as stark as in their paper.

In another recent contribution Bala and Van Long (2003) analyze the effects of trade on cultural diversity. Their model and mechanism of preference interaction is however different

from mine. Using replicator dynamics, they assume that the number of individuals preferring one type of good over another depends on the fraction of people having the same preference in the previous period as well as the relative price of the two goods. Trade may lead to the extinction of one preference type, depending on the relative endowment of each good and country size. In contrast to their approach the present paper derives the interaction of individual behavior more directly by borrowing from a framework that finds support in the psychology literature. In addition, the lack of cultural diversity is not driven here by differences in country size or relative endowments, but rather by differences in technology.

2 Trade and Identity: The Movie Picture Industry

The motion picture and video tape production industry is part of the audiovisual industry, which comprises also motion picture projection services, radio and television service, radio and television transmission services, and sound recording. The overall economic importance of the audiovisual industry is small. The total value in the EU is about 58.3 billion Euro in 1999 and employs perhaps 1.8 million people (WTO 1998a). The audiovisual industry is believed to be growing, perhaps rapidly, as a result of technological innovations like digitization and new internet-based distribution channels. The movie picture industry itself is even much smaller. Aas (2001) reports cinema ticket sales in the EU of 4.3 billion Euro in 1999, which amounts to about 7.4% of the EU's audiovisual industry. Even in the U.S. total employment in the motion picture and videotape industries is listed with only 590,000 people in 1995 (WTO 1998a). Despite the relative small economic importance the audiovisual industry in general, and the movie picture industry in particular, have played and still play a significant role in difficult negotiations for liberalizing trade and fierce debates over state interventions.

During the Uruguay round of GATT trade negotiations, which concluded in 1994 and led to the establishment of the World Trade Organization in 1995, member countries could not agree on the treatment of audiovisual products, reflecting sharp differences about the nature of such goods. On one side was the U.S. who saw audiovisual products as commercial goods, not significantly different from other goods. On the other side was the EU, and France in particular, who viewed audiovisual products as cultural goods which should be categorized neither as goods nor services. The EU asked for a cultural exception (*l'exception*

culturelle). Because of the diametrically opposed positions, also later known as the "all-or-nothing" stand, the Uruguay round was concluded without reaching a consensus and member countries decided to put the issue on hold for ten years. This period is about to expire and new proposals are considered in the WTO's Doha round of trade negotiations, an aspect to which I return below.

In this section I argue that the fuss over the audiovisual industry in past GATT and current WTO negotiations, as well as the amount and type of state interventions, cannot be explained with traditional political economy models of trade protection alone. Instead, much of what we see is driven by some countries' desire to preserve their cultural identities in the face of a perceived threat arising from importing foreign products. The dual nature of audiovisual products as both commerce and culture is now widely acknowledged, even by the U.S., although important differences among WTO members remain. The point of this section is not to justify all sorts of interventionist policies, but rather to highlight the different nature of the audiovisual industries and to motivate the need for developing a formal framework for analyzing trade in cultural products.

2.1 Trade and Trade Distortions in the Movie Picture industry

Based on survey data obtained by UNESCO (2000), the largest producers of full-length movies are India (839), China including Hongkong (469), Phillipines (456), the U.S. (385), and Japan (238), where numbers refer to annual averages over the 1988-99 period.⁵ Many European countries and some larger developing countries are medium-sized producers with about 20-199 movies per year. For instance, for the same period the UNESCO reports the following numbers for Thailand (194), France (183), Brazil (86), Nigeria (20), Iran (62). Interestingly, a large number of countries produce one film or no films at all, most of them poor developing countries, including Ghana, Iraq, Peru, but also small rich countries like Luxembourg. There is a strong correlation between country population size and film output. Large fixed cost but very small variable costs in producing a movie make production in more populous states easier. Film production is also strongly positively correlated with the Human Development Index and GNP per capita.

⁵The WTO (1998) provides somewhat larger numbers for the U.S. in the early 1990s, ranging between 450 and 583. Differences may be due to definitions and averaging. See also the cautionary footnote below.

World trade in movies is quite unbalanced on a bilateral and regional basis.⁶ An excellent overview on trade in movies is provided by Waterman and Lee (2003). In terms of film imports by numbers, for large producers (>200 movies per year) the number of imported films (1390) are about 58% of their own production, whereas for small producers (less than twenty movies per year in own production) imports (6723) far outweigh own production of 408 movies. On a regional basis, Asia's imports are about similar to its own production, whereas all other regions import many more movies than they produce, including North America. The largest discrepancy can be found in Africa, which produces on average only 42 movies but imports over 2800 films per year. These numbers are only partially revealing because they don't say much about viewership. Here the balance is very clear in favor of U.S. productions. About 85% of all movies shown worldwide are produced in Hollywood (WTO 1998a). The market share of U.S. films in Europe for 1994 ranges from 60% (France) to 90% (The Netherlands). Not surprisingly then, the U.S. runs a huge trade surplus in this sector with other regions and countries, including the EU, as the following table demonstrates.

Trade balance in audiovisual works US-EU, 1989-1999, in million US\$

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
US to EU	3133	3280	3947	4106	4642	4886	5331	6262	6645	7313	8117
EU to US	404	464	279	300	429	566	517	613	668	706	853
Net Balance	2729	2816	3668	3806	4213	4320	4814	5649	5977	6607	7264

Source: Aas (2001) based on European Audiovisual Observatory

Such unbalanced bilateral or regional trade, in particular when put in context of global trade volumes, usually does not create an economist's interest. It is a major concern for many European governments among others. The importance and promotion of culture is anchored in the Maastricht Treaty (Articles 87 and 151) and has led to widespread government intervention. *The primary purpose of regulation in the audiovisual sector is to safeguard certain public interest objectives such as pluralism, cultural and linguistic diversity and the protection of minors* (EU Commission 2001, p. 3). Perhaps not surprisingly, financial support for film and audiovisual productions in EU member countries is very large in some cases, as the

⁶All numbers must be taken with care because the definition of the nationality of a movie is sometimes obscure and used differently across countries (raising issues like where the movie was produced, the nationality of producers and directors, as well as the role of international joint ventures). In addition, at least for U.S. companies intra-firm trade plays a significant role and is at the same time not well captured statistically (see WTO 1998).

following table shows.

Public Funds for Film and audiovisual production in EU, 2000, in million Euro

Aus	Bel	Den	Fin	Fra	Ger	Gre	Ire	Ita	Lux	Neth	Por	Spa	Swe	U.K.
16.7	17.0	30.9	12.0	411.2	188.6	9.0	9.1	91.0	1.7	25.7	17.3	31.8	33.4	47.1

Source: Aas (2001) based on European Audiovisual Observatory

These policy interventions are remarkable not only for their volume, but for two other reasons as well. First, in general the EU Treaty restricts the amount of state aid out of fear that such aid could distort competition. The EU Commission therefore requires approval of any introduction or change in state aid. A second aspect that stands out is the fact that the policy interventions take the form of production subsidies and not tariffs, although various domestic content requirements interfere directly with foreign market access, an aspect discussed below.

Some more insight can be obtained by looking at the EU in particular. Most of the financial support comes from individual member states, although through the MEDIA PLUS initiative (2001-2005) the EU pumps 400 million Euro into the sector over a five-year span. The EU is heavily involved in regulating state aid. As mentioned above, in general the EU Commission takes a restrictive stand on state aid, which is mostly explained by concerns about competitive distortions. Cultural industries face different regulations however. Based on Article 87(3) of the EC Treaty, state aid for cultural products must follow the following rules: (i) The producer is free to spend at least 20% of the film budget in other EU member states without losing eligibility for state aid ("Territorialization"); (ii) State aid is limited to 50% of the production budget subject to exemptions for certain low budget films ("Aid intensity"); (iii) Aid for certain film production activities like post-production promotion are prohibited. The aid intensity is quite high and proved to be contentious. The EU Commission appeared to push for lower levels, while some countries had higher levels according to the UNESCO (2000) study (e.g., Austria 90%, Luxembourg 88%, Spain and Portugal 80%).

Besides subsidies, some countries promote their own industries through other means, in particular by restricting market access and imposing domestic content restrictions. For example, India explicitly limits the number of foreign films. Canada has local content requirements for broadcasting as well as film and video ranging between 20 and 65 percent

(WTO 1998a). Worldwide other restrictions involve limits on foreign shareholdings and exclusion from national treatment in respect to domestic subsidies. The WTO reports that during the Uruguay round only 13 countries made commitments in the audiovisual sector, but 33 countries took exemptions from the most-favored nation status, including various non-European countries.

Since the end of the Uruguay round and the establishment of the WTO positions in the debate on liberalizing trade in audiovisual products have changed. This is partly due to politics, partly due to technological change. For example, the U.S. now rejects the all-or-nothing stand that led to the stalemate in the early 1990s. Instead it acknowledges that *the audiovisual sector is both cultural and commercial activity* (WTO 1998b), because the U.S. views the audiovisual sector as very different from what it was just a few years earlier. New technologies like digital compression make distribution of cultural content through less expensive channels possible. The U.S. believes that *in the light of the quantum increase in exhibition possibilities in today's digital environment, it is quite possible to enhance one's cultural identity and to make trade in audiovisual service more transparent, predictable, and open* (WTO 2000). Quite likely, the U.S. will push for lower and more transparent aid levels in the Doha round, which might even be welcome by the EU Commission to some extent. The EU, although perhaps not all member countries, has realized that isolation from foreign competition, even from intra-EU producers, coupled with tremendous subsidies is unlikely to make the cultural industries in Europe competitive in the long run, not least because foreign competition is inevitable as consumers directly choose content through new technologies like the internet. Nevertheless state subsidies and other market access restrictions are likely to continue to play an important role.

Besides the U.S. and the EU, Switzerland and Brazil have taken an explicit stand. Switzerland (WTO 2001a), confirming the dual nature of audiovisual products, sees a need to specify the notion of cultural diversity so that safeguards can be properly defined. It also wants subsidy rules to be developed in the GATS framework and believes that competition issues like high entry barriers need to be addressed. The position of Brazil is of interest, as it reflects a developing country, although a large one. Like the U.S., Brazil (WTO 2001b) rejects the all-or-nothing position of earlier years and sees the main question in *how to promote the progressive liberalization of the sector in a way that creates opportunities of effective*

market access for exports of developing countries in this sector without affecting the margin of flexibility of governments to achieve their cultural policy objectives as they find appropriate. One of Brazil's concerns is the dominance of few oligopolistic firms that may use dumping and transfer pricing rules to crowd out local firms.

2.2 Assessment

There appears to be widespread consensus now about the dual nature of audiovisual products. It is also apparent that technological innovations have and continue to change fundamentally the industry. What is less clear, however, is whether and how trade liberalization affects cultural diversity and hence national identities. Economists should also question the reasoning behind state interventions and market access restrictions, as well as provide a deeper understanding of how and why trade in cultural products could be different from trade in more conventional goods.

Consider first state interventions. Traditional wisdom holds that small open economies should not impose tariffs, unless foreign products themselves give rise to externalities that are not properly taken into account by market participants. For this reason economists typically explain existing protectionist policies by appealing to political economy arguments (see Grossman and Helpman, 2002, for an overview, and chapter 6 in particular). None of these theories, however, seem to explain well the current interventions both in terms of reasoning as well as the instruments of intervention. Many models associate a higher protection level with a larger industry output.⁷ Given the small output in the movie picture industry in many countries, the level of protection or state intervention seems inappropriately high.

Grossman and Helpman (1994) have more recently pioneered a lobbying framework, in which lobbies compete by providing money to politicians in order to affect their platforms. While this approach is very popular from a modeling perspective, and has found some empirical support (see, for example, Goldberg and Maggi 1999), it seems not a good fit

⁷Early contributions to this literature (Mayer 1984) explain tariff protection as a result of political conflict among heterogenous individuals who differ in their capital-labor endowments. In the political support function approach by Hillman (1982) governments trade off the support from particular industries against the dissatisfaction from consumers. Other approaches, like the tariff formation approach by Findlay and Wellisz (1982), emphasize the interaction of lobbies from different industries.

for the present industry. In the U.S., Hollywood's political influence is legendary (e.g., Ronald Reagan as president, Arnold Schwarzenegger running for governor of California, and many actors supporting the Democratic Party), but overall protection is in effect very small. By contrast, state subsidies are very prevalent in Europe, but individual candidates for office have tight links and receive most of the campaign financing from their parties, which in turn are mostly state financed. When governments and parliaments are dominated by a few large parties, interest groups from small sectors like the audiovisual industry must compete with large interest groups like unions, employer associations, or pensioners, and tend to be less influential.

I noted earlier that the movie production industry, like many cultural products, is characterized by steep increasing returns to scale (IRS). Trade policy interventions therefore may also be motivated by concerns about losing such an industry when agglomeration forces push the industry to concentrate geographically. Ethier (1982) and Grossman and Helpman (1985) study a trade model with economies of scale, where IRS are external to the individual firm. In this framework a country can lose from trade relative to autarky. But given the size of the sector in most countries, even in the U.S., it seems not plausible that the vanishing of this sector can have big enough general equilibrium effects on wages. While external economies of scale may be relevant (e.g., Hollywood), the production characteristics of movies suggest to look at models with economies of scale internal to a firm. In fact, the movie picture industry might be a good example of the monopolistic competition framework introduced by Dixit and Stiglitz (1977), and extended to a trade context by Krugman (1979), among many others. In those models, trade is Pareto superior to autarky not only because of gains from specialization but also from an extended set of product varieties as fixed costs can be spread among a larger consumer base. The Pareto superiority of trade does not rule out that state interventions are beneficial, in particular when unilaterally provided. However, it would make the deep concerns by many countries unreasonable.

Another important and puzzling feature of state interventions in the audiovisual sector is the existence of state subsidies and the absence of tariffs. Traditional trade theory has difficulties in explaining the prevalence of tariffs for protection of many (non-audio) products. Tariffs are dominated by domestic production subsidies because in a small open economy the latter do not lead to higher consumer prices. Under tariffs consumers suffer additional

welfare losses when prices go up. It is therefore surprising that in the audiovisual industry production subsidies, and to some extent domestic content requirements, dominate. Perhaps this can be best explained by two factors. First, higher domestic prices due to tariffs do not guarantee domestic production because of strong increasing returns to scale. Recall that many countries don't have any or very little movie production, which implies that aid to producing films, including the development of local talent and local production facilities, is the better because more direct approach. The second factor is perhaps even more crucial. Higher consumer prices discourage consumption of all movies, domestic and foreign. This is counterproductive to the objectives of promoting culture and cultural diversity, as demand for locally produced products declines. Herein lies an important difference to protection in more traditional industries where higher tariffs raise consumer prices and lead to welfare losses, but the consumption of the particular products themselves has no own value.

3 The Model

In this section a simple two-country Ricardian model of international trade is set up. In contrast to a standard Ricardian model I assume that individuals care about other individuals' choices, which gives rise to an individual identity function. This is explained in more detail below. In order to focus on understanding the relationship between trade liberalization and identity I abstract from increasing returns to scale. Each country produces three goods x, y , and z , using a linear technology with labor as the only input. The production functions for Home and Foreign are

$$\begin{aligned}
 X &= \frac{L_x}{a_x}, & Y &= \frac{L_y}{a_y}, & Z &= \frac{L_z}{a_z} \\
 X^* &= \frac{L_x^*}{a_x^*}, & Y^* &= \frac{L_y^*}{a_y^*}, & Z^* &= \frac{L_z^*}{a_z^*},
 \end{aligned}
 \tag{1}$$

where $L_i, i = x, y, z$, is the quantity of labor used in each industry and a_i is the unit labor requirement coefficient in Home, and similar for Foreign. An asterisk denotes foreign country variables. Home and Foreign are identical except for their production technologies, an aspect to which I return below. For reasons that will become clearer later I assume $a_x, a_y, a_x^*, a_y^* \leq 1$. All markets are perfectly competitive.

In each country there is a continuum of consumers of size one. Each individual supplies one unit of labor inelastically. In what follows I focus on the description of Home. Each consumer may purchase good z (the noncultural good) and one unit of either good x or y (the cultural good). One way to think about this setup is to see goods x and y as differentiated products in an industry (say beer and wine, or Hollywood movies and locally produced movies), and each person consumes only one of the two. The unit purchase restriction simplifies the analysis and the introduction of individual identity. Good z is a composite consumption good, comprising all other goods in the economy. Assume that individual preferences are given by

$$U(b) = c_z + \begin{cases} b + \tilde{I} - (1 - \lambda)I & \text{if individual consumes good } x \\ \tilde{I} - \lambda I & \text{if individual consumes good } y \end{cases} \quad (2)$$

where c_z is the amount of good z consumed, b is a preference parameter that is uniformly distributed on $[-\bar{b}, \bar{b}]$ for $\bar{b} \geq 0$. As motivated by Akerlof and Kranton (2000), $\tilde{I} - (1 - \lambda)I$ is the *identity function* when the individual buys good x , and $\tilde{I} - \lambda I$ if the person consumes good y . The parameter \tilde{I} is the base identity level that each individual obtains. Without loss of generality, and to simplify exposition, I assume $\tilde{I} = 0$. Identity is reduced by an amount that depends on the pattern of consumption in society. Let λ be the number and thus fraction of society that consumes good x . If Home's norm is to consume good x , then individuals who consume good x suffer from each individual that deviates from the norm and consumes good y in the amount of I . Each x consumer's total loss in identity is $(1 - \lambda)I$. If a person violates the norm and consumes good y , then the individual inflicts an identity loss I onto itself, that is larger the more individuals consume good x .⁸ Finally, a crucial role below plays the sign of the difference $\bar{b} - I$. Note that when $\bar{b} > I$ the highest valuation individual for good x buys good x even if no one else does, as long as the price of x is less than the price of y . An alternative interpretation of the utility function (2) is to see it as a consumption externality, which becomes quite clear in setting \tilde{I} equal to zero.

⁸Compared to Akerlof and Kranton (2000) I simplify the identity function by assuming that the identity loss parameter I is the same regardless of whether the person consumes x or y . Akerlof and Kranton allow for the possibility that when the social norm is to consume x , the loss parameter is I_o (o for other) for every other consumer who consumes good y . Similarly, when deviating from the norm by consuming y , the loss parameter is I_s (s for self) to indicate the self-inflicted loss in identity. *A priori*, there is no restriction on the relative size of the two parameters. For the present purpose, it is useful to assume that the two are the same. As mentioned in the introduction, I ignore the process of identification, which psychologists use to describe the additional actions taken by those whose norms are violated by others to reconfirm their values.

Let the price of good i be p_i , an individual's budget constraint reads

$$w = p_z c_z + \begin{cases} p_x & \text{if person buys good } x \\ p_y & \text{if person buys good } y \end{cases} \quad (3)$$

where w is the wage rate and thus income, given the assumption that each person inelastically supplies one unit of labor. It is now easy to see when an individual buys good x and when good y . Using (2) and (3), and the definition $p \equiv \frac{p_y - p_x}{p_z}$, a person buys x if and only if

$$b \geq I(1 - 2\lambda) - p \equiv \widehat{b}(\lambda). \quad (4)$$

Note that the critical value \widehat{b} may be below $-\bar{b}$ or above \bar{b} . An individual consumes good y when $b < \widehat{b}$.

3.1 The Closed Economy

The equilibrium notion is straightforward. An *autarky equilibrium* is a vector of industry labor inputs and outputs $\{L_{i=x,y,z}, X, Y, Z\}$, a consumption tuple for each individual, consisting of c_z and the variety of the cultural good consumed (x or y), a price vector $\{p_i, w\}_{i=x,y,z}$, and a critical value $\widehat{\lambda}$ such that (i) all goods markets and the labor market clear given prices and $\widehat{\lambda}$, (ii) firms maximize profits given the price vector, and (iii) consumers make utility maximizing choices taking $\widehat{\lambda}$ and prices as exogenous. In addition, the following must be true: (iv) the number of individuals who prefer buying x based on (iii) must equal $\widehat{\lambda}$. The last condition is the only true novel aspect compared to a standard Ricardian trade model, and amounts together with (iii) to a fixed point requirement.

In solving the model note first that perfect competition and profit maximization imply

$$p_i \leq w a_i, \quad i = x, y, z, \quad (5)$$

where the equality holds when the output in industry i is strictly positive. Regarding (iii), the only consumer decision is between choosing good x and y . The initial assumption on technology coefficients ($a_x, a_y \leq 1$) guarantees that consumption of the composite good is nonnegative, i.e., $c_z = (w - p_j)/p_z \geq w(1 - a_j)/p_z \geq 0$ for $j = x, y$. The optimal consumption choice at the individual level is therefore completely characterized by (4). Turning to equilibrium condition (iv), aggregate demand for good x equals the sum of all unit demands

from those individuals for which condition (4) holds. Assuming for the moment an interior solution, that is $-\bar{b} \leq \hat{b}(\lambda) \leq \bar{b}$, equilibrium requires

$$\int_{\hat{b}}^{\bar{b}} f(b)db = \frac{\bar{b} - \hat{b}}{2\bar{b}} = \lambda,$$

where $f(b) = 1/2\bar{b}$ is the density under the uniformity assumption of the distribution of b . Solving for λ , the critical value is given by

$$\hat{\lambda} = \frac{1}{2} \left(1 + \frac{p}{\bar{b} - I} \right). \quad (6)$$

Note that the price term p can be positive or negative. By using (6) in (5) it is easy to verify that the interior solution applies only when $-1 < p/(\bar{b} - I) < 1$, or

$$\bar{b} - I \geq \begin{cases} \max\{p, -p\} & \text{if } \bar{b} - I > 0 \\ \min\{p, -p\} & \text{if } \bar{b} - I < 0 \end{cases}. \quad (7)$$

For the following result it is useful to introduce a new terminology.

Definition. A country is called *culturally diverse* if $\hat{\lambda} \in (0, 1)$, and *culturally homogenous in good $x(y)$* if $\hat{\lambda} = 1$ ($\hat{\lambda} = 0$).

In addition, and parallel to the price term definition p , the definition $a \equiv \frac{a_y - a_x}{a_z}$ is used. The sign of a , like the sign of p , is not determined *a priori*. This leads to the first result.

Proposition 1. An autarky equilibrium exists and has the following properties:

- (a) If $\bar{b} - I \geq \max\{a, -a\}$, the equilibrium is unique and Home is culturally diverse. The price p^A equals a , and $\hat{\lambda}^A = \left(1 + \frac{a}{\bar{b} - I}\right)/2$.
- (b) If $\bar{b} - I < \max\{a, -a\}$, Home is culturally homogenous. The price term p^A is not uniquely determined.
 - (b1) The real equilibrium is unique if $\min\{a, -a\} < \bar{b} - I < \max\{a, -a\}$. Home is culturally homogenous in x ($\hat{\lambda}^A = 1$) if $a > 0$, and homogenous in y ($\hat{\lambda}^A = 0$) if $a < 0$.
 - (b2) There exist two real equilibria, in which Home is culturally homogenous in x or y if $\bar{b} - I < \min\{a, -a\}$.

Proof: For existence we first prove the following result: Given p , a unique fixed point $\widehat{\lambda} \in [0, 1]$ exists.

Recall that a consumer purchases good x if (4) holds. This is a consequence of utility maximization. Aggregate demand for good x must equal λ , and therefore we have

$$\int_{\min\{\bar{b}, \max\{\widehat{b}, -\bar{b}\}\}}^{\bar{b}} f(b)db = \frac{\bar{b} - \min\{\bar{b}, \max\{\widehat{b}, -\bar{b}\}\}}{2\bar{b}} = \lambda. \quad (8)$$

A fixed point is now a value of λ such that (4) and (8) hold and $\lambda \in [0, 1]$. Note that both equations are linear in λ and hence at most one solution exists. I now examine all possible cases.

- $\widehat{b} < -\bar{b}$. All individuals want to buy good x , as indicated by (4). In (8) the lower integrand equals $-\bar{b}$ and thus the aggregate demand equation solves for $\lambda = 1$, which is consistent with all individuals buying good x .
- $\widehat{b} > \bar{b}$. All individuals want to buy good y , as shown by (4). The lower integrand is \bar{b} , and the aggregate demand equation requires $\lambda = 0$, which is consistent with individual utility maximization by all individuals.
- $-\bar{b} \leq \widehat{b} \leq \bar{b}$. The value of the lower integrand is \widehat{b} , and the two equations solve for $\lambda = 0.5(1 + p/(\bar{b} - I))$. In this case the aggregate demand condition is equivalent to $\lambda = (\bar{b} - \widehat{b})/2\bar{b}$, which is an element of $[0, 1]$ by assumption.

Note that the fixed point was proven for given p . Existence of the autarky equilibrium is guaranteed by standard arguments, because aggregate demand for all goods is continuous and monotone in p .

(a) Assume that Home is homogenous in x . From (4) and (8) this requires $\widehat{b}(1) \leq -\bar{b}$ or $\bar{b} - I \leq p$. Since y is not produced $p \leq a$, which leads to a contradiction with the assumption $\bar{b} - I \geq \max\{a, -a\}$. A similar argument can be made to show that Home cannot be homogenous in y . When Home is culturally diverse, use $p_i = wa_i, i = x, y, z$ to derive the price term p . (b) Home cannot be culturally diverse because this implies $p = a$, and, in addition, it would have to be true that $\widehat{b}(0) < \bar{b}$ and $\widehat{b}(1) > -\bar{b}$, leading to the

requirement $\bar{b} - I > \max\{p, -p\} = \max\{a, -a\}$, which is a contradiction. The price term is not uniquely determined because either x or y is not produced. Next consider the conditions for consumption of x and z only: $\hat{\lambda} = 1$, $p_i = wa_i, i = x, z$, and $p_y \leq wa_y$, so that $p^A \leq a$. Together with (4) this gives $-a - I \leq \hat{b}(1) \leq -\bar{b}$ or $\bar{b} - I \leq a$. Similarly, the conditions for consumption of y and z only (namely $\hat{\lambda} = 0$, $p_x \leq wa_x, p_i = wa_i, i = y, z$) give $\bar{b} - I \leq -a$. ■

Remark: The equilibrium in b) is not unique as far as prices go when the country is culturally homogenous. The price of the good that is not consumed is not uniquely determined because the price of a good that is not produced is less or equal to marginal cost.

Proposition 1 is illustrated in *Figure 1* for the case where $a > 0$. Depending on the value of $\bar{b} - I$ relative to a , the autarky equilibrium is unique or not, and is either culturally diverse or homogenous. Cultural diversity is more likely the larger the difference between the preference parameter for the person with the highest taste for good x (\bar{b}) and the value of the identity loss parameter (I), holding technology constant. A similar figure applies when $a < 0$. In this case the only difference is that the middle segment of *Figure 1* is replaced by a unique equilibrium in which the country is homogenous in good y , that is, $\lambda = 0$.

For later comparison it is useful to write down equilibrium autarky utility levels,

$$u^A(x, b) = \frac{1 - a_x}{a_z} + b - (1 - \hat{\lambda}^A)I \tag{9}$$

$$u^A(y) = \frac{1 - a_y}{a_z} - \hat{\lambda}^A I,$$

where A denotes autarky values and the term in brackets of (9) indicates which good a consumer buys. Note that $u^A(y)$ is independent of b . The comparative statics of $\hat{\lambda}^A$ with respect to \bar{b} and I depend on the sign of p^A , whose sign is determined by the absolute difference in unit labor coefficients of x and y .

The next result concerns the Pareto optimality of the autarky equilibrium. This is a nontrivial problem because of the consumption externality. In general we should not expect the autarky equilibrium to be Pareto optimal because of the simultaneity and direct interdependence of all decisions. However, it is not clear how a Pareto better allocation could be implemented. A particular issue is the unobservability of the taste parameter b .

Suppose a government does not know individual tastes, but knows the distribution of preferences and observes the consumption bundles in autarky. Could the government implement a tax/transfer scheme based on autarky consumption bundles only that is Pareto better than the autarky equilibrium? The following result gives a negative answer if society's taste preferences are sufficiently different.

Proposition 2. Assume the government can make lump sum transfers conditional on which goods are consumed in autarky, but not depending on the preference parameter b . When the autarky equilibrium is unique in terms of the cultural consumption pattern, autarky is Pareto optimal if tastes are sufficiently heterogenous (i.e., \bar{b} is sufficiently large).

Proof. An allocation is Pareto optimal if there exists no other allocation that is both feasible and makes at least one person better off, while no one worse off. Proof is done by contradiction. Assume there exists another allocation that is Pareto better. Consider an allocation with a different $\lambda' = \hat{\lambda}^A + \Delta$, where $\Delta \in [-\hat{\lambda}^A, 1 - \hat{\lambda}^A]$, but leave physical consumption bundles as they are for x consumers. Then each x consumer under the new scheme gains ΔI , giving a total gain of $\Delta \hat{\lambda}^A I$. Taxing this gain completely, and thus making all x consumers indifferent to their autarky utility levels, the government can spread the gain among all y consumers under autarky. Note that it has to give all y consumers the same transfer because tastes are not observable. In addition there are Δ individuals who consumed good y under autarky but now consume good x . Since taste is unobservable these "switchers" are better off if

$$u'(x, -\bar{b}) = \frac{1 - a_x}{a_z} - \bar{b} + \frac{\Delta \hat{\lambda}^A I}{1 - \hat{\lambda}^A} - (1 - \hat{\lambda}')I \geq \frac{1 - a_y}{a_z} - \hat{\lambda}^A I = u^A(y), \quad (10)$$

because even the individual with the lowest preference for good x ($b = -\bar{b}$) has higher utility. A necessary condition for (10) to hold is that

$$a \geq \bar{b} - I \left(\hat{\lambda}^A \left(2 + \frac{\Delta}{1 - \hat{\lambda}^A} \right) - 1 + \Delta \right). \quad (11)$$

The right side is minimized for $\Delta = 1 - \hat{\lambda}^A$, when $\Delta \geq 0$, leading to the requirement $a \geq \bar{b} - 2\hat{\lambda}^A I$. This condition can be rewritten after inserting for $\hat{\lambda}^A$ as

$$a \left(1 + \frac{I}{\bar{b} - I} \right) \geq \bar{b} - I.$$

If the country is culturally diverse under autarky, we know from Prop. 1 that $\bar{b} - I > \max\{a, -a\}$. Thus $\bar{b} - I > 0$. The above inequality can therefore never hold when $a < 0$. Also, when $a > 0$, the inequality is violated if \bar{b} is sufficiently large. Note that $\hat{\lambda}^A$ is falling in \bar{b} . So holding parameters a and I constant, the condition for a Pareto improvement is violated if \bar{b} is sufficiently large. When the country is culturally homogenous in good y under autarky ($\hat{\lambda}^A = 0$), the requirement becomes $a \geq \bar{b}$. From Prop. 1 we know also that when the autarky equilibrium is unique $a < \bar{b} - I < -a$, which leads to a contradiction.

If $\Delta \in (-\hat{\lambda}^A, 0)$, the right hand side of (11) is minimized when $\Delta = 0$. A necessary condition for Pareto improvement becomes $a \geq \bar{b} - \hat{\lambda}^A I$. The same argument as above leads to a contradiction. ■

Note that the result is not as strong as it might appear. The government could potentially do better than the proposed scheme if it can differentiate the transfer between those consumers who continue to consume good y and those who switch from y to x subject to the self-selection constraint which requires that the "switchers" prefer their bundle to those who continue to consume good y . No general result has been established for such a scheme so far.

3.2 Free Trade

Recall that Foreign is identical to Home except for technology parameters. Thus $I = I^*$, $\bar{b} = \bar{b}^*$, and $L = L^*$. To make trade potentially different from autarky, I assume

$$\frac{a_x}{a_x^*} < \frac{a_z}{a_z^*} < \frac{a_y}{a_y^*}. \quad (12)$$

This assumption narrows down the trading structure, without fixing it entirely. Condition (12) implies that under free trade Home produces and exports good x , while Foreign produces and exports good y , if all goods are consumed and both countries produce the noncultural good. In that case either one or both countries produce good z , an aspect that is crucial for evaluating welfare effects. Any other ordering of labor coefficients than (12) would open up the possibility that a country exports both x and y , something that appears less interesting for the present purpose. The assumption is also consistent with a situation in which each cultural good can be produced only in one country, say French wine in France or Hollywood

movies in the U.S., which can be formalized by assuming that a_y and a_x^* go toward infinity. Then (12) holds for strictly positive and finite unit labor coefficients in the z -sector.

Condition (12) implies also $a > a^*$ because $\frac{a_y}{a_z} - \frac{a_y^*}{a_z^*} > 0 > \frac{a_x}{a_z} - \frac{a_x^*}{a_z^*}$. Foreign's autarky equilibrium has the same qualitative structure as in Proposition 1. Depending on the sign of a , however, the range of values for $\bar{b} - I$ under which the economy is culturally diverse, can be larger or smaller. Free trade therefore has the potential to affect cultural diversity in the two countries differentially.

The definition of a free trade equilibrium follows now the one under autarky with the difference that goods markets are integrated (while labor markets stay national) and consumers in both countries maximize utility given their national parameter λ and λ^* respectively. The critical value $\hat{\lambda}$ has the same structure as in (6), assuming an interior solution, although now relating to the free trade price p^T . In the following I use superscript T to indicate free trade values (as opposed to A for autarky). Also I normalize the price of the composite good to one, $p_z^T = 1$.

Some preliminary insights are straightforward. With the price normalization, the free trade relative price differential becomes

$$p^T = \frac{p_y^T - p_x^T}{p_z^T} = w^{*T} a_y^* - w^T a_x, \quad (13)$$

if all goods are produced in equilibrium. I introduce the new definition $\tilde{a} \equiv a_y^*/a_z^* - a_x/a_z$. Furthermore, $p^T = \tilde{a}$ if $(Z^T, Z^{*T}) > 0$, $p^T \geq \tilde{a}$ if $Z^{*T} = 0$ and $p^T \leq \tilde{a}$ if $Z^T = 0$.

Regarding existence of equilibrium, note that countries are symmetric except for technology and thus have the same consumption pattern. The utility maximizing choice in both countries is still governed by (4) and similarly the aggregate demand condition (8). This implies that if a fixed point λ^T for Home exists given p , it exists in both countries. Standard arguments then ensure a free trade equilibrium.

Proposition 3. A (partial) characterization of the free trade equilibrium:

- a) Assume $0 < (a_x, a_y^*) < 1/2$. If $\bar{b} - I \geq \max\{\tilde{a}, -\tilde{a}\}$, the world is culturally diverse and $p^T = \tilde{a}$. If $\bar{b} - I < \max\{\tilde{a}, -\tilde{a}\}$, the world is culturally homogenous, and $p^T \leq \tilde{a}$ if $\hat{\lambda}^T = 1$, and $p^T \geq \tilde{a}$ if $\hat{\lambda}^T = 0$.

- b) Assume $1/2 \leq (a_x, a_y^*) \leq 1$. If $\bar{b} - I \geq \max\{\frac{\tilde{a}a_x}{1-a_x}, \frac{-\tilde{a}a_y^*}{1-a_y^*}\}$, the world is culturally diverse and $p^T = \tilde{a}$.

Proof: a) Assume for now that the world is culturally diverse under free trade. Then the equilibrium price term satisfies $p^T = a_y^*/a_z^* - a_x/a_z \equiv \tilde{a}$, where $a^* < \tilde{a} < a$. To see this, note that under cultural diversity Home must produce x and Foreign y . Home cannot produce y , and Foreign cannot produce x . Equilibrium in the market for good x requires $2\hat{\lambda}^T = L_x/a_x$. Now $Z^T > 0$ if $L_x = 2\hat{\lambda}^T a_x < 1$. This is always the case as $a_x < 1/2$. A similar argument holds for Foreign. Hence both countries produce good z , and wages must satisfy $w^T = 1/a_z$ and $w^{*T} = 1/a_z^*$. Inserting these in the price term gives $p^T = \tilde{a}$. Using (12) it is easy to verify that $a^* < \tilde{a} < a$. I assumed initially that the world is culturally diverse. It is now straightforward to show that this is true under the assumption on $\bar{b} - I$ using the same technique that were used in proving cultural diversity of the autarky equilibrium. The only difference is the replacement of a by \tilde{a} . Similar for cultural homogeneity.

- b) The condition for cultural diversity is $-1 < p^T(\bar{b} - I) < 1$. The price term $p^T = \tilde{a}$ when both countries produce good z , which is the case if after satisfying demand for cultural goods, each country has labor left over to produce the noncultural good. The conditions for this to happen ($L_x, L_y^* < 1$) are $(\bar{b} - I) \left(1 - \frac{1}{a_y^*}\right) < \tilde{a} < (\bar{b} - I) \left(\frac{1}{a_x} - 1\right)$. Combining the two sets of conditions gives the overall condition for cultural diversity. ■

Proposition 3 is not as general as one would hope for because it doesn't fully characterize the equilibrium when labor productivity in the cultural goods industries is relatively low. The reason is that in this situation it is not guaranteed that both countries produce good z , which makes the characterization difficult. Despite this difficulty some further characterization is possible.

Lemma 1. If $\hat{\lambda}^A = \hat{\lambda}^{*A}$, then countries cannot be culturally diverse under autarky. Moreover $\hat{\lambda}^{*A} \leq \hat{\lambda}^T = \hat{\lambda}^{*T} \leq \hat{\lambda}^A$.

Proof: Assume $\hat{\lambda}^A = \hat{\lambda}^{*A} \in (0, 1)$, where these values are given by (6). This requires $p^A = a = a^* = p^{*A}$. But this is impossible because $a_y/a_z - a_y^*/a_z^* > 0 > a_x/a_z - a_x^*/a_z^*$ by assumption (12).

The consumption pattern must be the same for both countries under free trade. Be-

cause countries are symmetric except for technology, and there are no frictions in trade, all consumers face the same price vector and thus consumers with identical preferences in both countries make the same consumption decision. Therefore, under trade the fraction of individuals consuming good x must be the same in both countries.

Next consider the comparison between autarky and trade values for λ . Obviously $\widehat{\lambda}^T \leq \widehat{\lambda}^A$ if $\widehat{\lambda}^A = 1$. Furthermore $\widehat{\lambda}^T \leq \widehat{\lambda}^A < 1$ when $\widehat{\lambda}^A > 0$ because $p^T \leq p^A = a$. When Home produces good z under trade, $w^T = 1/a_z$ and thus $p^T = w^{*T}a_y^* - a_x/a_z \leq a$. When only Foreign produces the composite good under trade $p^T = a_y^*/a_z^* - w^T a_x \leq \tilde{a} < a$. Lastly, assume $\widehat{\lambda}^A = 0$, which implies $1 + p^A/(\bar{b} - I) \leq 0$. It is now impossible that $\widehat{\lambda}^T > 0$ because the latter implies $1 + p^T/(\bar{b} - I) > 0$. Jointly with the previous inequality, I get $p^T - p^A > 0$, a contradiction. ■

Lemma 1 is useful because it allows us to make predictions about how the pattern of cultural consumption changes qualitatively when moving from autarky to free trade. Before stating further results it is helpful to have the equilibrium utility level for each type of consumer at Home available:

$$\begin{aligned} u^T(x, b) &= w^T(1 - a_x) + b - (1 - \widehat{\lambda}^T)I \\ u^T(y) &= w^T - w^{*T}a_y^* - \widehat{\lambda}^T I. \end{aligned} \tag{14}$$

Note that Home's wage must satisfy $w^T \geq 1/a_z$, where the equality holds when $Z^T > 0$. For welfare evaluation we can distinguish three groups at Home: Those who consume good x under trade and autarky, those who consume good y under both regimes, and those who switch from x to y (the "switchers"). It is easy to show that no consumer switches from consuming good y to good x , given the assumption on technology. For each case the utility difference is

$$\begin{aligned} u^T(x, b) - u^A(x, b) &= \left(w^T - \frac{1}{a_z} \right) (1 - a_x) + (\widehat{\lambda}^T - \widehat{\lambda}^A)I \\ u^T(y) - u^A(y) &= \left(w^T - \frac{1}{a_z} \right) + \left(\frac{a_y}{a_z} - w^{*T}a_y^* \right) + (\widehat{\lambda}^A - \widehat{\lambda}^T)I \\ u^T(y) - u^A(x, b) &= \left(w^T - \frac{1}{a_z} \right) + \left(\frac{a_x}{a_z} - w^{*T}a_y^* \right) - (b - I) - (\widehat{\lambda}^A + \widehat{\lambda}^T)I. \end{aligned} \tag{15}$$

Several insights follow immediately. For the first group the first two brackets are nonnegative,

while the last term is nonpositive. Trade is then no better than autarky for x consumers if $Z^T > 0$ (because $w^T = 1/a_z$) or $a_x = 1$. Individuals in the second group, the y consumers, are never worse off. The first and last bracket are always nonnegative. In addition, the second bracket is nonnegative as well. When $Z^{*T} > 0$, the assumption on technology implies $\frac{a_y}{a_z} - w^{*T} a_y^* = \frac{a_y}{a_z} - \frac{a_y^*}{a_z^*} > 0$. When $Z^T = 0$ the following holds $\frac{a_y}{a_z} - w^{*T} a_y^* \geq \frac{a_y}{a_z} - w^T a_y = 0$. Regarding the last group, the switchers from x to y , the welfare change is not clear immediately. Note that the second bracket differs from the second bracket in the previous line. These insights lead to the next result.

Proposition 4. When the autarky equilibrium is unique, trade is not Pareto inferior.

Proof: It is sufficient to show that at least one consumer gains. One country produces z under trade. Assume that Home produces the composite good if the world is culturally diverse. The proof is broken into three steps depending on $\widehat{\lambda}^A$.

First assume $\widehat{\lambda}^A = 1$. When also $\widehat{\lambda}^T = 1$, Home's x consumers must be better off under trade if Home does not produce z , as Foreign has the lower opportunity costs of producing z . When Home does not produce z someone in Foreign must be better off because either a favorable λ -shift occurs ($\widehat{\lambda}^A < 1$), or the traditional gains from trade operate ($\widehat{\lambda}^A = 1$). When $\widehat{\lambda}^T < 1$, it is true that $p^T < p^A$. For a new y consumer (the "switcher") utility is $u^T(y) = 1/a_z - w^{*T} a_y^* - \widehat{\lambda}^T I$. Consider now the lowest valuation individual $b = -\bar{b}$. Comparing trade and autarky utilities gives $u^T(y; -\bar{b}) > u^A(x, -\bar{b})$ if $\bar{b} - \widehat{\lambda}^T I > a_x/a_z - w^{*T} a_y^* \geq a_x/a_z - w^T a_y = (a_x - a_y)/a_z = -a$. When autarky equilibrium is unique, $-a < \bar{b} - I < a$, which proves that trade is better.

Next consider the case $\widehat{\lambda}^A < 1$ and someone who consumes good y under both situations. The utility difference is

$$u^T(y; b) > u^A(y, b) = a_y/a_z - w^{*T} a_y^* + I(\widehat{\lambda}^A - \widehat{\lambda}^T) \geq a_y/a_z - a_y^*/a_z^* + I(\widehat{\lambda}^A - \widehat{\lambda}^T) > 0.$$

Third, if $\widehat{\lambda}^A = 0$, Lemma 1 implies $\widehat{\lambda}^{*A} = \widehat{\lambda}^A = \widehat{\lambda}^T = 0$, which means that the model is a standard two-good Ricardian model in which trade is Pareto superior.

I assumed that Home produces the composite good. If instead Foreign produces z , then somebody must gain in Foreign. ■

Proposition 4 is fairly straightforward. An intuitive way to (partially) understand the result is to note that for consumers who consume the same set of goods under both trade and autarky consumption of good z cannot decline. It is clear then that if the world is culturally diverse under both regimes somebody must be better off. The only problem could arise when a good is not consumed in either autarky or trade. The next result sheds light on the question whether trade is Pareto superior.

Proposition 5. Assume the world is culturally diverse under free trade. a) Trade is not Pareto superior to autarky, except in a knife edge case. b) If $a_x, a_y^* \leq 1/2$, trade is not Pareto superior to autarky.

Proof: a) First consider $\widehat{\lambda}^{*A} < \widehat{\lambda}^T < \widehat{\lambda}^A$. Either Home x consumers under trade or Foreign y consumers under trade must have lost (or both) because at least one country produces good z , and thus physical consumption is unchanged but those groups experience an unfavorable λ -shift.

Assume instead $0 < \widehat{\lambda}^{*A} = \widehat{\lambda}^T < \widehat{\lambda}^A$. If $Z^T > 0$, x consumers at Home must lose. If $Z^T = 0 < Z^{*T}$, a necessary condition for this is $p^T = p^{*A}$ or $a_y^*/a_z^* - w^T a_x = a_y^*/a_z^* - a_x^*/a_z^*$. Solving for Home's wage and substituting, the equality holds if and only if $(\bar{b}-I)(1-a_x^{-1}) = -a^*$. This condition is generically not fulfilled. A similar argument applies when $\widehat{\lambda}^{*A} < \widehat{\lambda}^T = \widehat{\lambda}^A < 1$. b) From Lemma 2, $a^* < p^T = \tilde{a} < a$, and both countries produce good z under free trade and autarky. If any country was culturally diverse under autarky, $p^A = a$ or $p^{*A} = a^*$, and thus the fraction of consumers consuming x cannot be the same under trade and autarky. This must imply that somebody is worse off. Both countries cannot be culturally homogenous under autarky if countries are diverse under free trade, as follows from Lemma 1. ■

Proposition 5 is perhaps surprising in several ways. Recall that in a standard Ricardian model trade is always weakly Pareto superior. A country does not gain from free trade relative to autarky if its terms of trade do not change. If this happens, however, then the other country must have gained, assuming relative labor input coefficients differ across countries. This is typically no longer the case once cultural identity or a consumption externality is considered and the world is culturally diverse under free trade. The latter means that some people consume the same set of goods under autarky and trade. Opening up for trade then must imply an unfavorable λ - shift for some individuals. This could

potentially be compensated by an increase in consumption of the composite good, which in turn requires that good z is not produced in the country. That cannot be true for both countries, however, unless an unlikely condition is fulfilled.

The result leaves open the possibility that trade could be Pareto superior if the world is culturally homogenous under free trade. For example, if $0 = \widehat{\lambda}^{*A} = \widehat{\lambda}^T < \widehat{\lambda}^A$, nobody consumes good x under trade. For trade to balance, Home must produce good z . Welfare effects are ambiguous in general however. Inspection of the last line of (15) shows that the first bracket is zero, but the other terms cannot be signed unambiguously for all parameter values. The previous results are concerned with a global comparison of autarky and free trade in terms of the Pareto criterium. The last result focuses on the welfare effects of complete trade liberalization in one country.

Proposition 6. Everybody in a country can lose from free trade.

Proof: Consider the following example where Home is homogenous in good x under autarky. Assume also $a_x = 1$, which implies that x consumers under free trade are worse off if $\widehat{\lambda}^T < 1$ since there is no gain in z consumption. Next, I need to evaluate the welfare change for individuals who switch from x to y . Their autarky utility $u^A(x, b)$ is equal to b under the assumption on labor productivity. This is rising in b , so if the lowest b consumer under trade loses, so will all others. Trade utility is $u^T(y) = w^T - w^{*T}a_y^* - \widehat{\lambda}^T I$, assuming the world is culturally diverse.

I now consider a special case, where Home does not produce good z , but Foreign does, and $\widehat{\lambda}^T \in (0, 1)$. I verify the consistency of all assumptions later. In that case $w^{*T} = 1/a_z^*$. Moreover from the labor market equilibrium condition at Home, I obtain $L_x = 2\widehat{\lambda}^T a_x = a_x(1 + p^T/(\bar{b} - I)) = 1$ or $\widehat{\lambda}^T = 1/2$. Since $p^T = a_y^*/a_z^* - w^T a_x$, I can solve for Home's wage as $w^T = a_y^*/a_z^*$. Inserting in trade utility, I obtain $u^T(y) = -I/2$. Trade is worse than autarky if $-I/2 - b < 0$, which is the case for all individuals if $\bar{b} - I/2 < 0$.

The final step is to show that all conditions are not contradictory. Note that after inserting Home's wage $p^T = 0$ and hence the condition for cultural diversity, $-1 < p^T/(\bar{b} - I) = 0 < 1$, is satisfied. Also, the condition for Home not to produce z ($w^T \geq 1/a_z$) requires $\bar{a} \geq (\bar{b} - I)(\frac{1}{a_x} - 1) = 0$, which holds if $a_z/a_z^* \geq 1/a_y^*$. This necessitates that a_y is large in

order to be consistent with the initial technology assumption. ■

Some interpretation is in order. The example is constructed in such a way that the country has essentially no consumption of noncultural goods both under trade and autarky. This holds for those who consume good x under trade and autarky because productivity in this sector is very low. Hence these individuals lose once society becomes culturally diverse. The same must hold for the switchers from x to y , as the wage adjusts to clear the labor market equilibrium. Another way to see why Home's wage must equal a_y^*/a_z^* is to recognize that half of the population consumes good x and half consumes y . In order for trade to be balanced, the prices of the two cultural goods must be the same, which in turn determines Home's wage immediately, as the price of good y is just a_y^*/a_z^* . Note that the result is not a contradiction to the previous result that trade is not Pareto inferior. By Lemma 1 Foreign cannot be culturally homogenous in x , otherwise the world couldn't be diverse under trade. Hence, some individuals in Foreign experience a favorable shift in the cultural consumption pattern.

In essence then, the example doesn't allow for gains in noncultural consumption under trade. This is partly driven by the assumption on Home's technology, partly by the requirement of consuming one unit of a cultural good. Trade therefore only affects the pattern of consumption in society. If taste preferences are not too divergent, this must be negative for all individuals in a country. Note, however, that by continuity the result holds for a_x being close but not identical to one.

4 Conclusion

This paper has developed a model of trade in cultural products. In contrast to the new trade theory or other models of trade in cultural goods, this paper does not rely on increasing returns to scale on the production side of the economy. Cultural goods differ from other goods in that they create an interdependence among individual consumption decisions and thus generate something called cultural identity. This modeling approach seems a natural way of introducing cultural goods, and is based on ideas in sociology and psychology, as explained in Akerlof and Kranton (2000). From a modeling point of view, the interdependence of individual consumption decisions is similar to increasing returns to scale in the new trade

theory. In the latter higher output decreases average costs and hence price, and therefore makes it even more attractive for consumers to purchase the good. Here, the more consumers buy the same good the lower is the loss in identity for existing consumers and the more attractive becomes the consumption of such good for other consumers. In a way, therefore, the present paper shifts the attention away from the production side to the consumer side of the economy.

The model could be extended in several ways to gain further insights. As mentioned in the introduction, the concept of identity used in the present paper is very rudimentary. Psychologists emphasize the process of identification by which they mean that individuals may engage in activities to reaffirm their values if others violate them. For example, if the social norm is to consume good x , a x consumer may undertake an activity against a y consumer, which is costly to the latter. The execution of such action is costly to the x consumer as well, but the benefit is that through this action she avoids the loss of identity. Depending on the size of the costs and losses, the process of identification takes place or not. Incorporating such behavior into the present model is possible in principle, although it might lead to far more complex solutions. One benefit of such an extension is, however, that the interaction among individuals is no longer a simple consumption externality as in the present form. Opening up markets for international trade may now change not only the pattern of consumption in society but also the magnitude of retaliation (identification).

Another avenue for future work is to link the consumption behavior internationally. In the present model an individual's cultural consumption decision depends on prices and the consumption behavior in the rest of the own country. In reality there are many examples where individual consumption behavior is driven by foreign consumption patterns. For example, teenagers around the world copy consumption patterns from teenagers and/or athletes in the U.S. This could be incorporated into the model fairly easily by interpreting λ as the fraction of the world population that consumes good x . As long as countries are symmetric in size and taste distribution, this modification should not change any of the results because countries have symmetric consumption patterns in the present model. Results could and probably would change once countries were allowed to differ on any other dimension than technology.

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