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POP INTERNATIONALISM: HAS HALF A CENTURY OF WORLD MUSIC TRADE DISPLACED LOCAL CULTURE?*

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Advances in communication technologies have increased the availability of cultural goods across borders, raising concerns that cultural products from large economies will displace those in smaller economies. This article provides stylised facts about global music consumption and trade since 1960 using a unique data on popular music charts corresponding to over 98% of the global music market. Contrary to growing fears about large-country dominance, our gravity estimates show a substantial bias towards domestic music that has, perhaps surprisingly, increased in the past decade. Moreover, we find no evidence that new communications channels reduce the consumption of domestic music.

Advances in communication technologies over the past half century have made the cultural goods of one country more readily available to consumers in another. While lower trade costs are generally good news for consumers – they make a wider range of products available to more people – reduced transaction costs in cultural goods are greeted with much less enthusiasm. A large group outside economics is concerned with possible negative effects of cultural products from distant and large economies, particularly the US, on the local cultural products of smaller economies.

The French have taken the rhetorical lead in exclaiming the American threat to local culture. During the Uruguay Round of trade negotiations in 1993, Jacques Toubon, the French Minister of Culture said: We must not let our souls be asphyxiated, our eyes blinded, our businesses enslaved. We want to breathe freely – breathe the air that is ours, the air that has nourished the culture of the world, and that, tomorrow, is in danger of being lost to humanity…. Let us mobilise for this battle of survival.[1] Then-president François Mitterrand echoed similar sentiments.[2] This rhetoric affects contemporary public policy. Despite a general trend towards free trade negotiated under successive international agreements, cultural goods

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[1] Quoted in McMahon, Darrin. 'Echoes of a Recent Past: Contemporary French Anti-Americanism in Historical and Cultural Perspective'. International Security Studies at Yale University, January 1995 (http://www.ciaonet.org/wps/mcd01/).

[2] Miterrand said: 'Let us be on guard. If the spirit of Europe is no longer menaced by the great totalitarian machines that we have known how to resist, it may be more insidiously threatened by new masters – *economisme,* mercantilism, the power of money, and to some extent, technology… What is at issue is the cultural identity of nations, the right of each people to its own culture, the freedom to create and choose one's images…. A society that relinquishes to others its means of representation, is an enslaved society'. Both quotes from McMahon (1995).

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have had longstanding exceptions.[3] Europe's commitment to policies promoting local culture has been reaffirmed by its 2006 ratification of the UNESCO Convention on Cultural Diversity, which seeks 'to protect and promote the diversity of cultural expressions' and which reaffirms 'the sovereign rights of States to maintain, adopt and implement policies and measures that they deem appropriate for the protection and promotion of the diversity of cultural expressions on their territory'.[4]

Fears of American dominance in music are not entirely unfounded: The US had about 40% of all world exports of music in the last decade. Moreover, during that period, 31 artists have appeared simultaneously on at least 18 countries' charts in at least one year. Twenty-three of these artists – Avril Lavigne, Backstreet Boys, Beyoncé, Black Eyed Peas, Britney Spears, Christina Aguilera, Destiny's Child, Eminem, Enrique Iglesias, Evanescense, Faith Hill, Gnarls Barkley, Gwen Stefani, Jennifer Lopez, Justin Timberlake, Madonna, Mariah Carey, Outkast, P!Nk, Red Hot Chili Peppers, Rihanna, Usher and Vanessa Carlton – are American.[5] See Table 1.

While it has become easier for the world's consumers to get access to US music, at the same time it may also have become easier for the world's music producers to get access to the US – and other – markets (Cowen, 2002). The remaining eight artists 3
appearing on charts around the world are from a variety of countries of varying sizes: Nelly Furtado (Canada), Kylie Minogue (Australia), Las Ketchup (Spain), Shaggy (Jamaica), Shakira (Colombia), T.A.T.U. (Russia), Dido and Robbie Williams (UK). So it is possible that in a connected world, small-country artists could find new audiences, both at home and abroad. As the examples above suggest, globalisation could either promote or diminish large-economy dominance in cultural products.

We have three goals in this project. First, we aim to provide stylised facts about the patterns of trade and consumption of popular music since 1960. Second, we develop a model of music trade based on those facts. Third, we estimate a gravity equation based on the theoretical model to document how domestic bias in music trade has changed over time and whether those changes relate to advances in communication technologies.

[3] The first GATT agreement in 1947 allowed European countries to place import quotas on American films and, moreover, allowed European countries to undertake policies to 'protect national treasures'. At French insistence – and to Hollywood's dismay – audiovisual products were allowed a 'cultural exception' under the Uruguay Round of the General Agreement on Trade in Services (GATS), allowing European countries to maintain import quotas and subsidies to domestic cultural production. See Grasstek (2005) and Roger Cohen, 'Europeans Back French Curbs on U.S. Movies', New York Times, December 12, 1993.

[4] See unesco.org website. Most European countries subsidise their domestic audiovisual sectors, and some regulate music as well. The Television without Frontiers directive 'requires broadcasters to reserve a majority proportion of their transmission time, excluding the time appointed to news, sports events, games, advertising, teletext services and teleshopping, for European works'. See ec.europa.edu website.

[5] Our definition of nationality is based on three criteria, in order: place of first recorded album, country of origin, and most popular in a given country. Avril Lavigne, Enrique Iglesias and Rihanna, for example, were born in Canada, Spain and Barbados, respectively, but recorded their first albums in the US. Our results are unchanged when using the country of origin as our unique measure of nationality. See Data Section for details.

Table 1

Artists Appearing on 18+ *Charts' Top* 100*'s Since* 2001

Artist	2001	2002	2003	2004	2005	2006	2007	Artist nationality
Avril Lavigne		19	19	20				US
Backstreet Boys	18				18			US
Beyonce			21				18	US
Black Eyed Peas			18	19	20			US
Britney Spears	19			22				US
Christina Aguilera			19			18		US
Destiny's Child	18			20	19			US
Dido	18							UK
Eminem		21	21	19	18			US
Enrique Iglesias		19						US
Evanescense			22	19				US
Faith Hill	18							US
Gnarls Barkley						18		US
Gwen Stefani					19			US
Jennifer Lopez	20		19		20			US
Justin Timberlake						18		US
Kylie Minogue	18	19						Australia
Las Ketchup		18						Spain
Madonna		19	18		19	18		US
Mariah Carey					18			US
Nelly Furtado						19		Canada
Outkast				18				US
P!Nk		20				19		US
Red Hot Chili Peppers		19				19		US
Rihanna							18	US
Robbie Williams		18						UK
Shaggy	18							Other
Shakira		21				18		Other
T.A.T.U.			21					Other
Usher				18				US
Vanessa Carlton		18						US

Notes. Figures based on music chart data collected for 22 countries – Argentina, Austria, Australia, Belgium, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK and the US. Our definition of nationality is based on three criteria, in order: place of first recorded album, country of origin and most popular in a given country. Avril Lavigne, Enrique Iglesias and Rihanna, for example, were born in Canada, Spain and Barbados, respectively, but recorded their first albums in the US. See Data Section for more details about the sample.

There are large theoretical and empirical literatures on patterns of bilateral trade in goods.[6] While scholars note the relative paucity of research on services – and have taken steps to correct it (Reinsdorf and Slaughter, 2009) – lack of reliable data is a major obstacle, especially for cultural goods.[7] We overcome this problem by using a novel data based on singles charts covering, for example, the weekly top 40 songs, from as many as 22 countries over the past half a century (Argentina, Austria, Australia, Belgium, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Italy, Japan, the

[6] Anderson (1979), Krugman (1980), Melitz (2003) and Chaney (2008) provide prominent theoretical contributions. Leamer and Levinsohn (1995) or Disdier and Head (2008) for introductions to empirics on trade and bilateral trade patterns in particular.

[7] A few studies document trade in cultural services (Disdier *et al.*, 2010*a*,*b*; Hanson and Xiang 2008).

Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK and the US). Music consumption in these 22 countries corresponded to over 98% of the recorded music market in 2003. The data set includes 1,202,554 chart entries covering 68,283 songs and 23,377 artists. Using the national origin of each of the artists, we can determine the penetration of each national repertoire into each importing country. Because we observe a measure of sales of each repertoire in each market – and not just international trade – we can also examine the extent of home bias in music consumption.

Our new data show that, despite widespread fears about American dominance, music trade is roughly proportional to countries' GDPs. Several countries, including the UK and Sweden, have a larger proportional share of trade than the US. Trade in music bears several similarities to the trade of physical goods: shorter distances and sharing a common language promote higher trade volumes between countries, and many countries do not trade with each other. We also find a large bias towards domestic consumption of music which has, perhaps surprisingly, *increased* in the past two decades: the share of consumption worldwide that originates from domestic artists increased from less than 50% during the 1980s to almost 70% in 2007.

Given these similarities with goods trade, our theoretical model of music trade is heavily based on the recent work by Melitz (2003), Chaney (2008) and Helpman *et al.* (2008). The model allows for artists with heterogeneous productivity, and it also generates gravity equations that we will use in the empirical application. The model also accounts for the selection of musicians into export markets, as emphasised by Helpman *et al.* (2008).

Estimates from the gravity model corroborate our main stylised facts: a persistent distance effect and a home bias that increased by a factor of six in the past decade. The increasing home bias effect is a global phenomenon, not limited to the US or to English-speaking countries. These results are robust to the inclusion of many covariates, such as the share of artists that export from a given country, country of origin and destination fixed effects, and the inclusion of origin and destination-specific year dummies. Poisson regressions that deal with country-pairs without trade – as in Santos and Tenreyro (2006) – also deliver similar results, as do sample selection bias corrected models, as in Helpman *et al.* (2008).

What factors explain the recent increasing consumption of domestic music? We first ask whether the lower trade costs resulting from new communication channels – such as MTV and the Internet – help displace local production and consumption of 5
music. We find that increased home bias is instead *positively* associated with the increase in local MTV channels and Internet penetration. On their face, these results defy the predictions of standard trade models (including ours), that is, that increasing integration across countries would reduce trade costs and the importance of distance and home bias. The spread of the Internet may enable the dissemination of local music within countries more than it increases the availability and consumption of foreign music. Moreover, local MTV channels promote local music along with foreign fare. Finally, we also test whether protectionist policies, such as imposing radio airplay quotas, spur the popularity of locally produced music; but these results are neither statistically significant nor are they robust to different specifications.

Overall, our estimates indicate that fears of cultural globalisation may be overstated, at least with respect to the music market. Some smaller countries actually benefit substantially in this global market, as they are able to achieve market shares that are sometimes two or three times larger than the relative sizes of their economies. Moreover, new technologies that lower trade costs do not appear to have a destructive effect on local production and consumption of music.

A few caveats accompany our basic results. First, American music may indirectly affect the type or genre of music produced and consumed by other countries, that is, French artists may produce rock & roll in France. We explore this issue with a limited analysis of genre data. Second, smaller countries that have benefited the most from globalisation, such as Sweden, may actually produce and export music in English – which is arguably not indigenously Swedish. Finally, while we cannot determine whether our results apply to developing countries such as China, India and African countries, our data from Brazil show negligible effects of 50 years of globalisation on its music trade and consumption patterns.

This article proceeds in six Sections after the introduction. Section 1 describes the data used in the study. Section 2 offers a descriptive characterisation of national repertoires' market shares, home bias and the spatial pattern of music trade over the past half century. Section 3 presents our theoretical model, and Section 4 explains the empirical implementation of our gravity equation. Section 5 presents gravity estimates and evidence on the link between new communication channels and home bias. Finally, Section 6 concludes the article.

1. Data

The data for this study are based on chart entries from 22 countries, from 1960 through 2007.[8] Overall, countries included in our sample correspond to approximately 98% of the $34 billion in revenues raised with recorded music in 2003.[9] We have 10 countries continuously since the mid-1960s (or earlier): Australia, Brazil, Canada, Italy, the Netherlands, Norway, the UK and the US. We have another four with data since at least the mid-1970s: Switzerland, Belgium, New Zealand and Sweden. France's chart data are available since 1984. Our data set picks up two more beginning in the mid-1990s: Denmark and Finland. Finally, it expands by five countries beginning in the early 2000s: Argentina, Japan, Portugal, Spain and Chile.

Countries also have charts that differ in frequency and length (number of positions). For many countries and years, we have weekly top 20 charts. For others, we have the weekly top 100. We have weekly charts for 10 of the countries over at least some years. For two countries – Australia and Brazil – we have only annual top 100 charts. The data include a total of 1,222,384 chart entries. Tables 2 and 3 describe the underlying data's frequency (e.g. weekly or monthly) and the length of the periodic music charts.

[8] We obtained the chart data from a variety of online sources. Gravity equations estimated below only use data through 2006 as several covariates based on CEPII data end in 2006.

[9] The recorded music industry generated roughly $34 billion in annual revenues in 2003, and according to the International Federation of the Phonograph Industry (IFPI) our sample of 22 countries accounted for $33.4 billion in revenues, or nearly all of the world's recorded music revenue for that year.

Table 2

Chart Frequency Availability

Country	Chart entries	Annual	Monthly	Twice monthly	Weekly
Argentina	5,754				2001–2007
Australia	1,458	1960–2005			
Austria	55,502		1965–1979	1980–1989	1990–2007
Belgium	98,964				1970–2007
Canada	82,516	1960–2006			
Chile	4,319				1960–2007
Denmark	13,620				2002–2007
Finland	12,243				1994–2007
France	86,051				1995–2007
Germany	21,441				1984–2007
Italy	37,570		1960–1964, 1978–2007	1965–1970	1971–2007
Japan	6,418				1960–2007
Netherlands	88,760				2001–2007
New Zealand	76,057				1965–2007
Norway	32,113				1975–2007
Portugal	8,000				1960–2007
Spain	6,640				2001–2007
Sweden	52,100				2001–2007
Switzerland	83,260			1976–1993	1994–2007
UK	175,088				1968–2007
US	249,980				1960–2007

While we would like to observe sales, instead we only observed those ordered chart rankings.[10] There is by now an established empirical tradition of translating sales ranks into (pseudo) sales data, necessitated by the difficulty – which we share – of not observing sales quantities directly. For example, Chevalier and Goolsbee (2003) and Brynjolfsson *et al.* (2003) find that sales of online books obey the '80–20 rule'[11] and are well described by the Pareto distribution. This can be described by a relationship between log sales and the log sales rank. With fragmentary data on sales and ranks, the above authors have explored regressions of the form: $\log(sales) = \alpha + \beta \log(rank) + \varepsilon$, where α and β are coefficients, and ε is an error term. Chevalier and Goolsbee find a coefficient of −0.855 for books, while BHS report a coefficient of −0.871.

Actual sales data for recorded music are generally difficult to obtain, but we have access to monthly album sales data for South Korea covering the top 70 albums from 1999–2008. A regression of log sales on ranks for these data yields a rank coefficient (β) of, on average, −1.03, with a standard error of 0.13. Appendix Figure A1 plots those

[10] These rankings are based largely on sales, although they are also based on part on radio airplay. Chart methodologies have changed over time with the changing role of singles. Since 1991, the Billboard Hot 100 chart has relied on a combination of sales data from Soundscan (which mechanically monitors music sales) and radio airplay data from Broadcast Data Services (which mechanically monitors airplay) rather than manual reports from radio stations and record stores. Prior to September 1995, songs could enter the chart based on airplay alone; afterwards, entering the chart required both airplay and sales. In December 1998, the methodology changed to allow songs to enter the chart based on airplay alone, allowing songs never released as singles to enter the chart. Beginning in 2005, *Billboard* allowed paid digital downloads to enter the chart regardless of airplay. See http://en.wikipedia.org/wiki/Billboard_charts#Methodology_of_its_charts, accessed 9 February 2010.

[11] That is, 20% of the products account for 80% of total sales.

Table 3

Chart Length Availability

	Top 10-	Top 15	Top 20	Top 30	Top 40	Top 50–75	Top 100
Argentina			2002–2007		2001		
Australia			1960–1992			1993–2005	
Austria	1965–1966		1967–1984	1985–1994	1995–2000	2001–2007	
Belgium				1970–1994		1995–2007	
Brazil							1960–2006
Canada				1969–2007		1960–1968	
Chile			2002–2007				
Denmark			1994–2007				
Finland			1995–2007				
France						1984–1997	1998–2007
Germany			1960–1976	1977–2007			
Italy	1960–1984		1985–2006	2007			
Japan			2001–2007				
Netherlands					1965–2007		
New Zealand					1975–2008; 2005–2007	1979–2004	
Norway	1960–1994		1995–2007				
Portugal			2001–2005			2006–2007	
Spain			2001–2007				
Sweden			1975–1990		1991–1994	1995–2007	
Switzerland	1968–1975	1976–1982		1983–1991	1992	1993–1998	1999–2007
UK						1960–1982; 1992–2006	1983–1991; 2007
US							1960–2007

Notes. The complete list of chart sources is available in footnote 14.

monthly coefficients, and they do not vary much over time. Based on the literature and on our own evidence, we therefore convert all ranks into sales indices using $\beta = -1$. Our sales index is thus the reciprocal of the sales ranking. That is, if a song is number 5 on a national chart in a given week, we describe its sales as (1/5)th as high as the number-one song, and so on. Whatever the underlying (weekly or monthly, etc.) chart lengths, we aggregate each artist's sales index in a chart country to the annual level, creating an annual sales index.[12]

While this translation of rank into a sales index gives us a method for calculating, say, the market share of French artists in Belgium, we also want to calculate the share of French artists in the world market (which, for us, is the sample countries). This calculation requires measures of market size – total music sales – in each of the sample countries. We have national GDP (from the CEPII data set which are in turn derived from the World Bank's World Development Indicators[13]) back to the beginning of the sample and also direct measures of music sales in the sample countries since 2003, from the International Federation of the Phonographic Industry (IFPI). We ran a

[12] In addition to giving differently ranked songs more appropriate roles in sales, the use of this index also helps to deal with charts of different length and frequency across time and place. For example, we have top-20 weekly charts for many of our country-years and top-50 weekly charts for others. If sales follow this rule, then the top 20 account for 69% of the sales of the top 100, and the top 50 account for 87% of the sales of the top 100 in that week. Each country-year has at least 100 entries, so the Pareto distribution implies that a very small share of sales is omitted in our calculation of market shares.

[13] See http://www.cepii.fr/anglaisgraph/bdd/gravity.htm, accessed 23 November 2011.

regression of log IFPI on log GDP for the countries in our sample from 2003–7 to gauge the relationship between both measures. The estimated coefficient of log GDP is 0.97 with standard error 0.054. Given the longer time coverage of our GDP data, we use GDP as our preferred measure of market size.

In practice, if s_i^F is the French artist market share in country i, and m_i is the size of the music market in country i – which we operationalise as GDP – then the world market share for French repertoire is $s^F = \sum_i^N s_i^F m_i / \sum_i^N m_i$, where we have omitted time subscripts.

Finally, we also need to determine the nationality of all artists in our data set. To this end, we undertook a laborious process of searching various sources (including music encyclopaedias, allmusic.com and Wikipedia) to determine the nationality of each artist. A nationality is defined in three possible ways, in order of importance: (1) the country of the first recording; (2) the country of birth; (3) country where the artist was most popular. Of the chart entries in our final sample, 34%, 48% and 1% used criteria 1, 2 and 3, respectively.[14] This process allows us to attach nationalities to the vast majority (82%) of the artist entries appearing in the sample. In addition, we mechanically assign an artist's nationality to his or her chart country if that is the only country in which an artist appears on the charts (15% of chart entries use this assignment). We were unable to find or assign nationalities to the remaining 3% of entries.[15]

2. Stylised Facts

Given the novelty of our data, we begin by presenting new stylised facts about the music market. In Table 1 we already described heterogeneity in artist market shares, as some superstar musicians reach the top of the charts in many different countries in a given year. We now turn to the evolution of more aggregate measures of international trade during the past five decades. These descriptive results are interesting by themselves, and they will also guide the theoretical framework presented next.

Figure 1 shows each country's share of the world market since 1960. To ensure that composition effects are not driving the results, the figure includes only 16 countries with continuous data beginning prior to 1985 (although similar patterns are observed for the complete sample). Only two country shares, the US and the UK, are clearly visible. A striking pattern in this figure is what one might term, 'the rise and fall of the British empire': The UK repertoire share rose from about 10% in 1960 to a peak of over 30% in the 1960s (the 'British invasion'). The UK share fell to 20% in 1970, then rose to a peak of roughly a third of the world market in the mid-1980s (the 'Second British invasion'). The UK share has fallen steadily since. Music from the US takes up the largest share of the world market, but its share fell from nearly 80% in 1960 to a low of 40% in the mid-1980s. Since then, the US share has risen fairly steadily to its current level of nearly 60%.

[14] For the sub-sample of entries with known country of first record and known country of origin, these two criteria have a similar nationality for 92% of the artists.

[15] In this version of the article, we only used the nationality of the first artist listed in a chart. About 9% of the charts have at least two artists, and these two artists have identical nationality in 70% of the cases.

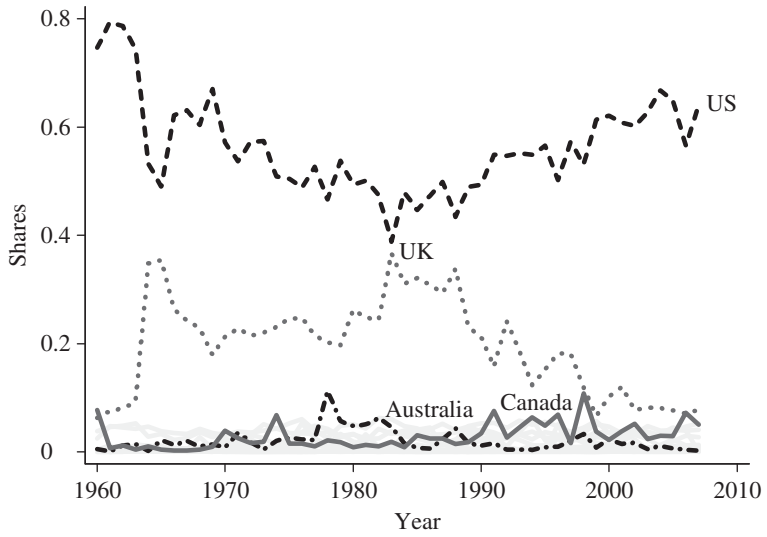

Fig. 1. *Shares of Each Exporter in the World Consumption of Music,* 1960–2007

Notes. Light grey lines show data for all countries that have small market shares. Consumption shares calculated according to (3) in the text.

Concerns about globalisation are arguably better documented with national repertoires' shares of trade, as opposed to total consumption. Figure 2 does this, showing that for most of the period – between the mid-1960s and 1990 – UK repertoire had the highest share of world trade, around 40%. The UK share has declined steadily since 1990, and the US share, roughly a third for most of the period, has surpassed the UK share, reaching about 40% in the past 15 years.

Total consumption and export shares for some repertoires will be large simply because of the relative sizes of origin countries, so Figure 3 reports the consumption shares divided by GDP shares. In this figure, the US index of music sales to GDP is close to its proportional share, while the UK index has, for most of the period, been the highest. In the mid-1980s, the UK repertoire's market share was over four times its share of GDP. At times, other repertoires have had disproportionate shares: Australia's ratio reached 3 in the late 1970s and Sweden's ratio passed 3 in the early 1990s. Canada's ratio passed 1.5 in the late 1990s. All other countries show ratios below one.[16]

Figure 4 shows that, relative to GDP, the national repertoires that have occupied disproportionate shares of world trade over the sample period are those of the UK, Sweden, Canada and Australia. While the US index of trade has risen over the sample period, it has been below its GDP share the entire time. Except in the early 1960s, the US index has always been below the UK index, usually far below.

Despite policy maker and popular concern over US dominance, the figures above show that increased consumer access to foreign products over the past half century has not brought about a trend systematically favouring the US repertoire, or those of large

[16] The Australian peak in 1978 is largely attributable to the Bee Gees, who accounted for 73% of Australia's worldwide music sales that year. The 1994 peak for Sweden is largely attributable to Ace of Base, who accounted for 76% of Sweden's international music sales in that year.

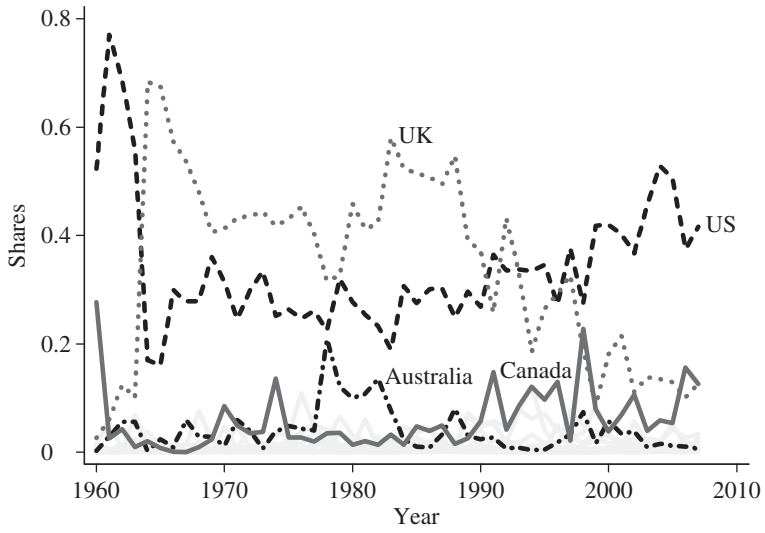

Fig. 2. *Shares of Each Exporter in the World Imports of Music,* 1960–2007
Notes. Light grey lines show data for all countries that have small market shares. Export shares calculated according to (3) in the text, but omitting consumption of domestic music.

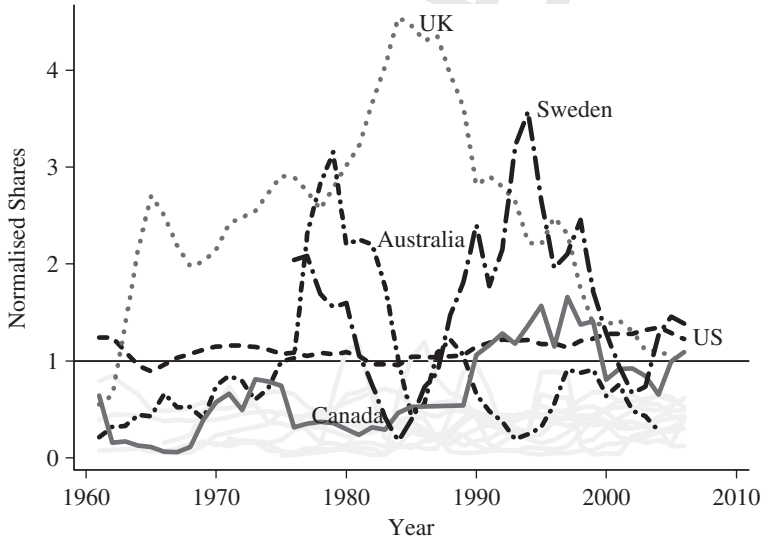

Fig. 3. *Shares of Each Exporter in the World Consumption of Music, Normalised by GDP Shares,* 1961–2006
Notes. Light grey lines show data for all countries that have small normalised market shares. Consumption shares calculated according to (3) in the text using moving averages over three-year periods, and then divided by similar moving averages for GDP shares. Horizontal line of 1 represents proportionality in shares of total consumption of music.

economies generally, relative to smaller economies. Moreover, despite popular fears, the US is not the most disproportionately dominant supplier to the world's popular music market.

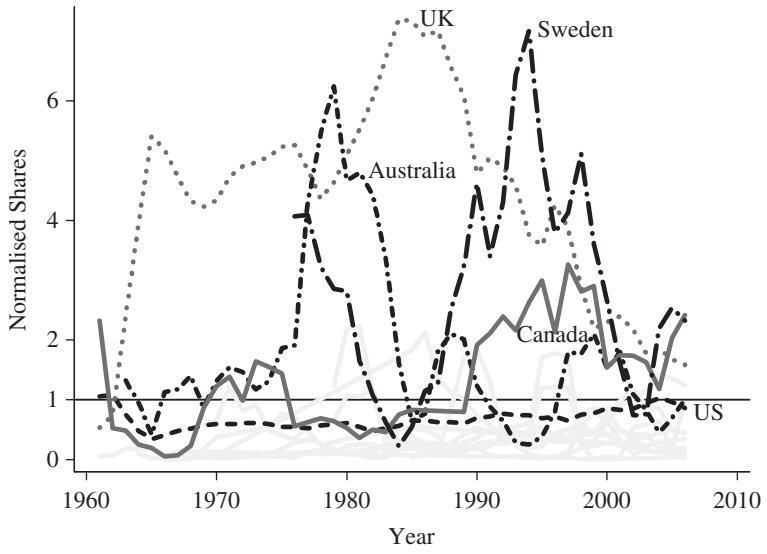

Fig. 4. *Shares of Each Exporter in the World Imports of Music, Normalised by GDP Shares,* 1961–2006
Notes. Light grey lines show data for all countries that have small normalised market shares. Export shares calculated according to (3) in the text (but omitting consumption of domestic music) using moving averages over three-year periods, and then divided by similar moving averages for GDP shares. Horizontal line of 1 represents proportionality in music export shares.

Recent data also provide evidence of a shift towards domestic music. Figure 5 summarises the worldwide home share over time (the share of domestic artists in worldwide consumption). This 'overall home share' fell steadily from the early 1960s until the mid-1980s. As of the mid-1980s – a few years after the introduction of a single worldwide MTV – it appeared that consumers around the world were losing interest in their domestic artists. One might at the time have viewed this as a symptom that preferences were converging across the world, but the overall home share has rebounded steadily since the mid-1980s, reversing what might have appeared ominous in 1985.[17]

Figure 6 shows domestic shares for each country separately. The average increase in home shares was not an isolated phenomenon. While home shares have declined in the UK over the past quarter century, they have risen in many other countries –

[17] Our finding of a growing home share accords with recent trends documented elsewhere. According to European Commission, Office for Official Publications of the European Communities (2003) 'Recordings by domestic artists have risen from 58–68% of sales between 1991 and 2001'. Moreover, this result is not affected by changes in ranking methodologies. As described in Section 2, Billboard charts are a function of sales of singles, albums, videos and DVDs, with weights for these items changing over time. For example, the US Billboard charts have given more weight towards radio airplay time since 1998. In addition, starting in 2005, sales of digital music are also part of the ranking equation. Our data reveal that such events did not dramatically change the levels of home consumption shares in the US. The data are more consistent with a growing trend in home bias that started in 1985 and that has not stopped since. Of course, this does not imply new technologies do not affect home bias – in Section 7, we will in fact estimate their importance to home shares.

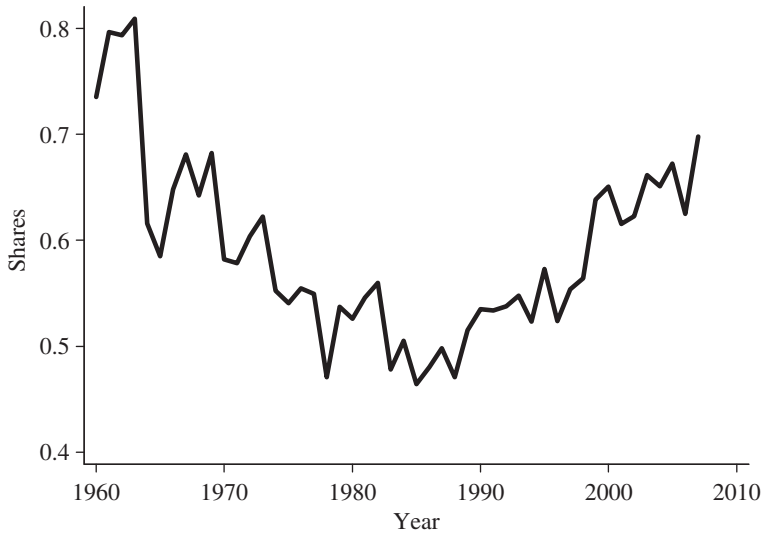

Fig. 5. *Overall Domestic Shares,* 1960–2007
Notes. Overall domestic shares calculated as the total consumption of domestic music in all countries in a given year, divided by the total consumption of music in that year.

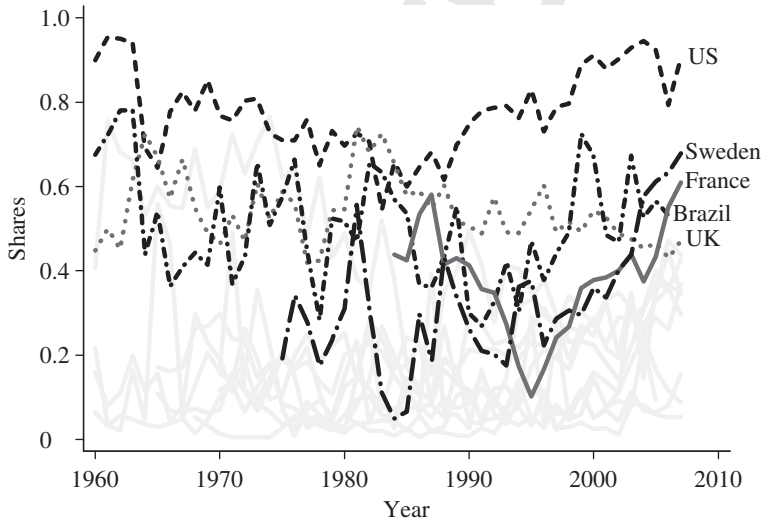

Fig. 6. *Domestic Shares By Country,* 1960–2007
Notes. Light grey lines show data for all countries that have small domestic shares. Domestic shares calculated as the total consumption of domestic music in each country in a given year, divided by the total consumption of music in each country in that year.

including the US, Sweden, Brazil, France – over the past 20 years. The same pattern is seen for smaller countries (in grey): domestic shares of 20% or less in the 1980s' increased to about 40% in the 2000s.

Our data also allow documentation of who trades with whom in the music market. We calculate each repertoire's share of imports in each country where it is sold, focusing on the period 2003–7 when we have the largest coverage of countries. Figure 7 depicts these as bar charts showing each repertoire's share of imports in other countries (e.g. the upper left picture shows Australian music's share of imports into each destination country). Import shares are shown in descending order. For most repertoires, their height declines quickly when ordered from largest to smallest. For example, the upper left panel shows Australian music's share in the markets where it makes up the largest share of imports. These are, in order, New Zealand, the UK and Canada. Australian music makes up 4% of imports in New Zealand, but less than 3% in the UK and Canada. Other drop-offs are similarly quick: Canadian music makes up a third of US imports but less than a tenth of imports in the next country. While all drop-offs are clear, three occur more slowly than others: the US, UK and Sweden. US repertoire makes up over 80% of imports in Canada and Australia. US repertoire makes up over 40% in 16 of 22 countries and over a quarter in all sample countries.

Examining these panels gives a sense of the importance of two central factors in the empirical literature on trade in goods, geographical proximity and linguistic similarity of trading partners. Brazil's repertoire has its largest trade share in Portugal, the only other Portuguese-speaking country in the sample. France has large import shares in Belgium and Switzerland (which are nearby and partly Francophone). Germany has large shares in other German-speaking countries: Austria and Switzerland as well as other nearby countries, including the Netherlands and Scandinavian countries. As noted above, American and Canadian repertoires are especially popular in Canada and the US, respectively, which share both a language and a border. Spain has its most substantial trade shares in Spanish-speaking Chile and Argentina, as well as geographically adjacent Portugal.

Figure 7 also indicates that many countries do not trade with each other. For example, Japan only exports to four countries in our sample, while Brazil exports to only nine countries. Overall nearly two fifths of the trade flow observations are zero. Finally, Appendix Figure A2 shows a similar bar chart for importers. The US has the largest market share in all countries in our sample.

3. Theory

In this Section, we adapt the international trade models of Helpman *et al.* (2008) to the case of music trade. Both models follow Melitz (2003) and Chaney (2008) in the sense that firms are heterogeneous in productivity, and they also generate gravity equations that we will use in the empirical application. Those two characteristics are essential in the music market, where artists are heterogeneous and distance matters. We draw more heavily from Helpman *et al.* (2008) because it better fits some stylised facts of music trade, such as the absence of trade flows between many pairs of countries. It also allows us to empirically account for the selection of musicians into export markets.

Assume that each country j's utility related to music consumption is given by the following function:

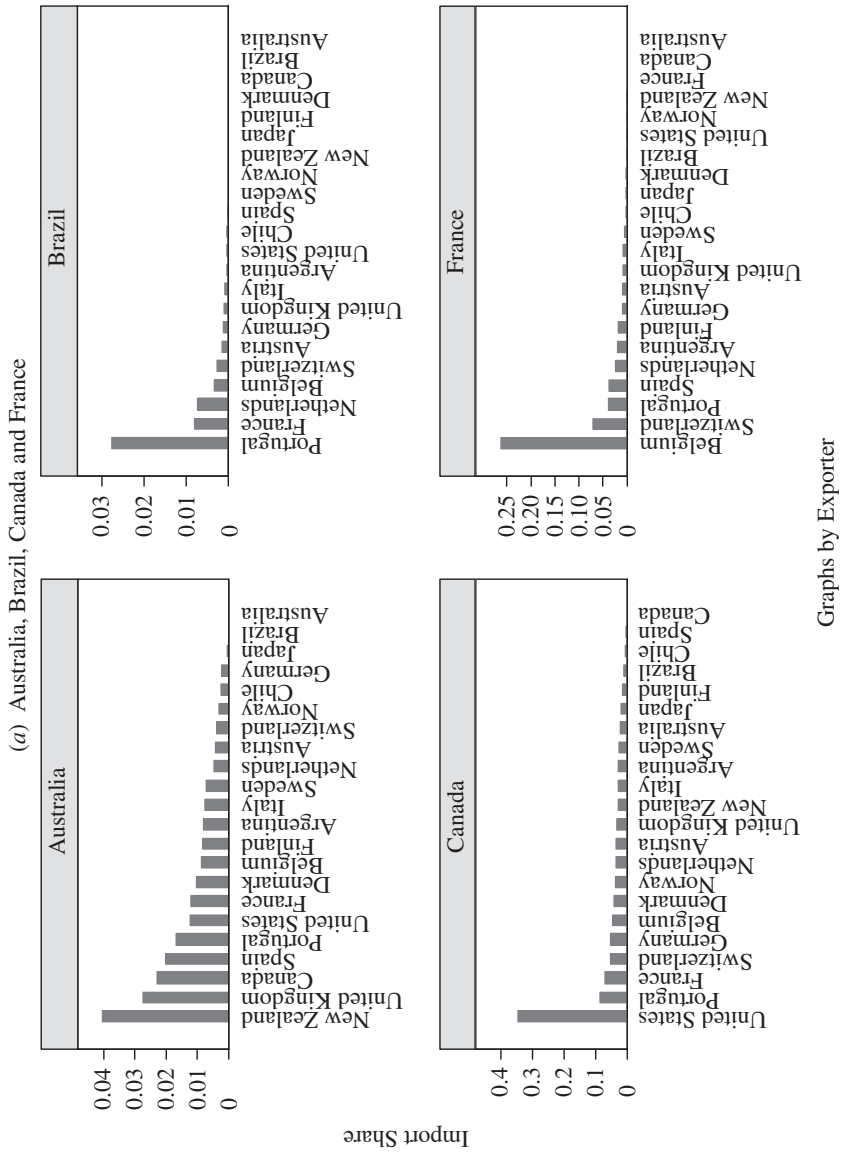

Fig. 7. *Repertoire Shares of Imports by Exporter*, 2003–7

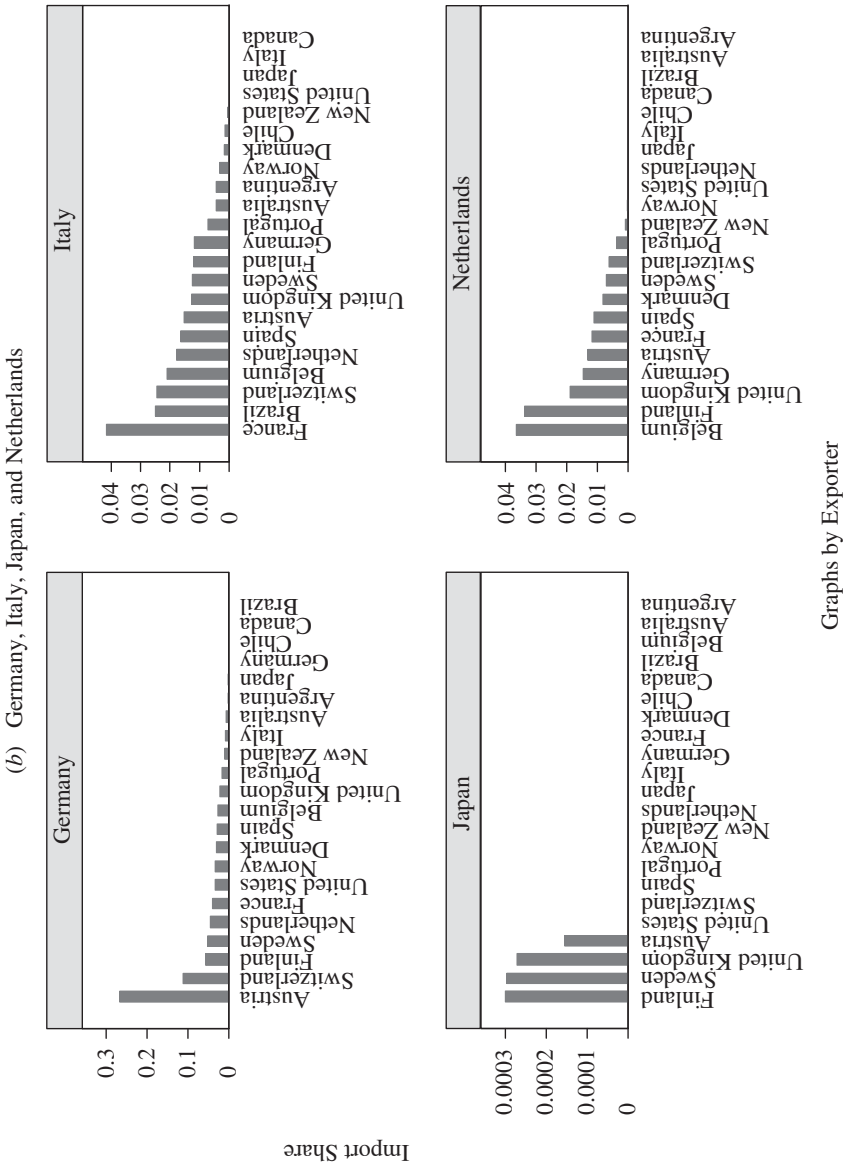

Fig. 7. *(Continued)*

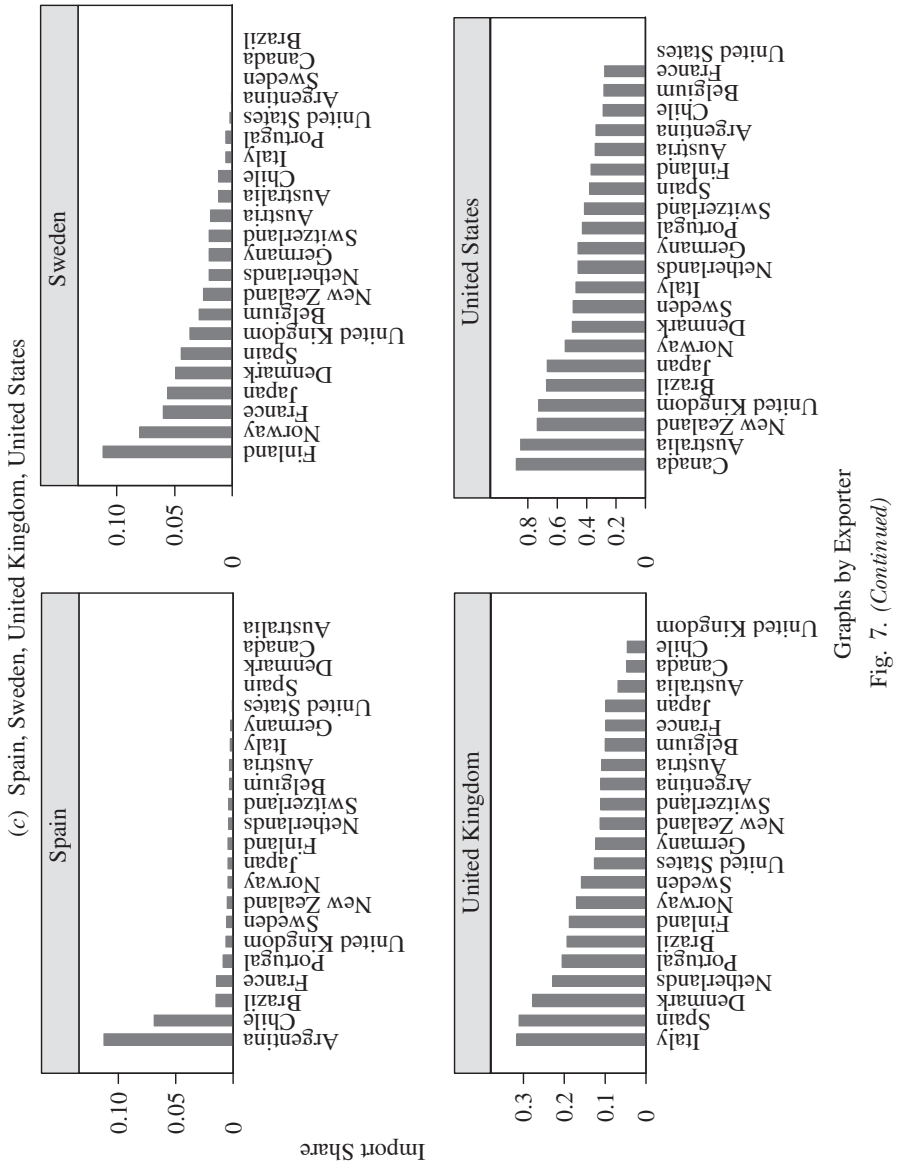

Fig. 7. *(Continued)*

$$u_j = \left[\int_{m \in M_j} x_j(m)^{\alpha} \mathrm{d}m \right]^{1/\alpha}, \quad (1)$$

where $x_j(m)$ is the country's j consumption of music m and M_j is the set of music available for consumption in that country. The elasticity of substitution across music is $\varepsilon = 1/(1 - \alpha)$, and it is constant across countries.

The demand function for music is a function of its income Y_j, and relative prices of music:

$$x_j(m) = \frac{p_j(m)^{-\varepsilon} Y_j}{P_j^{1-\varepsilon}}, \quad (2)$$

where $p_j(m)$ is the price of music m in country j and P_j is the country's music price index. The motivations for trade in such products are outlined in Krugman (1979): consumers like variety, and trade makes a wider variety of products available to consumers in each country. Each country j produces N_j distinct music products, so overall the world economy has $\sum_{j=1}^{J} N_j$ distinct music products.

Music, along with other reproducible cultural products such as movies, is a differentiated product that is produced subject to increasing returns. The costs of recorded music, particularly as distribution technology has advanced, are almost entirely fixed. Assume that a song is produced with cost $C_j a$, where the cost C is country specific, and a is artist specific. The inverse of a represents the artist productivity. The heterogeneity in a can also be viewed as talent, or the ability of musicians to reach a larger audience. As we observed in Table 1, only few artists simultaneously appear in the top of the rankings of many different countries, and only a fraction of the artists in a country get to export their songs. We assume that artists' productivity follows a cumulative distribution function $G(a)$, with support $[a_L, a_H]$.

Selling music abroad involves two additional costs. First, there is a fixed cost of serving country i, denoted by $C_j f_{ij}$, as well as a transport cost. Using the melting iceberg definition of transport costs, T_{ij} units of a product have to be shipped for one unit to arrive. Assume that f_{ij} is greater than zero only for $i \neq j$, and that $T_{ij} = 1$ for every j and $T_{ij} > 1$ for $i \neq j$.

There is monopolistic competition, and producers maximise profits by charging a price according to standard markup $p_j(a) = C_j a/\alpha$. The delivered price of music from country j to country i would be $p_j(m) = T_{ij} C_j a/\alpha$. Profits from sales to country i would be:

$$\pi_{ij}(a) = (1 - \alpha) \left(\frac{\mathrm{T}_{ij} C_j a}{\alpha P_i} \right)^{1-\varepsilon} Y_i - C_j f_{ij}. \quad (3)$$

Profits are positive in the home market as transport costs are zero, and all producers of music sell in the home market. Sales abroad are only profitable if $a < a_{ij}$, where a_{ij} is defined by $\pi_{ij}(a) = 0$.

Therefore, only a fraction of $G(a_{ij})$ of country j's N_j music products sell abroad, and the set M_j is a subset of all music produced in the global economy. Some musicians and

countries may also have a negligible presence in certain countries. Countries like the US may have a number of local artists coexisting with global superstars. Trade volume between two countries can be written as a function of the distribution of firms that export:

$$V_{ij} = \int_{a_L}^{a_H} a^{1-\varepsilon} \mathrm{d}G(a), \text{ for } a_{ij} \geq a_L. \tag{4}$$

Hence, the trade volume between two countries is zero for $a_{ij} < a_L$.

Finally, we can write the demand function in terms of the parameters above, by combining (2) with our definition of the delivery price. Then, the value of country's i imports from country j is

$$M_{ij} = \left(\frac{\mathrm{T}_{ij} C_j}{\alpha P_i}\right)^{1-\varepsilon} Y_i N_j V_{ij}. \tag{5}$$

4. Empirical Implementation

Equation (5) determines total exports from country j to i and can be log-linearised as

$$m_{ij} = \beta_0 - (\varepsilon - 1)c_j + n_j + (\varepsilon - 1)p_i + y_i + (\varepsilon - 1)\tau_{ij} + v_{ij}, \tag{6}$$

where lowercase terms denote logs and the constant term β_o equals to $(\varepsilon - 1)\ln \alpha$.

The importing country components can be pooled in a fixed effect $\chi_i = (\varepsilon - 1)p_i + y_i$, while the exporting country components are reflected in $\lambda_j = -(\varepsilon - 1)\ln c_j + n_j$. Following Helpman *et al.* (2008), we assume that trade costs τ_{ij} can be decomposed in a fixed component d_{ij} that represents the symmetrical distance between countries i and j, and a stochastic iid component u_{ij}. We use a simple distance measure (from CEPII data set) based on the most important city of each country in terms of population.

Finally, v_{ij} are assumed to be a function of the fraction of artists that export from j to i, termed w_{ij} (which is a function of the unobserved cutoff a_{ij}). With those assumptions, (6) becomes:

$$m_{ij} = \beta_o + \lambda_j + \chi_i + \gamma d_{ij} + \theta w_{ij} + u_{ij}. \tag{7}$$

Two important points are emphasised by Helpman *et al.* (2008). First, when w_{ij} is not included, the coefficient γ on distance can no longer be interpreted as the elasticity of a firm's trade with respect to distance. We have micro data for each artist in our sample, so we can directly control for the fraction of artist that export from j to i. Second, our reduced form approach to control for w_{ij} may not fully account for the endogeneity of artists that export, and therefore of countries that trade with each other. Helpman *et al.* (2008), for example, assume the Pareto distribution for productivity and estimate a Heckman selection correction model to deal with this issue. We replicate this approach that is directly derived from theory, and we find qualitatively similar results to our simpler

reduced form approach. Finally, we explore another method to deal with country-pairs with zero trade by adopting the Poisson estimation strategy suggested by Santos and Tenreyro (2006).[18] Estimates are largely unchanged when accounting for zero trades.

Our rich data set has information on consumption of domestic music, which allows us to document preference for domestic products. We account for such home bias by including a specific term for domestic consumption, s_{ij}, that is equal to 1 when $i = j$ and zero otherwise. We follow the literature[19] in additionally including indicators for countries that share languages, l_{ij}, as this might be an important determinant of trade flows. We also include a measure of shared culture, r_{ij}, an indicator for whether countries had a colonial relationship, and a border dummy for contiguous countries, b_{ij}. In all specifications below, we also interact importer and exporter dummies with time dummies, allowing for origin and destination-specific time patterns. Our final reduced form empirical model is

$$m_{ijt} = \lambda_{jt} + \chi_{it} + \gamma d_{ij} + \theta w_{ijt} + \delta l_{ij} + \phi s_{ij} + \varphi r_{ij} + \varpi b_{ij} + u_{ijt}. \quad (8)$$

Moreover, we will be interested in the evolution of home bias, same language and distance effects over time. For those specifications, we interact a set of year dummies with those three baseline variables, allowing for the estimation of year-specific elasticities of trade with respect to distance, home bias and common language.

5. Results

5.1 *Gravity Estimates*

Table 4 reports our gravity estimates based on equation (8), using data on bilateral trade flows between all countries in our sample from 1960–2006. We only use unidirectional trade values, so each country-pair appears twice in the data: as imports from i to j and also as imports from j to i. Columns (1)–(4) report various gravity specifications, and all specifications include year dummies interacted with origin and destination dummies. We include only country-pairs with valid data on all variables to maintain the same sample across specifications. Column (1) reports an OLS regression of log trade on the four basic variables (contiguous countries, common language, whether colonial relation, distance and the home market effect). In this rudimentary specification, trade is 28% higher between contiguous countries and 75% higher between countries sharing a language. Trade declines with distance, with an elasticity of −0.31. Finally, there is substantial domestic consumption bias: counties are over 10 times (exp(2.44)) more likely to consume domestic as imported music, all else equal.

Column (2) adds a simple control for the share of an origin country's artists that export in a given year. This variable has a large and significant coefficient, and its inclusion reduces the other coefficients in absolute value, as in other studies that control for selection (Helpman *et al.* 2008). Columns (3) and (4) report results from the sample selection bias correction model. Following Helpman *et al.* (2008) we use a

[18] Poisson models are of the form $y_i = \exp(x_i\beta) + e$, instead of the log linear form $\ln y_i = x_i\beta + \ln \eta_i$. See Santos and Tenreyro (2006) for more details. Both models return estimates of the β elasticities.

[19] See Anderson and Wincoop (2003).

Table 4

Gravity Estimates

			Heckman correction		
	OLS (1)	OLS (2)	Selection equation (3)	Trade (4)	Poisson (5)
Contiguous countries	0.2812	−0.0272	0.1557	−0.0375	−0.0579
	(0.0633)**	(0.0537)	(0.0722)*	(0.0479)	(0.0839)
Common language	0.7536	0.2781	0.4274	0.2344	0.8892
	(0.0576)**	(0.0488)**	(0.0656)**	(0.0436)**	(0.0760)**
Colonial relation	0.1102	0.0423	0.0762	0.008	0.2394
	(0.0752)	(0.0607)	(0.1124)	(0.0541)	(0.0626)**
Distance	−0.3131	−0.1315	−0.251	−0.0977	−0.3718
	(0.0234)**	(0.0213)**	(0.0288)**	(0.0190)**	(0.0240)**
Home	2.4445	1.645	2.135	1.5689	1.6164
	(0.0774)**	(0.0705)**	(0.2217)**	(0.0615)**	(0.0678)**
Share artists exporting		1.0883		1.1068	7.3747
		(0.0259)**		(0.0230)**	(0.5651)**
Religious distance			0.431		
			(0.1216)**		
Mills ratio				−0.3056	
				(0.0318)	
Observations	6,643	6,643	11,181	6,643	11,181
R^2	0.83	0.88			

Notes. Robust standard errors in parentheses. *Significant at 5% level. **Significant at 1% level. All specifications include origin and destination-specific year dummies (with the exception of the Heckman selection equation, where origin, destination and time dummies are included but not interacted). Dependent variable in columns (1), (2) and (4) is log trade; column (3) is an indicator for whether there is trade from the origin to the destination country. Column (5) is a Poisson regression that includes observations with zero trade.

measure of religious distance between countries as a determinant of positive trade flows (in column 3) that is excluded from the trade equation in column (4). Results from this approach are very similar to results in column (2). Finally, we also use the Poisson approach to deal with country-pairs without trade, in columns (5), which is the analogue of column (1) except that the zero trade observations are included.

Although some magnitudes change across the various specifications in Table 4, several results are robust. First trade is higher among countries sharing a common language and lower between countries that are farther apart. Second, there is substantial home bias in all specifications. We proceed using the sample selection bias corrected model from columns 3 and 4 (which includes origin and destination specific year effects) as our baseline model for the remainder of the article. We note, however, that all of the results we report below are substantively similar with all of the estimation approaches employed in Table 4.

So far, we imposed the assumption that home bias, same language and distance effects are constant over time. This may not be true, however. We might expect that changes in communication technologies and transportation costs to diminish the importance of distance, home bias and common language effects. Among the stylised facts documented above was the reduction and subsequent rise in the share of consumption that is domestic.

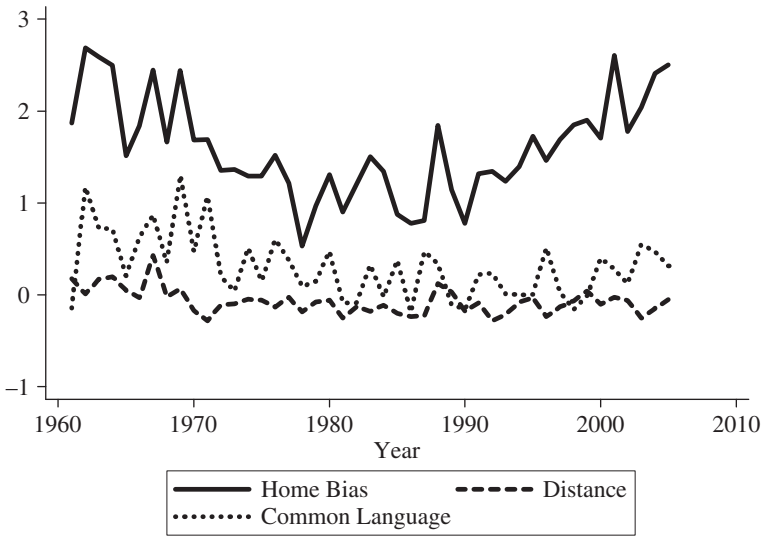

Fig. 8. *Estimated Home Bias, Same Language and Distance Effects,* 1960–2006

We can document possible changes over time by modifying equation (8), in particular by interacting home bias, same language and distance variables with year dummies. Figure 8 plots those estimates. First, we find that distance elasticities are somewhat constant over time, around −0.1 and −0.2. In a meta-analysis of 1,467 distance coefficients from 103 studies of goods trade, Disdier and Head (2010) find an average of 0.9 (with 90% of estimates lying between 0.28 and 1.55). Distance thus matters less with music than with typical goods, which is what one might expect given the small transport costs of recorded music. However, its effect has not changed much over time, despite the large reductions in transportation costs.[20]

Home bias elasticities show a very different pattern. They fluctuate at around 2 and 2.5 between 1960 and 1970, then sharply decline to 1 and remain below or around that level until early 1990s. Home bias then steadily increases until 2007, reaching 2.5 again, meaning that local consumption of music is more than 10 times more likely than consumption of foreign music. This time pattern matches the path of the overall home shares shown in Figure 5.[21] The 95% confidence intervals (not shown in the figure) also reveal that recent estimates of the home bias effects are statistically distinguishable from the trough of the home bias effect observed in the 1980 and 1990s. Table 5 presents formal F-statistics comparing decadal changes in distance, home bias and same language. While successive decades' log distance effects are statistically indistinguishable from each other since 1960, the home bias effect changed by a statistically significant amount from the 1960s to the 1970s and also from the 1990s to the 2000s.

[20] That said, literal transport costs provide only one of a number of possible interpretations of distance coefficients. Blum and Goldfarb (2006) find a distance coefficient of 1.1 for information consumed digitally over the Internet. Because transport costs are literally – or virtually – zero in their context, it seems that transport costs for cultural goods might well reflect demand (preferences for proximate products), rather than supply (transport costs). A similar interpretation may hold for the distance coefficient in our context.

[21] We also find similar results when constraining the sample to only 16 countries with continuous data beginning prior to 1985, to ensure that composition effects are not driving the results.

Table 5

Tests of Whether Interactions are the Same Across Decades

Comparison	Variable	F	p
2000s *versus* 1990s	Home bias	19.39	0.0000
1990s *versus* 1980s		4.64	0.0313
1980s *versus* 1970s		0.57	0.4519
1970s *versus* 1960s		15.96	0.0001
2000s *versus* 1990s	Common language	9.00	0.0027
1990s *versus* 1980s		0.36	0.5479
1980s *versus* 1970s		5.24	0.0221
1970s *versus* 1960s		3.62	0.0572
2000s *versus* 1990s	Log distance	0.23	0.6351
1990s *versus* 1980s		0.00	0.9471
1980s *versus* 1970s		0.41	0.5244
1970s *versus* 1960s		9.48	0.0021

Note. The Table reports tests of parameter stability across decades. The baseline model is the sample selection bias corrected gravity model. See text.

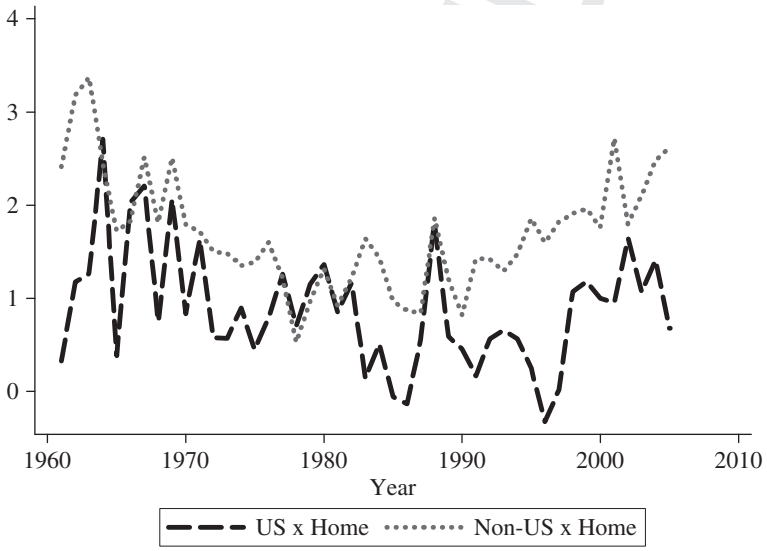

Fig. 9. *Estimated Home Bias, US versus Other Countries,* 1960–2006

Common language elasticities show a sequence of small declines since 1960 but have increased recently, albeit by less than the home bias.

Figures 9 and 10 decompose the home bias between the US and other countries and also between English-speaking countries and the rest of the world. Recent increases in home bias are not limited to the US, nor are they restricted to English-speaking countries. In fact, while the US witnessed a six-fold increase in the home bias effect, non-English-speaking countries had an even larger seven-fold surge in the propensity to consume domestic music.

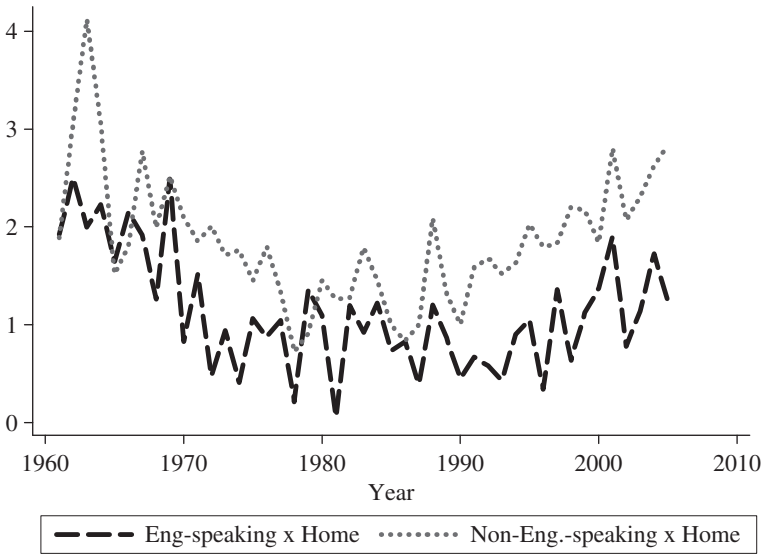

Fig. 10. *Estimated Home Bias, English-Speaking Countries versus Other Countries,* 1960–2006

We also tested the robustness of the sample selection bias corrected gravity estimates in Table 4 to different distance measures available in the CEPII distance data.[22] We present those results in Appendix Table A1. Estimated distance elasticities, and the other estimated elasticities as well, are robust to a variety of methods to calculate distance, such as the simple distance based on most populated cities, distance based on capitals, distance weighted by city populations and a weighted scheme that uses population and CES distances.

Overall, those results corroborate our stylised facts presented in Section 2. Distance and language effects are important but do not vary much over time. The home bias, on the other hand, was dramatically reduced during the 1980s, but has recently increased to levels not previously experienced in the sample. This result seems at odds with the reductions in music trade costs over the past half century. In the next subsection, we explore whether some technological changes and audiovisual policies in the music industry may explain that result.

5.2 *Possible Explanations for the Increasing Home Bias*

It seems ironic that the world's consumers have become more interested in their domestic music even as they have become better able to gain access to the world's music. Here, we consider three factors as possible explanations of the growing home bias in the music market: the appearance of regional and country-specific music television, the growth of the Internet and domestic airplay quotas.

[22] See http://www.cepii.fr/anglaisgraph/bdd/distances.htm.

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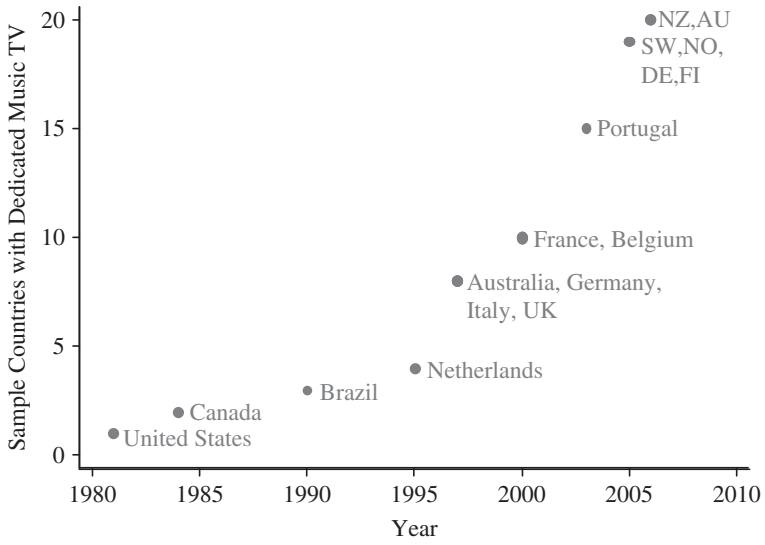

Fig. 11. *Local MTV Evolution*
Notes. Each dot shows the first year of local MTV activities for the assigned country.
Source. Wikipedia.

Regional and Local MTVs: Prior to 1980, the main way that consumers became aware of music was through radio airplay. Beginning in 1981, MTV broadcast music videos over cable television in the US. While MTV was not allowed to operate in Canada, a Canadian firm launched a Canadian music television station, CHUM MuchMusic, in 1984. But for roughly half a decade, there was only one MTV station throughout the world, which would seem to provide a force favouring a convergence of musical consumption across the globe. Moreover, it would tend to promote whichever repertoire was being broadcast. And indeed, the early years of MTV correspond to the period when the UK repertoire gained substantial market share throughout the world.

However, beginning in 1987, MTV began to splinter regionally, creating region or country-specific channels carrying some local programming (and local music). In 1987, MTV Europe was launched, broadcasting common programming throughout Europe in English. Since then, MTV has increasingly customised programming to particular countries.[23] Each of these channels was locally tailored in terms of both language and carriage of local artists.[24] Figure 11 shows the number of country-

[23] MTV Brasil launched in 1990. MTV Japan launched in 1992. The year 1995 saw the launch of MTV Netherlands. In 1997, MTV launched MTV Central, serving German-speaking countries of Europe – Germany, Austria, Switzerland and Liechtenstein – in German. MTV Argentina launched in 1999. The network also launched MTV Italy, in Italian, MTV Australia, and MTV One for the UK (in English). MTV launched MTV France and MTV Spain in 2000, along with English-language MTV Nordic for Scandinavia. MTV Chile launched in 2001. MTV launched MTV Portugal in 2003. In 2005, MTV launched separate channels for Norway (MTV Norge), Finland, Denmark and Sweden (MTV Sverige) in their respective languages. In 2006 Austria and New Zealand got their own flavours of MTV. In 2009, MTV Switzerland appeared.

[24] See http://en.wikipedia.org/wiki/List_of_MTV_channels and the pages linked for information on the launch of local MTV channels (accessed 26 January 2010).

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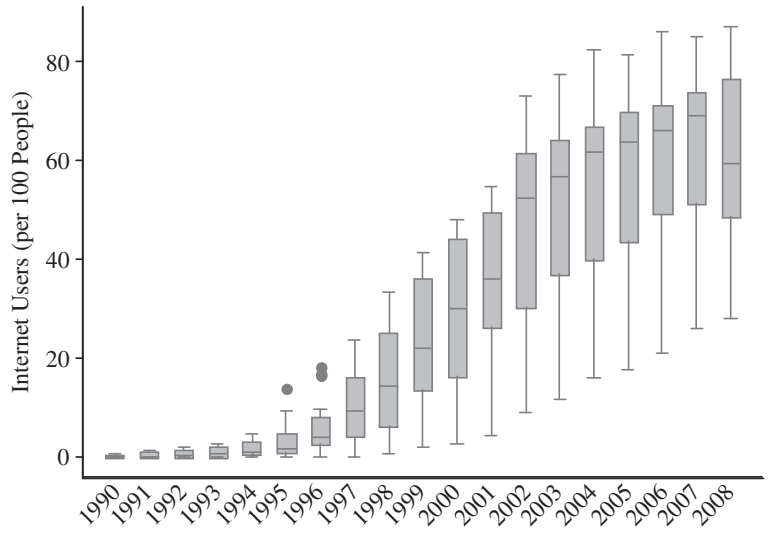

Fig. 12. *Internet Penetration,* 1990–2008
Notes. Graph shows box plots by year of Internet users per 100 people for the countries in our sample.

targeted MTV channels (for the countries in our sample) over time. While MTV may have begun as a force favouring convergence in music consumption across the globe, by the year 2000 MTV appeared to be a force promoting local as well as global artists.

Internet Penetration: Since the late 1990s – when consumers began sharing music illegally on the Internet – the Web has supplemented the role played by traditional media (radio and television) in musical discovery. It is not clear how the Web would affect trade. On one hand, the Web makes music of each country available to consumers both at home and abroad, which would tend to raise trade without necessarily reducing the world shares of any particular countries. On the other hand, it is possible that the Web reinforces local distribution. Web distribution may complement the local promotion of concerts, in which case it would tend to promote domestic consumption more than trade. These arguments are familiar from the debate over whether the Internet provides a complement or a substitute for physical agglomeration. Evidence in Gaspar and Glaeser (1998) and Sinai and Waldfogel (2004) suggests that communication technology (including the Internet) is, on balance, a complement for agglomeration. Figure 12 shows the time pattern of Internet adoption in our sample countries.[25] Internet penetration grew rapidly from 1995 to about 2005, when it ranged from around 20% (in sample South American countries) to around 80% (in the sample's Scandinavian countries).

[25] See World Bank site http://ddp-ext.worldbank.org/ext/DDPQQ/showReport.do?method=showReport for Internet data, accessed January 2010.

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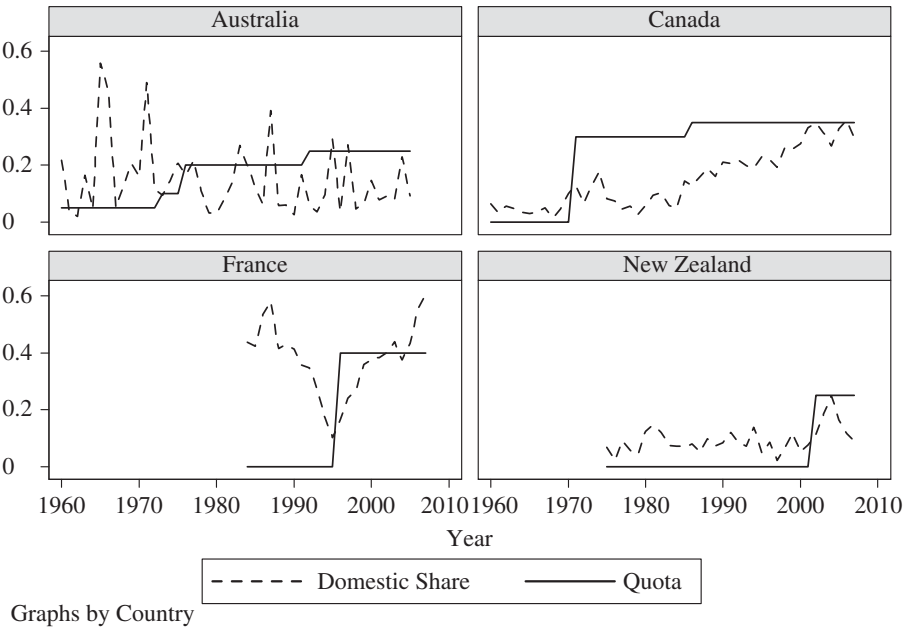

Fig. 13. *Domestic Shares and Radio Quotas*
Notes. The dashed line in each panel shows the percentage of consumption of domestic music in the respective country. Solid lines indicate the minimum percentage of radio air play devoted to domestic music according to each country's legislation.

Radio Airplay Quotas: The promotion of domestic musical artists is of sufficient importance that many countries mandate their carriage on domestic radio. Since 1971, Canada has mandated that a certain share – now 35% – of music be of Canadian origin.[26] Since 1996, France has required 40% of music on the radio to be French. Australia and New Zealand also require domestic content.[27] Figure 13 documents the time pattern of the mandated domestic shares in Australia, France, Canada and New Zealand along with the domestic music shares in the respective countries. Particularly, in Canada, New Zealand and France, the imposition of the domestic quota coincides with a growth in domestic share.

All three factors – the presence of a regional MTV station, the domestic adoption of the Internet and the presence of domestic radio quotas – may explain the growing home bias. To explore this, we directly include them in the gravity equation (8), along with their interactions with the home consumption dummy. Results for the coefficients of interest are reported in Table 6.

The coefficients on interactions with the home bias term are of direct interest, and MTV has the largest impact. An MTV interaction with home coefficient of 0.47 means that home bias increases by 0.47 log points once a region obtains regional MTV

[26] See http://www.collectionscanada.gc.ca/rpm/028020-200-e.html, accessed 21 January 2010.
[27] See http://www.mca.org.au/web/content/view/104/6, Bernier (2003) and Scott (2008) for evidence on the timing of these quotas. Richardson (2006) provides a theoretical treatment.

Table 6

Determinants of Domestic Share in Music Consumption

	Heckman correction (1)
Home bias	1.3879
	(0.0643)**
Internet	−0.0093
	(0.0115)
Regional MTV	−2.4097
	(0.4835)**
Domestic radio quota	−17.2608
	(2.5870)**
Home × Internet	0.0122
	(0.0029)**
Home × MTV	0.4742
	(0.1357)**
Home × quota	−2.8137
	(0.4015)**
Observations	11,181

Notes. Robust standard errors in parentheses. *Significant at 5% level. **Significant at 1% level. Table reports selected coefficients from a sample selection bias corrected gravity model augmented to allow the home bias term to vary with regional MTV presence, Internet penetration and domestic radio airplay quotas.

programming. That corresponds to a nearly 60% increase in the importance of the home bias. On the other hand, the Internet interaction coefficient of 0.012 in the model means that a movement from 0%–100% Internet penetration at home would raise the domestic music share by 0.0122 log points, or about 1% of the baseline home bias effect. Finally, the quota interaction has a rather puzzling negative coefficient.[28] While our exploration of possible determinants of increased consumption of domestic music is limited in the sense that we lack plausibly exogenous variation in measures of the communication channels, it is nevertheless true that we find no compelling evidence none of the communication channels above reduced the consumption of local music.

5.3. *Genre*

Our results thus far show that US artists do not penetrate the world popular music market beyond the US GDP share and that home bias has actually increased in the past decade. However, the US could still be spreading its culture if artists elsewhere copy American music styles. We could explore this if we had data on the genre of each artist along with information on the national origin of each genre. Then, for example, if the spread of an indigenous American genre such as rap could reflect US dominance even if the rap sold were by, say, French or German artists. We obtained some data on the genre for every CD available for sale in the US between 1985 and 2002 from MUZE, a service providing catalogue data to music retailers. Some of the categories of genre in

[28] Results for the quota coefficients based on OLS models were not statistically significant.

the data set include pop & rock, R&B, electronic, country, gospel, reggae, spoken word, oldies and international.[29] In 2003, R&B was the leading genre with 32% market share, followed by spoken word (19%) and rock & pop (18%). Rock & pop achieved the highest market share of the sample period, reaching close to 60% in the mid-1980s', but R&B displaced rock & pop as the genre leader in the mid-1990s.

By construction, our genre data are representative of the music sold in the US, but the match of genre data with music charts is quite incomplete in other countries. For example, only 6.5% of the unique French artists that appear in the French charts were assigned to a genre, and they are usually artists that have more national or international recognition. For this selected sample of artists outside the US and the UK, we find that 42% of them have rock & pop as the main genre, 23% are classified as International, 12% are R&B and all other genre have less than 4% participation each. To the extent that rock & pop and R&B were originally American styles of music, one could infer that American genres are imitated abroad, but a conclusive answer to this question awaits better data.

6. Conclusion

Using a novel data set on trade in popular music among 22 countries over the past half century, we add to what is known about cultural trade. First, despite popular and policy maker concern over large-country dominance, we find that repertoire shares of the world market – and of world trade – are roughly proportional to countries' shares of world output. Second, despite this rough proportionality, consumers clearly prefer domestic repertoire over imported music. Third, imports favour repertoires from countries that are geographically closer and which share a language. These estimates for music – a traditional and important cultural service – resemble the patterns observed in bilateral trade of physical goods.

Fourth, despite rapid improvement in information and communication technologies over the past half century, the effects of distance and language have remained fairly constant. Fifth, perhaps surprisingly, the degree of home bias has increased sharply since the late 1990s. Sixth, we present evidence that this change occurs amid the adoption of the Internet, the regional splintering of MTV. These results imply that concerns about technological change making music more easily available across places do not appear to threaten the popularity of domestic artists at home.

Overall, our findings suggest that concern about cultural domination by large economies – particularly the US – may be misplaced for music. The US is the largest consumer and exporter of music, but relative to its GDP, the US share of world music trade is sixth behind Sweden, Canada, Finland, the UK and New Zealand. We cannot extrapolate the same conclusion for other cultural goods, such as movies and TV programmes. The production of music requires only a fraction of the fixed costs

[29] Several caveats apply to these data: some genre are ad hoc classifications and are not necessarily associated with a country; those categories may have a current view of genre (such as 'Oldies'), or US-based view (such as International), or they may change over time (spoken word is associated with Rap and Hip-Hop recently, but it was associated with Beats in the 1960s); there is a lack of unique local categories, such as Samba from Brazil, and Fado from Portugal; the coverage is much better for US and Global artists, so budding artists in smaller countries are not represented in MUZE.

required for film production, for example; and the distribution of movies and TV shows depend on other channels. Additional empirical research is necessary to document the effect of globalisation on those goods.

Appendix A

Table A1

Sensitivity of Gravity Estimates to Different Distance Measures

	Heckman correction			
	(1)	(2)	(3)	(4)
Contiguous countries	−0.0375	0.006	−0.0091	−0.0102
	(0.0479)	(0.0461)	(0.0465)	(0.0477)
Common official language	0.2344	0.2306	0.2266	0.2386
	(0.0436)**	(0.0440)**	(0.0441)**	(0.0437)**
Ever in colonial relation	0.008	−0.013	−0.0038	−0.0184
	(0.0541)	(0.0548)	(0.0547)	(0.0545)
Home	1.5689	1.6134	1.5905	1.5555
	(0.0615)**	(0.0624)**	(0.0638)**	(0.0749)**
Log share of nationality artists exporting	1.1068	1.1105	1.1086	1.1115
	(0.0230)**	(0.0233)**	(0.0233)**	(0.0234)**
Log simple distance (most populated cities, km)	−0.0977			
	(0.0190)**			
Log simple distance between capitals (capitals, km)		−0.0745		
		(0.0200)**		
Log weighted distance (pop-wt, km)			−0.0939	
			(0.0231)**	
Log weighted distance (pop-wt, km) CES distances				−0.0708
				(0.0208)**
Observations	6,643	6,643	6,643	6,643

Notes. Robust standard errors are given in parentheses. *Significant at 5% level. **Significant at 1% level. Column (1) is column (4) from Table 4. The remaining columns employ different distance measures from CEPII.

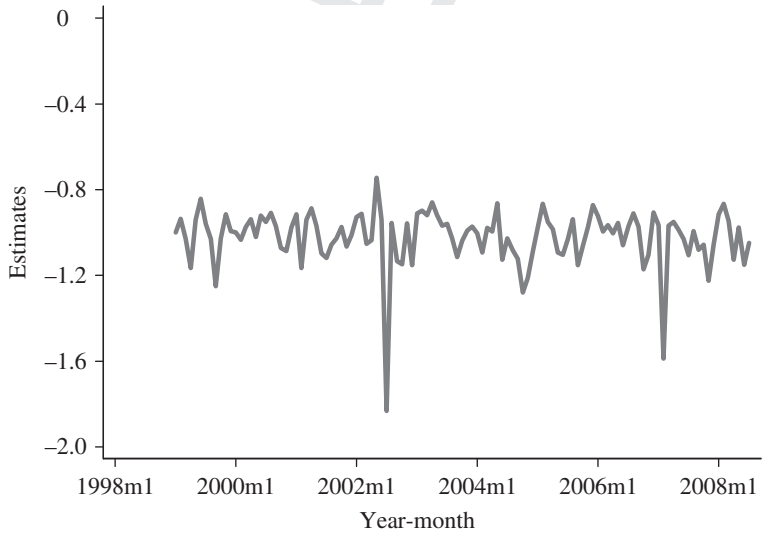

Fig. A1. *Monthly Estimates of Pareto Coefficient, Korea,* 1998–2008

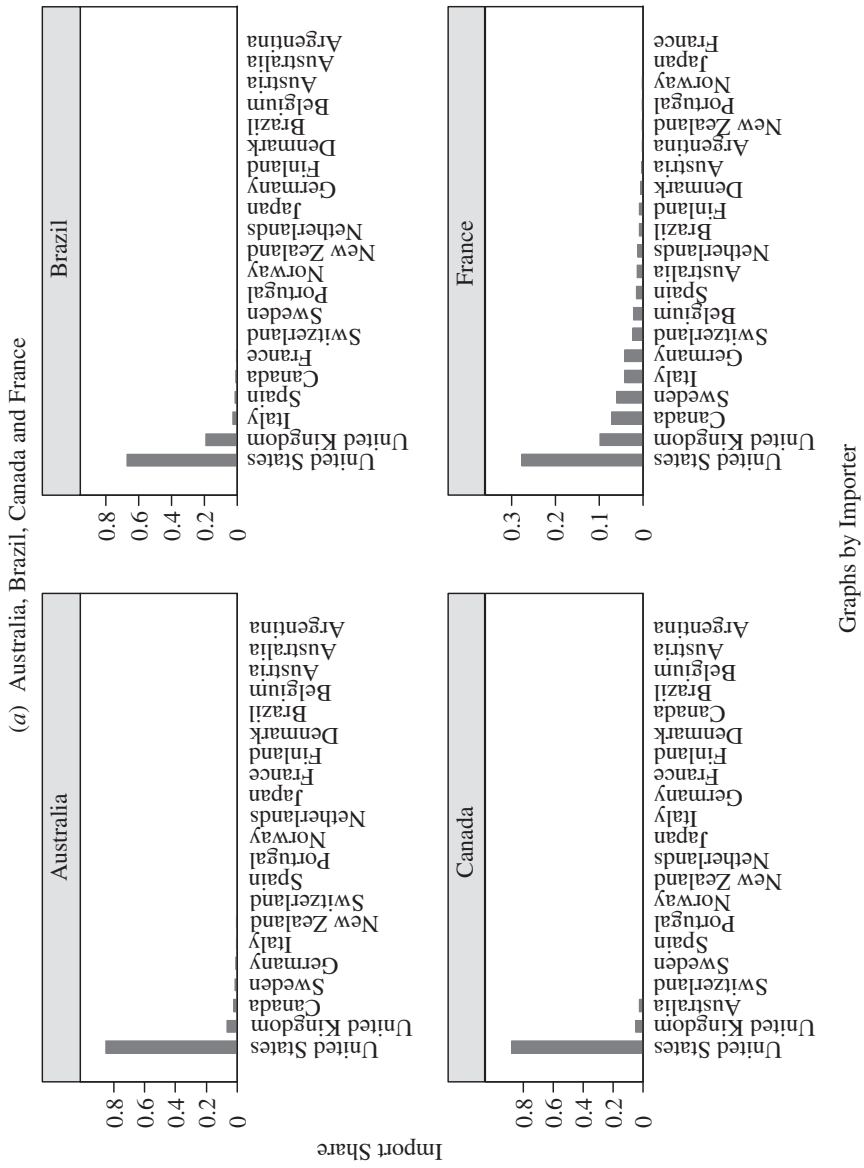

Fig. A2. *Repertoire Shares of Imports by Importer*, 2003–7

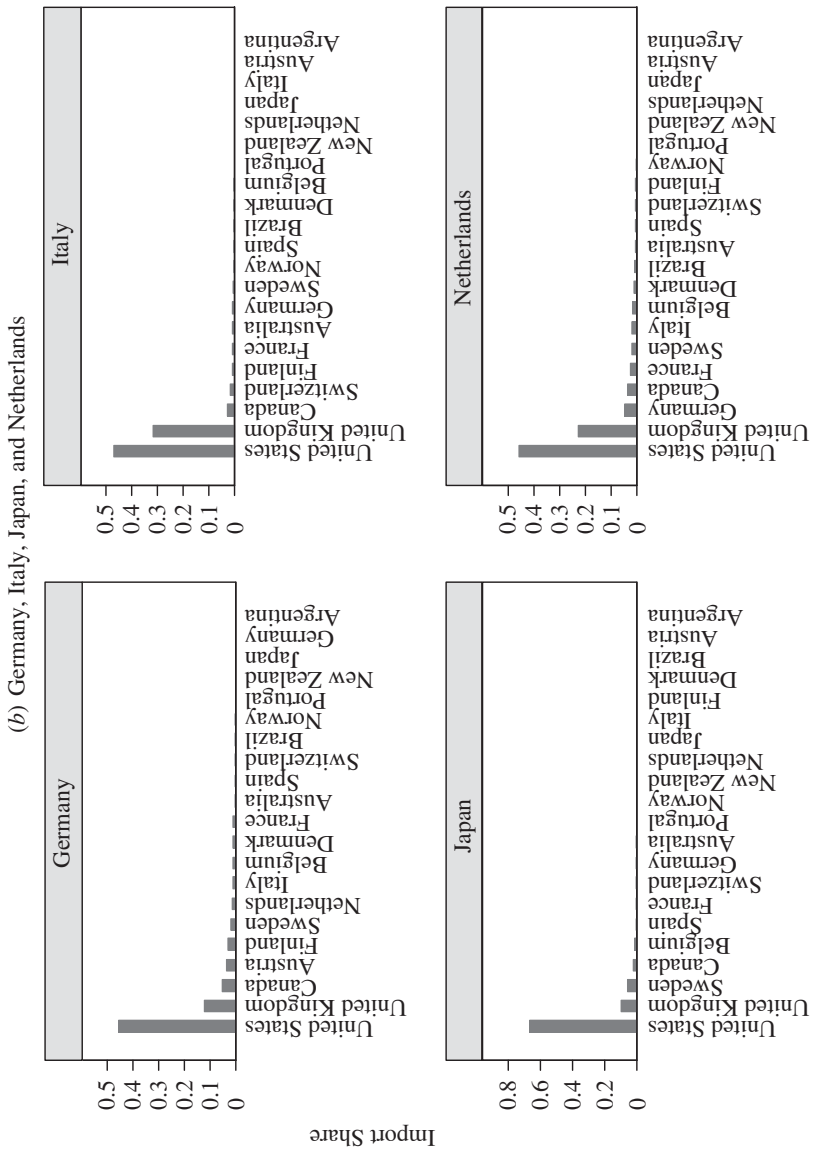

Fig. A2. *(Continued)*

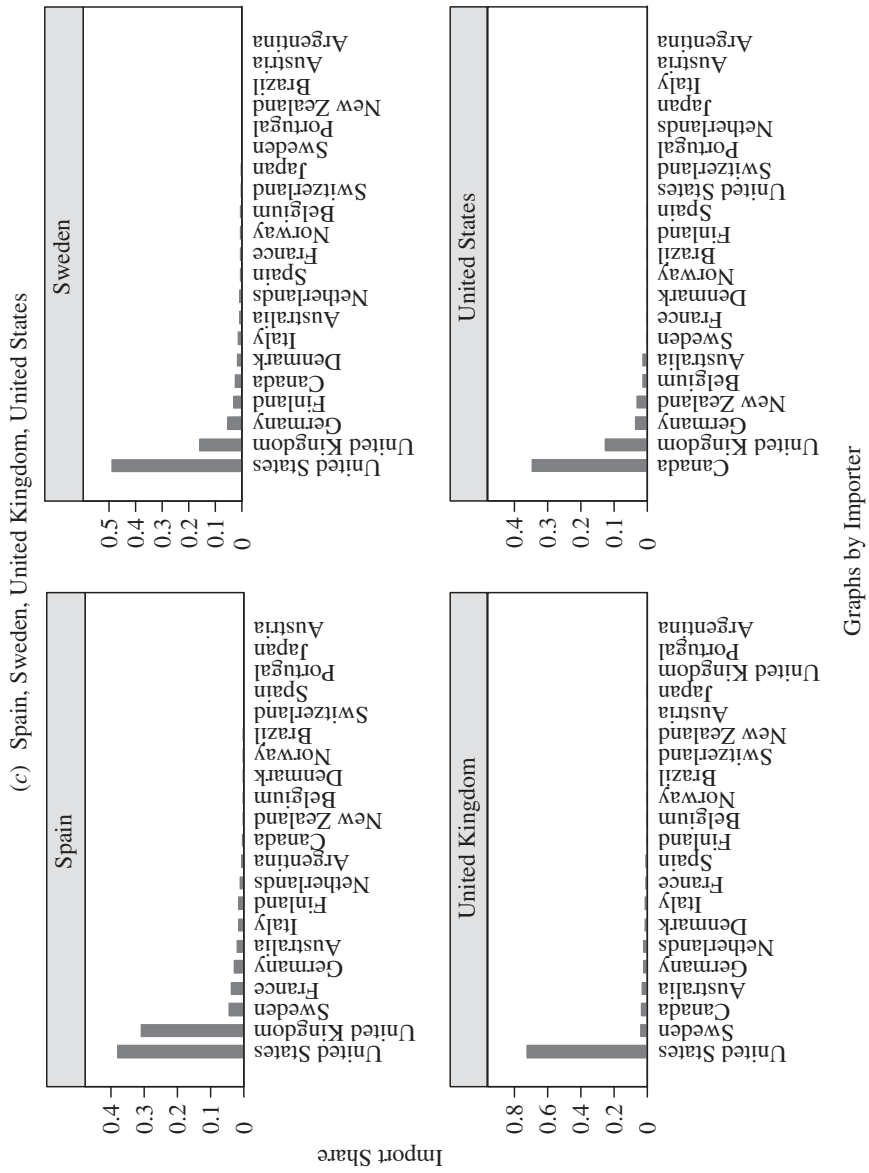

Fig. A2. *(Continued)*

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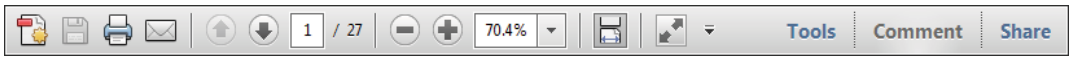

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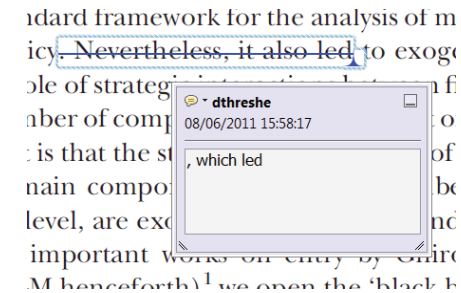

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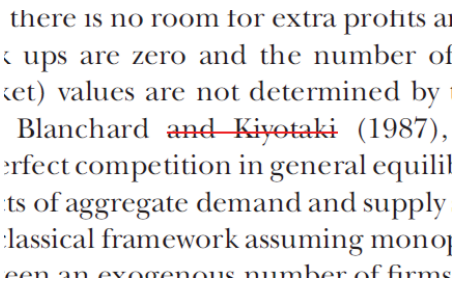

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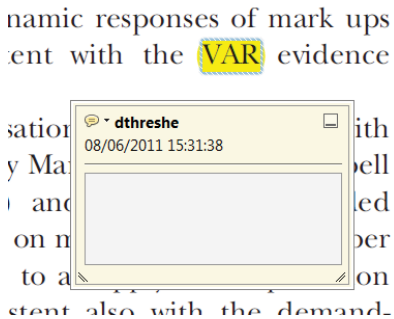

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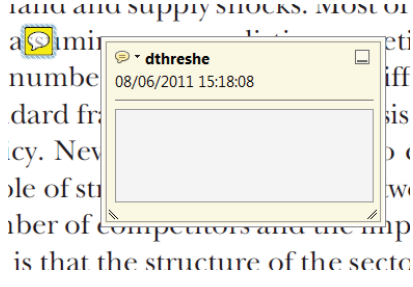

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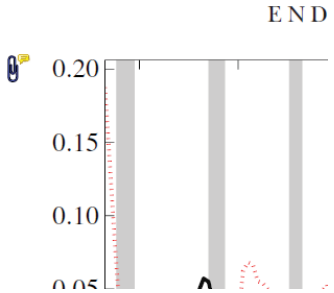

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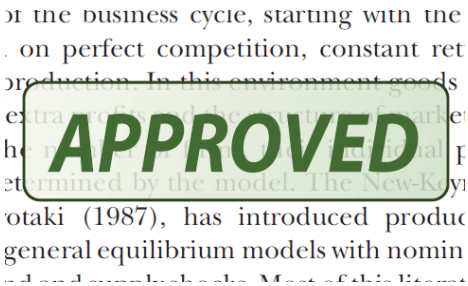

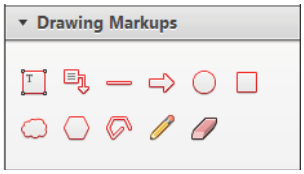

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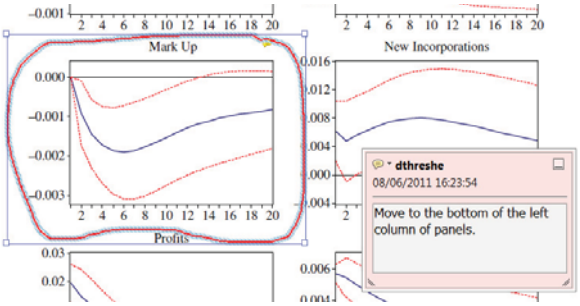

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