"An Economic Assessment of the Accession of the Central and Eastern European Countries to the EU Single Market"

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Centre for the Study of Globalisation and Regionalisation (CSGR), University of Warwick, Coventry, CV4 7AL, United Kingdom. URL: http://www.csgr.org

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T.Huw Edwards[12]
Centre for the Study of Globalisation and Regionalisation, University of Warwick
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Abstract

In 2004 the European Union is due to incorporate 10 new members, mostly from the Central and Eastern European Countries (CECs). Trade between the EU and CECs currently falls well short of that between EU countries, and if we assume this pattern reflects both tariffs and a resource cost due to regulatory differences, then 1997 trade patterns would imply such costs are 7-15% on trade between the EU and CECs. Elimination/harmonisation of remaining tariffs is likely to bring small welfare gains to new entrants. By contrast entry to the Single Market looks far more significant: after both tariff union and entry to the Single Market total trade volumes between the EU and CECs could rise by 50-100% (much more in some commodities), while welfare gains in the CECs could be of the order of 11.5-20%, larger than the previous two studies have suggested. Welfare gains within the EU are around 0.4% of GDP, with all regions gaining but Germany gaining most. Gains are greater where capital is fully mobile.

Keywords: European Union, Computable General Equilibrium, Transition, Trade

JEL Classifications: F12, F15, F17

Address for correspondence
T H Edwards
CSGR, University of Warwick
Coventry, CV4 7AL, UK
Email: T.H.Edwards@warwick.ac.uk

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Non-Technical Summary

This paper forms part of the research project on the Economic and Political Re-Integration in an Enlarged Europe, funded by the European Commission.

The paper is a numerical investigation assessing the possible benefits to the Central and Eastern European Countries (CECs), and to existing EU members, of an enlargement of the European Union. For data reason, the enlargement considered is accession of Poland, Hungary and an Other CEC region (Czech Republic, Slovakia, Slovenia, Romania, Bulgaria). The latter two are not included in the current accession round, but head the list of candidates for future enlargement.

From a trade perspective, much of the integration process has already taken place. The Europe Agreements of 1997 were very important in this regard, removing tariffs and quotas on all areas of trade between the EU and CECs excepting agriculture. The tariff reform that remains to be done for accession countries is therefore 1) removal of agricultural tariffs and 2) adoption of the Common External Tariff for trade with third countries outside the CEC region.

Arguably more important, however, is the general accession of the CECs to the EU's Single Market. This is a complicated series of agreements dealing with the huge raft of regulations and standards which countries impose on industry for means of health, safety and consumer protection. There is considerable disagreement as to the real significance of such regulations as barriers to trade. On the one hand, certain costs to importers, such as testing, certification and relabelling of goods, are fairly easy to establish: on average these probably account for an addition of between 1 and 2 per cent to the cost of imported goods into the European Union. However, a substantial school of thought suggests that regulations and standards may in practice be imposing far higher costs than this on companies engaging in trade, by forcing them to alter the specifications of the goods they produce in order to enter new markets.[3] Some economists, such as Baldwin (2001) and Wallner (1998) carry this argument further, and suggest that domestic health, safety, environmental and other regulations may be

[3] For discussion of this, see Maskus and Wilson (2001), which contains a number of papers linked to an ongoing World Bank study on regulatory barriers to trade.

systematically distorted by countries for protectionist purposes. This is, however, controversial.[4]

If we accept for the moment, however, the line that national regulations are impinging seriously upon international trade – whether or not this is being done for protectionist motives – then this suggests that international agreements on product standards are central towards opening markets for trade and competition. This certainly was a motive for the institution of the Single Market by the European Union, which relies primarily upon mutual recognition agreements to remove perceived barriers to trade among EU member states.[5] Membership of the Single Market is potentially of particular value to the CEC states, as these are mostly small economies which have inherited relatively monopolistic industrial structures, and which can potentially gain greatly from integration into a far more competitive single European market.[6]

The issue addressed in this paper is to quantify such potential benefits to the accession states, as well as the effect of entry upon existing EU members. This is done by means of a multi-country, multi-industry computable general equilibrium (CGE) simulation model. In this regard, I am following in the footsteps of earlier studies by Baldwin, Francois and Portes (1997) and LeJour et al (2001). However, the current model differs from the previous studies in a couple of respects. Firstly, unlike LeJour et al, the current study utilises an imperfectly-competitive economic model, which potentially takes account of the role of trade in enhancing competition within the hitherto sheltered CEC economies. Secondly, there is the issue of how the current regulatory barriers are estimated.

As has already been explained, such barriers are not easy to quantify. Baldwin et al (1997) simply applied an ad hoc assumption that an additional resource cost of 10 per cent was added to all goods traded between EU member and non-member countries, due to the need to comply with different regulatory standards. By contrast, LeJour et al (2001) inferred the size of regulatory barriers by comparing actual trade with predicted trade using a gravity model. This is an ad hoc economic model which predicts how much two countries will trade with

[4] See Edwards, 2003 (1), for a sceptical view of this argument.
[5] Mutual recognition is an agreement by which country A agrees to accept without further testing any goods from country B which meet country B's domestic standards, in return for country B accepting all goods from country A which meet A's own regulatory standards.
[6] For the basic economic arguments underlying this, see Baldwin and Venables (1995).

one another from the size of their economies and the distance between them (with a few other adjustments for tariffs or common membership of economic blocs). To the extent that trade between the EU and the CECs in 1997 fell short of what the gravity model would predict, this was assumed to be 'explained' by unquantified regulatory barriers.

The approach in this paper is based on similar assumptions to LeJour et al (2001). However, the general equilibrium model used here is somewhat more sophisticated, being based upon the variety goods approach of Dixit and Stiglitz (1978). It is assumed that a larger economy will be producing a greater variety of goods, and since consumers in all countries like variety it will, consequently, capture a larger share of export markets, other things equal, than a smaller economy. This produces a very similar basic model to the gravity model, but which is directly derived on theory and can be calibrated directly from the same data set used for the general equilibrium simulations, once data for tariffs and transport costs and a few assumptions about production costs have been incorporated (see Appendix I). Like LeJour et al (2001) I find that there is a considerable shortfall in trade at present between the EU and the accession states, and I then assume that 1) this trade shortfall represents the effects of a real resource cost of regulatory differences and 2) this will be rectified once the countries join the Single Market.

On these assumptions, the model simulations in this paper uphold the results of the two earlier studies: namely that accession to the Single Market could greatly boost trade between the EU and the CECs, that this will lead to greater trade in both directions in many industries and that the effects of increased competition, as well as of better utilisation of comparative advantage, lead to sizeable welfare gains for the accession states, while having no measurable detrimental effect on existing EU economies.

The results of these simulations are summarised in Tables 7 to 11. AGGREGATE Trade volumes between the EU and accession states could potentially increase by 50-100 per cent, with Poland experiencing the largest increases. These trade volume increases are in both directions, though given the relatively small scale of the CECs compared to the existing EU the significance is far greater for the former group. Table 9 shows output changes: light manufacturing grows by over 20 per cent following accession in Poland, Hungary and the Other CEC region, while Hungarian heavy manufacturing also grows by over 20 per cent. Table 7 indicates that GDP is likely to increase in all regions of the CECs and EU following

accession, with the main effects coming from entry to the Single Market rather than harmonisation of tariffs. Polish GDP could gain by 20 per cent in this simulation, while Hungary and the Other CECs gain somewhat less.

Table 10 indicates that CEC accession is likely to lead to substantial upward pressure in prices in those regions (reflecting higher factor demand), while there is a small downward pressure on prices in the existing EU regions. All factor prices rise sharply in the accession countries (Table 11), while they fall slightly in the existing EU. The net result is a rise of perhaps 10-15 per cent in real wages in the accession countries, with little net change in the existing EU.

The overall picture painted by these simulations is a highly optimistic one for the accession countries, indicating large potential gains in trade and real incomes, at virtually no cost to the existing EU members. However, it is worth remembering that this model has been based upon an assumption that there are high regulatory barriers to trade before accession, and that these are reflected in real trading costs. These assumptions may not be accurate, and consequently the figures in this paper may be regarded as painting a relatively optimistic picture of the potential gains from enlargement. A good deal of further work is required to examine in detail the real qualitative and quantitative nature of regulatory barriers to trade and the effects of the Single Market initiative: this is a subject to which economists have been slow to turn attention.

1. Introduction

This paper represents a study modelling the costs and benefits of EU enlargement into some or all of the Central and Eastern European Countries (henceforth referred to as CECs). In particular, I look at the effects of accession to the EU's Single Market, with its harmonisation and mutual recognition agreements which eliminate many non-tariff barriers to trade between EU members. This is investigated using a computable general equilibrium model based upon an imperfectly competitive variety goods model using the Dixit-Stiglitz framework, which has been shown (eg Baldwin and Venables, 1995) to generate much more significant potential welfare gains from trade than the more traditional Armington models.

The layout of the paper is as follows. Section 2 contains an in-depth discussion of the literature to date, outlining the methodology and assumptions of three major previous studies of EU accession by Brown et al (1995), Baldwin et al (1997) and, LeJour et al (2001). Section 3 summarises the modelling approach and data used in this paper: in particular the novel model-consistent calibration procedure to estimate country bias effects. In section 4 I outline the results of simulations of simulations of accessions of Poland, Hungary and an Other CEC Region into the UK, and of accessions of the rest of Central and Eastern Europe.[7] The simulations are based upon an intermediate-term Dixit-Stiglitz model (which incorporates scale and variety effects, but does not allow firm numbers to change, which would happen in a longer-term model).

The final section discusses the findings of these simulations. If we assume that trade between the EU and accession states moves into line with that between existing EU members, then the effects on the accession states, particularly Poland, could be very large, with sizeable increases in trade with the EU and income gains of up to 20 per cent. However, the assumptions upon which this conclusion is based are rather contentious: in particular our current theoretical understanding of the working of mutual recognition agreements and of the relationship between non-tariff barriers and trade volumes is rather sketchy.

[7] Due to data limitations, I am unable to carry out simulations on the precise accession list of 2004. The Other CEC region comprises the Czech Republic, Slovakia, Slovenia, Romania and Bulgaria. The latter two are not on the 2004 EU accession list, whereas the 3 Baltic States, as well as Cyprus and Malta are.

2. Background and Literature Survey

While early studies of the economics of EU enlargement into the former Soviet bloc (eg Brown et al, 1995) concentrated on the effects of removal of tariffs and formal non-tariff barriers (NTBs), such issues are no longer at the centre of the enlargement debate, except in agriculture, since the Europe Agreements have removed most formal barriers.

Nevertheless, later studies (eg Baldwin et al, 1997, or LeJour et al, 2001) assume EU membership for CECs would still have large effects upon trade with the EU, due to accession to the single market. It is known that trade between countries falls well short of trade within a single country,[8] and that significant country bias also exists for members of trade blocs vis-à-vis non-member countries. Some economists, notably Baldwin, have attributed much of this to differences in product standards, trade law and other informal barriers to trade, which supposedly constitute 'regulatory protection',[9] in many cases larger than formal trade barriers.

The existence and scale of such non-tariff barriers are generally imputed from the empirical gravity modelling literature. It has long been believed that trade between two countries is usually roughly proportional, ceteris paribus, to the product of size of the economies, corrected for distance and formal trade barriers. However, there are residual differences, which we shall henceforth call residual country bias. Most notable is home bias: the preference of consumers in one country for produce of that country, rather than any other, which seems empirically to be very strong, even when a country joins the single market. Beyond that is a lesser, but still significant bias towards produce of other countries within the same trade bloc.

These biases are usually picked up in gravity equations of the form:

$$X_{g,c,cc} = \alpha_g + \beta_{1g}.D_{EU}^{\ ijs} + \beta_{2g} d_{c,cc} + \gamma_{1s} Y_c + \gamma_{2s} y_c + \gamma_{3s} Y_{cc} + \gamma_{4s} y_{cc} + \sum_d \delta_{ds} Dd + \nu_{1s} TM_{g,c,cc} + \nu_{2s} TE_{g,c,cc} + \varepsilon_{s,c,cc} \quad (1)$$

[8] McCallum (1995) found a national border effect reducing trade between Canadian provinces and neighbouring US states by a factor of 22 compared to between Canadian provinces.

[9] For the arguments on regulatory protection, see, eg, Baldwin, 2001, Maskus and Wilson, 2001 and Wallner 1998. However, for counter-arguments see Moenius, 1999 and Edwards, 2003 (1).

where all variables are in logs. $X_{g,c,cc}$ is exports from country c to cc in industry g, Y is GDP and y is GDP per capita, d is distance between capitals of the countries c and cc. Dd is a set of dummies for border effects, with D^{EU} set to 1 if both c and cc are EU members, otherwise set to zero. $T_{g,c,cc}$ is the import tariff on imports of s from country c to country cc. $T_{g,c,cc}$ is the export tariff levied by country c on country cc. LeJour et al (2001) estimated the following residual country bias dummies for EU membership:

Table 1: EU dummies in gravity equations (LeJour et al, 2001)

	EU dummy	Trade increase %
Sector		
Agriculture	1.25 *	249
Raw materials	-0.1	
Food processing	0.66 *	94
Textiles and leather	0.85 *	134
Non-metallic minerals	0.73 *	107
Energy-intensive products	0.13	
Other manufacturing	0.08	
Metals	-0.1	
Fabricated metal products	0.44 *	56
Machinery and equipment	0.31 *	37
Electronic equipment	0.58 *	79
Transport equipment	0.66 *	94
Trade services	0.76 *	113
Transport and communication	0.03	
Financial service	-0.14	
Other services	0.27 *	31

The rather strong assumption made by both the LeJour et al and the Baldwin et al[10] studies is that this residual border effect of EU membership corresponds to an unspecified set of trade costs (hencforth referred to here as the 'residual border trade cost'), whose assumed removal or reduction by joining the single market is a sizeable source of potential economic benefit for the CECs.[11] However, it must be stressed that there are plenty of alternative explanations

[10] In their earlier paper, Baldwin et al (1997) assume rather arbitrarily that joining the single market would mean a reduction in trade costs (real terms costs, assumed to be measured as an iceberg cost – a loss of value of all goods traded between exporting country c and country cc of fraction $\phi_{c,cc}$) of 10 per cent across the board.

[11] The economic interpretation LeJour et al attach to these dummies stems from the well-known link (following Bergstrand, 1989) with a general equilibrium trade framework based upon an imperfectly competitive framework (though in fact LeJour et al use an Armington rather than Dixit-Stiglitz model for simulations). Though Deardorff (1998) points out that a frictionless Heckscher-Ohlin model and an Armington model (which may be the result of countries specialising on sub-categories within the measured goods categories of a H-O model) will also produce gravity relationships.

other than iceberg-style trade costs for residual border effects in empirical models (such as differences in consumer preferences – companies producing goods suited, say, to French rather than British taste would be more likely to set up in France rather than the UK – or historical search-related factors[12]).

The two above studies both found significant welfare and trade gains from EU enlargement. Baldwin et al's (1997) simulation results, based on an assumed 10% iceberg cost on trade between the EU and CECs, are shown in Table 2 (below):

Table 2: Baldwin et al (1997) simulation results for EU enlargement.

Real income' changes from EU enlargement (% change on base).

	Conservative case' trade gains only	Less conservative' case with risk premium reduced
CEC7	1.5	18.8
EU15	0.2	0.2
EFTA3	0.1	0.1
Ex-USSR	0.3	0.6

Le Jour et al (2001) also find substantial benefits for the accession countries, particularly Poland, though not as sizeable as in Baldwin et al (1997). This is not surprising since LeJour et al use an Armington model, which does not model all of the benefits (particularly those linked to increased competition) which a Dixit-Stiglitz model captures. Both studies are agreed that enlargement involves few costs for existing EU members, though LeJour et al imply France may have lost slightly from the 1997 tariff changes.

[12] See e.g. Rauch, 1997, Edwards, 2003 (2).

Table 3: LeJour et al (2001) simulation results of EU enlargement

		Volume of GDP effects of: Removal of 1997 bilateral tariffs and adoption of Common External Tariff	Accession to the Internal market
CEEC 7		2.5	5.3
	Hungary	1.9	9
	Poland	4.3	5.8
	CEEC5	1	3.4
EU15		0	0.1
	Germany	0	0.1
	France	-0.2	0.1
	United Kingdom	0	0
	Netherlands	0	0.1
	South Europe	0	0.1
	Rest EU	0	0.1
Third Countries		0	0
	Rest OECD	0	0
	Former Soviet Union	0	0
	ROW	0	0

3. Methodology

Despite the doubts expressed above, this paper proceeds, upon the assumption that residual border effects do indeed reflect residual trade costs, as in the Baldwin et al and LeJour et al papers. Nevertheless, the approach here differs somewhat. First of all, in this paper I derive residual border effects by direct calibration of a theoretical Dixit-Stiglitz model, which is then used for simulation. Unlike previous studies the calibration and simulation models are fully consistent.

Secondly, the calibration exercise calibrates residual border effects for imports and exports between each pair of countries (though 'averages' are then constructed for inter-EU trade using model-consistent CES functions for aggregation). Since gravity studies typically use a much more parsimonious set of dummies (eg just a home dummy and a second dummy if both countries are EU members) they are effectively constraining many residual border effects to be equal – yet just by comparing two different calibrations we show that the choices of which prior restrictions to make on border effects has a potentially very large effect on the putative impact of EU membership on countries' trade patterns. This is perhaps a topic not sufficiently explored in the gravity literature.

The third difference from standard gravity approaches is that more specific account is taken of the importance of relative output prices. While we do not know exactly what the relative costs of production in different countries are (particularly when quality is corrected for) we can calibrate for revealed comparative costs once a certain set of restrictive assumptions has been made about border effects. However, the interrelationship between calibrated residual border effects and revealed comparative advantage is a close one, and different restrictions on border effects will greatly affect our picture of the underlying competitiveness of the CEECs in different industries.

3.1 Methodology for estimating border costs.

Appendix I shows the derivation of the equations for estimating comparative costs and assumed border costs of trade in this study, and how they relate to more orthodox gravity studies. Basically, I estimate the border iceberg cost on trade in good g from country c to country c, $\phi_{g,c,cc}$using the equation:

(2)

$$(1-\phi_{g,c,cc}).(1-\phi_{g,cc,c}) =$$
$$\left\langle E_{g,c,cc}.(1+\tau_{g,c,cc})^{1-\sigma}.(1+t_{g,c,cc})^{-\sigma} \times E_{cc,c}.(1+\tau_{g,cc,c})^{1-\sigma}.(1+t_{g,cc,c})^{-\sigma} \,\middle|\, H_{g,c}.H_{g,cc} \right\rangle^{1/(1-\sigma)}$$

Where $E_{g,c,cc}$ is export value of g from c to cc, τ is transport cost, t is the import duty rate, $H_{g,c}$ is consumption of home-produced g in country c and σ is the constant elasticity of substitution.

Data on sales prices of each country's goods at home, P_c, may not be easy to come by (and anyway, prices may not be directly comparable if quality varies). For that reason, it may be better to use a *revealed comparative advantage* approach, and actually incorporate calibration of P_c into the general calibration. This means we are calibrating the model for both prices and residual border costs.

3.2 Calibration

For calibration, I start with equation (2). In the absence of better data, it may well be most sensible to assume initially average firm size is the same across countries: $T_c=T_{cc}=T$ for all c,cc.

If the only unknowns are the residual border trade costs, $\phi_{c,cc}$, then if we assume

$\phi_{c,cc} = 0$ if c=cc

and $\supseteq 0$ if c≠cc

we need only fit for the (probable) non-zero elements of ϕ, where c≠cc.

To model the effects of the single market in terms of these border costs, I make the following assumptions about the structure of (non-tariff and non-transport) border costs:

- ψ_{gc} = home bias in country c. This cost is applied to import of good g from any other country cc into c (regardless of whether cc and c are both members of the EU's Single Market).
- $\varphi_{g,CEC,EU}$ = additional cost for imports from CEC countries to EU members (compared to imports from other EU members). This means that the total border cost for importing from a CEC country to an EU country is:
- $\phi_{g,cc,c} = \psi_{gc} + \varphi_{g,CEC,EU}$
- $\varphi_{g,EU,CEC}$ = additional cost for importing from the EU to the CEC. The total border cost for imports from the EU to the CEC is therefore:
- $\phi_{g,c,cc} = \psi_{g,cc} + \varphi_{g,EU,CEC}$
- $\varphi_{g,ROW,EU}$ additional costs for imports from the rest of the World to either the CEC or EU countries.

To calibrate, I assume $\varphi_{I,CEC,EU} = \varphi_{I,EU,CEC} = \varphi_I$. It is this cost on trade (which I assume to be the same in both directions) between the EU and CEC which is removed once the CEC country joins the Single Market.

3.3 The Model for simulations

Simulations are carried out using a multi-country static computable general equilibrium (CGE) model. Goods are produced using a Cobb-Douglas aggregate of intermediate inputs and 4 primary factors: unskilled labour, skilled labour, capital and land. Land is fixed sectorally. Both types of labour are mobile between sectors, but not between countries. For

capital, I investigate two variants, one where it is fixed in total within a country, and one where it is internationally mobile[13].

Intermediate inputs and final consumption goods are CES aggregates of home production and imports from various sources. The elasticity of substitution between different sources of a good is set at 4 in all sectors. There are also transport costs (modelled as iceberg costs), iceberg unspecified trade costs (see above) and tariffs, as well as taxes/subsidies on output and use of a commodity.

Firms both at home and abroad are imperfectly competitive (competing with a Dixit-Stiglitz symmetrical CES function), and charge profit markups dependent on their market shares. For computational reasons, the number of firms per industry and per country is however assumed to be fixed in simulations – these can therefore be seen as intermediate-term variety goods simulations.

The top level of the consumption function, where different industries' products are aggregated, uses a Cobb-Douglas structure.

3.4 Data

I use the GTAP version 5 database. This database has harmonised trade and input-output data for regions across the world in 1997. GTAP potentially has a large number of goods and regions, so for practical purposes I aggregate data into 8 goods and 10 regions, chosen for their relevance to the issue of enlargement.

Goods:

AG agriculture, forestry and fishing
OP other primary
FP food processing
IS iron and steel
TX textiles
MH heavy manufacturing
ML light manufacturing
SV services.

Regions*:

PLD Poland
HUN Hungary

[13] In the latter case, capital rents are equated across the world at RBW. A country will then pay a rent at this rate to foreigners if it imports capital. This assumption, which follows Fehr et al avoids some of the problems Rodrik notes in the Baldwin et al model's treatment of changing capital stocks.

OCEC Other CECs (Cz Rep, Slovakia, Slovenia, Romania, Bulgaria)
UK United Kingdom
GER Germany
OEUN Other EU Northern
OEUS Other EU Southern (Italy, Spain, Portugal, Greece)
FSU Former Soviet Union
ODX Other OECD excluding EU and CECs
LDC rest of the world (mostly less developed countries)

*note GTAP version 5 has only 3 CEC regions.

For **trade and protection** I use 4 principal data series from GTAP for these countries and regions:

VXMD exports at market (ie domestic prices),
VXWD exports at world prices,
VIWS imports at world prices,
VIMS imports at market prices (ie sales prices in the importing country before indirect tax).

The difference between *VXWD* and *VIWS* is taken to be the transport cost margin.

VXWD – VXMD is a value for net export tax/subsidy, and the GTAP estimates of the tariff equivalent of some quantitative trade restrictions whose revenue accrues to the exporting country.

VIMS – VIWS is the value for net import tax/subsidy and the tariff equivalent of remaining NTBs.

Correction is made for some data errors in the GTAP Version 5. In particular, I have removed tariffs on trade between the EU and CECs other than in agriculture and food processing, as these had been abolished under the Europe Agreements.

4. Results of the calibrations for border costs

Table 4 shows the formal trade barriers (tariffs and tariff equivalent of NTBs) in existence between the EU and CECs in 1997. These are CES weighted averages over the various EU component regions (UK, GER and OEU). As can be seen, imports from the CECs into the EU faced sizeable barriers in agriculture and food processing, but barriers elsewhere had been removed by 1997 under the Europe Agreements.

Table 4: Net formal trade barriers (tariff equivalent)

INDUSTRY	OCEC INTO EU	EU INTO OCEC	HUN INTO EU	EU INTO HUN	PLD INTO EU	EU INTO PLD
AG	0.178	0.107	0.166	0.177	0.308	0.253
OP	0	0	0	0	0	0
FP	0.329	0.248	0.291	0.272	0.536	0.365
TEX	0	0	0	0	0	0
IS	0	0	0	0	0	0
MH	0	0	0	0	0	0
ML	0	0	0	0	0	0
SV	0	0	0	0	0	0

However, even when country size, transport costs and these formal trade barriers are taken into account, there is still a considerable shortfall in imports compared to domestic produce in all cases: our model attributes this home bias to an iceberg cost of trade, $\phi_{g,c,cc}$.

Table 5: Calibrated relative production prices and home/country bias coefficients, 1997.

POLAND

INDUSTRY	RELATIVE PLD PRICE	INTER-EU HOME BIAS	EU V PLD	PLDC V EU
AG	-0.412	0.683	0.076	0.076
OP	-0.21	0.5	0.201	0.201
FP	-0.351	0.681	-0.005	-0.005
TEX	-0.297	0.548	0.093	0.093
IS	-0.006	0.556	0.158	0.158
MH	-0.402	0.591	0.135	0.135
ML	-0.405	0.529	0.166	0.166
SV	-0.376	0.821	0.062	0.062

HUNGARY

INDUSTRY	RELATIVE HUN PRICE	INTER-EU HOME BIAS	HUN V CEC	HUN V EU
AG	-0.35	0.683	0.098	0.098
OP	-0.495	0.5	0.334	0.334
FP	-0.406	0.681	0.051	0.051
TEX	-0.347	0.548	0.057	0.057
IS	-0.138	0.556	0.185	0.185
MH	-0.452	0.591	0.139	0.139
ML	-0.385	0.529	0.092	0.092
SV	-0.451	0.821	0.062	0.062

OTHER CECs

INDUSTRY	RELATIVE OCEC PRICE	INTER-EU HOME BIAS	EU V OCEC	OCEC V EU
AG	-0.359	0.683	0.093	0.093
OP	-0.155	0.5	0.304	0.304
FP	-0.41	0.681	0.064	0.064
TEX	-0.196	0.548	0.081	0.081
IS	0.239	0.556	0.125	0.125

MH	-0.31	0.591	0.109	0.109
ML	-0.344	0.529	0.125	0.125
SV	-0.36	0.821	0.038	0.038

Table 5 (above) shows the calibrated comparative costs and country bias based on the calibration assumptions in this paper. In this case, average 'excess' EU bias against CEC goods has been set the same as average CEC bias against EU goods. This calibration suggests the CECs are low-cost producers compared to the EU in almost all industries, especially services[14], agriculture, and light and heavy manufactures. Hungary is low-cost in textiles, while the OCEC region is high-cost in iron and steel. The average iceberg costs of trade in both directions varies from slightly negative (for Polish food processing only) to around 15% for Polish manufactures, 10-13% for other CEC manufactures and 9-14 per cent for Hungarian manufactures. For agriculture they are around 7-10%.

4.1 Gravity equivalent.

It is also possible to convert the iceberg trade costs $\phi_{c,cc}$ into equivalent gravity dummies $(\sigma-1).\ln(1-\phi_{c,cc})$. The extra dummies for imports from the EU into CECs and from CECs into the EU (which are both zero or negative in almost all cases) are as follows for calibration 3:

Table 6: Gravity dummy equivalents of calibrated residual border effects.

INDUSTRY	OCEC INTO EU	EU INTO OCEC	HUN INTO EU	EU INTO HUN	PLD INTO EU	EU INTO PLD
AG	-1.041	-1.041	-1.109	-1.109	-0.816	-0.816
OP	-2.807	-2.807	-3.305	-3.305	-1.54	-1.54
FP	-0.665	-0.665	-0.521	-0.521	0.049	0.049
TEX	-0.596	-0.596	-0.402	-0.402	-0.694	-0.694
IS	-0.987	-0.987	-1.615	-1.615	-1.32	-1.32
#MH	-0.93	-0.93	-1.244	-1.244	-1.199	-1.199
ML	-0.923	-0.923	-0.65	-0.65	-1.304	-1.304
SV	-0.714	-0.714	-1.28	-1.28	-1.26	-1.26

The dummies for trade between the EU and CEC are broadly of a similar order of magnitude to those found by LeJour et al's (2001) gravity model study, which estimated an EU trade dummy of 1.25 for much of agriculture and around 0.7 for most industrial sectors[15].

[14] Comparative costs in services would, of course, be expected to be lower in poorer countries (see Balassa (1962). However, it seems that, at least for Poland, the low relative costs apply to all sectors. Only for the Other CEC region does there seem to be clear evidence supporting the Balassa-Samuelson relationship.

[15] The reversal of signs in LeJour et al's formulation compared to mine is just due to the set-up of the model.

4.2 Enlargement simulations.

The simulation runs are carried out on the CGE model, assuming the number of firms per sector in each country does not vary. The welfare effects are probably smaller than would be expected in a fully long-run model where scale and variety effects of altering firm numbers were included.

Table 7 (below) shows the effects on consumer welfare in each region resulting from 1) customs union (the removal of the remaining tariffs on agriculture and foodstuffs between the EU and CEC regions and harmonisation of the CEC's external tariffs with those of the EU) and 2) assumed abolition of iceberg unspecified trading costs φ_I when countries join the EU single market. These simulations are carried out for cases where capital is immobile between countries and where it is assumed to be mobile.

Customs union has only small simulated welfare effects, though these generally benefit the accession states by 0-2 ½% while having no significant effect on existing EU members. The former effect is not surprising given the fact that most tariffs have already been abolished, while the latter reflects the small size of the CEC economies relative to the existing EU.

Under 2) the CEC trade shares with the EU, and the EU trade shares with the CEC are increased to reflect the supposed removal of trade costs when the CEC countries join the single market. Since it is assumed these costs are real resource costs, it is possible in this case for all countries to gain, and this does indeed seem to be the case. The biggest beneficiaries are the CEC countries, where welfare rises by 10-20% compared to 1997 base. Gains to the existing EU members are small, typically around ½%. While Germany gains most, even the poorer EU countries in the South experience gains of 0.4%, so that the benefits of expansion of trade outweigh the cheap-wage competition effects even for these countries. And the Former Soviet Union and LDCs also see small welfare gains, so that trade diversion effects are outweighed for them by the effects of the overall expansion of the EU and CEC economies.

Table 7: Summary of results – change on 1997 base, calculated consumer utility.

	1. EU-CEC customs union		2. CEC trade shares shift in line with intra-EU trade	
	a) National capital stocks fixed	b) Capital mobile internationally	a) National capital stocks fixed	b) Capital mobile internationally
Poland	1.87%	2.44%	15.27%	19.39%
Hungary	0.17%	0.17%	14.62%	17.56%
Other CEC	1.03%	1.21%	11.46%	13.25%
UK	-0.01%	0.00%	0.16%	0.14%
Germany	0.01%	0.00%	0.64%	0.71%
Other EU North	0.00%	0.00%	0.42%	0.44%
Other EU South	0.01%	0.00%	0.37%	0.38%
EU total	**0.01%**	**0.00%**	**0.42%**	**0.44%**
Europe total	**0.06%**	**0.06%**	**0.94%**	**1.09%**
Former Soviet Union	0.07%	0.08%	0.04%	0.09%
Other OECD	0.00%	0.00%	0.00%	0.00%
LDCs	0.00%	-0.01%	0.03%	0.01%
Global total	**0.02%**	**0.02%**	**0.26%**	**0.29%**

Table 8 shows the change in trade volumes: these are typically of the order 50-100% between the EU countries and CECs on accession.

Table 8: changes in trade volumes with trade share shifts and mobile capital assumed.

Total trade volumes	Before	After	% change
Pld to EU	4.98	9.12	83.35%
Hun to EU	2.62	4.34	65.48%
OCEC to EU	6.05	9.81	61.97%
EU to Pld	1.88	3.77	100.44%
EU to Hun	1.45	2.20	51.03%
EU to OCEC	3.56	5.50	54.52%

Table 9, which summarises changes in output by industry shows that gains in output are spread widely across all industries in the CEC region, though the biggest gains are to agriculture, food products and manufactures. Within the EU there appear to be few losers, though agriculture and heavy manufactures decline marginally in the UK.

Table 9: simulated change in output by country and industry compared to 1997 base.

INDUSTRY	AG	OP	FP	TEX	IS	MH	ML	SV
PLD	17.07 %	-1.66%	19.52%	10.15%	9.40%	16.51%	26.28%	13.25%
HUN	11.35 %	9.08%	18.63%	18.36%	12.80%	26.61%	24.15%	11.76%
OCEC	13.72 %	0.85%	18.54%	8.54%	7.75%	12.49%	23.10%	7.33%
UK	-0.03%	0.25%	0.07%	0.45%	0.67%	-0.03%	0.03%	0.07%
GER	0.95%	0.68%	0.72%	2.03%	1.41%	0.90%	0.86%	0.47%
OEUN	0.41%	0.96%	0.49%	1.02%	1.35%	0.68%	0.37%	0.32%
OEUS	0.59%	0.33%	0.30%	0.62%	0.97%	0.16%	-0.11%	0.21%
FSU	0.76%	0.36%	1.23%	-0.22%	-0.89%	-0.15%	-0.15%	0.01%
ODX	-0.07%	-0.07%	-0.02%	0.10%	-0.03%	-0.13%	-0.22%	0.00%
LDC	-0.02%	-0.03%	0.05%	-0.15%	0.15%	0.03%	-0.06%	0.01%

Table 10 shows that output prices in the EU generally fall as a result of the saving in costs of inputs (the unskilled wage in Germany is set to 1 in this model, to act as a numeraire). However in Poland output prices generally rise (and the same is true to a lesser degree of some sectors in other parts of the CEC region) as prices rise towards Western European levels.

Table 10: simulated change in output price by country and industry compared to 1997 base

AG	AG	OP	FP	TEX	IS	MH	ML	SV
PLD	5.20%	3.39%	6.29%	1.07%	3.13%	4.57%	5.44%	3.89%
HUN	-2.74%	7.07%	-3.07%	-1.31%	2.32%	3.26%	1.01%	1.42%
OCEC	2.71%	1.01%	3.01%	-0.33%	-0.25%	1.28%	0.99%	2.22%
UK	-0.79%	-0.49%	-0.85%	-0.71%	-0.69%	-0.72%	-0.79%	-0.55%
GER	-0.82%	-0.40%	-0.82%	-0.66%	-0.53%	-0.91%	-0.92%	-0.49%
OEUN	-0.78%	-0.36%	-0.88%	-0.76%	-0.75%	-0.91%	-0.90%	-0.51%
OEUS	-0.67%	-0.55%	-0.89%	-0.77%	-0.58%	-0.80%	-0.88%	-0.51%
FSU	-0.10%	-0.12%	0.09%	-0.31%	-0.20%	-0.15%	-0.23%	-0.18%
ODX	-0.48%	-0.46%	-0.52%	-0.57%	-0.59%	-0.54%	-0.54%	-0.47%
LDC	-0.47%	-0.44%	-0.55%	-0.51%	-0.61%	-0.57%	-0.60%	-0.46%

Table 11, summarising changes in factor returns, indicates that relative skilled/unskilled wages do not change greatly in any country, though there are sizeable gains to both types of labour in Poland in particular. The wages quoted are all relative to the German unskilled wage: the slight wage falls in some EU countries are only relative to this (consumer goods prices fall more sharply). The lack of distributional changes between types of labour may partly be because of the Cobb-Douglas production function structure, and partly because the

presence of a fixed factor (land) in two sectors absorbs much of the effects of changes in output prices.

Table 11: simulated changes in factor returns with trade share shifts and mobile capital assumed.

	Unskilled	Skilled	Capital	Land Ag	Other Prim
PLD	18.95%	18.25%	-0.29%	23.16%	1.68%
HUN	14.71%	14.15%	-0.29%	8.30%	12.70%
OCEC	12.36%	11.08%	-0.29%	16.80%	1.57%
UK	-0.51%	-0.50%	-0.29%	-0.82%	-0.24%
GER	0.00%	-0.01%	-0.29%	0.11%	0.21%
OEUN	-0.23%	-0.22%	-0.29%	-0.37%	0.48%
OEUS	-0.34%	-0.34%	-0.29%	-0.09%	-0.16%
FSU	-0.12%	-0.16%	-0.29%	0.66%	0.25%
ODX	-0.54%	-0.54%	-0.29%	-0.55%	-0.53%
LDC	-0.47%	-0.46%	-0.29%	-0.49%	-0.47%

5. Conclusions

In this paper, I have extended the modelling approach of Baldwin et al (1997) and LeJour et al (2001), introducing a model-consistent framework of calibration and simulation to estimate the likely effects of EU enlargement to incorporate the CECs, assuming that the 1997 residual country bias against the CECs in EU trade (and vice-versa) reflects resource costs of regulatory differences which can be eliminated by entry to the single market. Since this observed country bias is large (EU countries trade far more with each other than with the CECs, even correcting for size and difference), the regulatory barriers which would be needed to explain such differences would also be significant – of the order of 7 to 15 per cent on most goods. It follows that entry into the EU's Single Market would have large effects in terms of increasing trade between the EU and CECs – in fact simulations suggest that Poland's trade with the EU could double, while Hungary and the other CECs would also see large trade increases. Such trade increases would produce sizeable gains, not just from the elimination of the resource cost of trade and from trade more accurately reflecting comparative advantage, but also due to the effects of increased competition and scale utilisation, particularly within the CECs. As a result, welfare in the CECs could rise by 11.5 - 20 per cent (Poland being the largest gainer) while the existing EU countries would not lose from enlargement. Output would rise almost across the board for all industries in the CECs.

These calculations suggest that, on the assumption that observed country bias reflects resource costs to trade, and that entry to the single market could eliminate those costs, existing studies have, if anything, been quite cautious in their optimistic assessment of EU enlargement. However, it must be borne in mind that these conclusions are highly dependent on the above assumptions. There are a number of important cautions:

- There is considerable room for uncertainty over the comparative costs of production of different industries in different regions, and over the associated residual country biases, interpreted as iceberg trade costs $\phi_{c,cc}$, depending on the prior assumptions made in order to carry out the calibration (ie that $\varphi_{g,CEC,EU} = \varphi_{g,EU,CEC} = \varphi_{g)}$.
- It is probable that these prior assumptions are also important in gravity studies. Gravity modellers typically measure residual country bias with a set of trade dummies (eg a dummy set to 1 if both countries are members of the EU and 0 otherwise). The number of these dummies is typically much less than the number of calibrated $\phi_{c,cc}$ coefficients in our study, meaning that the gravity modellers are making far more restrictions on the relative sizes of different country bias effects.
- Whether accession to the EU would in fact lead to the elimination of the fitted 'bias' against CEC imports into the EU compared to the produce of other EU countries is not certain. Indeed, gravity studies of the single market (Brenton and Vercauteren 2001) cast doubt on the effects to date of institution of the single market.
- It is possible that the use of transport costs alone may underestimate the effects of distance upon trade (a weakness of the direct calibration approach compared to standard gravity models).An extra regression of estimated $\phi_{c,cc}$ coefficients on distance might be worthwhile, to see if there are additional distance effects at work.
- The assumption that the residual country bias represents unmeasured trade costs, $\phi_{c,cc,}$ rather than, say, difference in tastes and that these costs would be reduced or removed by countries joining the EU, is a strong one. For one thing, reorientation of production and consumption is unlikely to be costless. Estimates of the savings from double-testing and frontier controls due to the Single Market are more in the order of 1-2% saving on the cost of traded goods, rather than the 15% typically inferred by comparing trade shares. Whether the remainder of the 15 % actually represents other trading costs such as the effects of different product standards, labelling procedures, legal and guarantee systems etc is hard to tell. Whether the harmonisation of product standards in CEC countries to conform to the existing EU standards would benefit the accession countries, or would

impose unwanted costs on producers and consumers in the accession countries, is a very important point. This will be investigated further, as will the effects of the two different principal types of mechanism involved in the Single Market (harmonisation and mutual recognition).

- It is also possible, indeed likely, that over time CEC consumers and producers may become more oriented towards trade with the EU even if the countries do not formally join the single market, so the $\phi_{c,cc}$ coefficients might well reduce over time anyway.
- It is also likely that in 1997 the CEC countries were far from in equilibrium: real exchange rates and trade barriers would have changed very substantially in just the preceding 4 years. For that reason, export and import volumes might well not be at an equilibrium level relative to prices and trade barriers.

For all these reasons, the figures in this study should be taken with a degree of caution.

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APPENDIX I: Derivation of border costs and comparative production costs from trade data, based on an assumed Dixit-Stiglitz framework.

In principle it is possible to estimate border effects directly by calibration of a general equilibrium model, rather than relying on indirect methods such as estimation of a gravity model. This is most clearly seen in the case of a Dixit-Stiglitz model.

The theoretical relationship between a Dixit-Stiglitz model, with monopolistic competition between differentiated goods g, each produced in one country c only, is well-established since Bergstrand (1989).

For simplicity, consider a D-S model where goods are consumed in countries $c \in 1..C$ yielding consumer utility. Consumption of good g in country cc is $Q_{g,cc}$. Total consumer utility in country cc is assumed to reflect the function:

$$U_{cc} = \left[\sum_{c} \sum_{g \in c} \beta . \left((1 - \phi_{c,cc}) Q_{g,cc} \right)^{(\sigma-1)/\sigma} \right]^{\sigma/(\sigma-1)}$$

-(1)

Where σ is the elasticity of substitution between goods varieties, and $\phi_{c,cc}$ is an iceberg cost reducing by a fixed proportion the usable value of all goods from country c consumed in cc.

Differentiating (1) and setting the marginal utility of consumption of g equal to its relative price yields:

$$P_c (1 + \tau_{c,cc}).(1 + t_{c,cc}) / \pi_{cc} = \beta . (1 - \phi_{c,cc})^{(\sigma-1)/\sigma} . \left[U_{cc} / Q_{g,cc} \right]^{1/\sigma}$$

-(2)

Where $\tau_{c,cc}$ is the proportionate transport cost between country c and cc, and $t_{c,cc}$ is the net contribution of import and export tariffs, subsidies and the tariff equivalents of NTBs[16]. P_c is the selling price of goods from country c at the point of export (ie prior to trade costs and tariff). π_{cc} is an aggregate consumer price index for country cc.

[16] One possible inconsistency in the current analysis is that the tariff equivalent of NTBs has been taken directly from the GTAP database, and so may not necessarily be consistent with the substitution elasticities elsewhere in this paper.

We can rearrange this equation as:

$$Q_{g,cc} = U_{cc}.\left[\beta.(1-\phi_{c,cc})^{(\sigma-1)/\sigma}.\left(\pi_{cc} / P_c(1+\tau_{c,cc})\right).(1+t_{c,cc})\right]^{\sigma}$$

-(2a)

The next step is to rewrite the equation in terms of observable variables. The nominal value of exports from c to cc, $E_{c,cc}$ is the number of goods varieties produced in country c, n_c, times the volume of sales per good, $Q_{g,cc}$ ($g \in c$), (upscaled by $(1+\tau_{c,cc}$ to take account of the assumed iceberg transport cost) times the export price P_c. We can also replace U_{cc} with total expenditure in country cc, Ycc divided by the aggregate price index π_{cc}.

$$E_{c,cc} = \beta^{\sigma}.(1-\phi_{c,cc})^{(\sigma-1)}.n_c.(1+\tau_{c,cc}).P_c.(Y_{cc} / \pi_{cc}).(\pi_{cc} / P_c.(1+\tau_{c,cc})(1+t_{c,cc}))^{\sigma}$$

-(3)

Next we can replace n_c with the value of output in country c, X_c, divided by the size of turnover of a 'representative' firm T_c.

$$E_{c,cc} = \beta^{\sigma}.(1-\phi_{c,cc})^{(\sigma-1)}.X_c.Y_{cc}.T_c^{-1}P_c^{1-\sigma}.\pi_{cc}^{\sigma-1}.(1+\tau_{c,cc})^{1-\sigma}(1+t_{c,cc})^{-\sigma}$$

-(4)

This equation can of course be rewritten in logarithmic form:

$$\ln E_{c,cc} = \sigma.\ln\beta + (\sigma-1).\ln(1-\phi_{c,cc}) + \ln X_c + \ln Y_{cc} - \ln T_c + (1-\sigma).\ln P_c + (\sigma-1).\ln\pi_{cc}$$
$$+ (1-\sigma).\ln(1+\tau_{c,cc}) - \sigma.\ln(1+t_{c,cc})$$

-(4a)

It should be clear that this is a very similar functional form to the equations estimated by gravity modellers, but with various parameter restrictions imposed in order to achieve consistency with the general equilibrium Dixit-Stiglitz framework. This is even clearer if we choose to model transport costs as a function of distance $d_{c,cc}$:

$$\ln(1+\tau_{c,cc}) = a + b\ln d_{c,cc}$$

-(5)

Substituting from (5) into (4a), we essentially have a gravity model, but unlike the econometrically estimated gravity models the coefficients on industry output in country c and on demand in country cc are constrained to equal 1, while production prices are introduced as exogenous data (rather than being proxied by per capita income, as in many gravity studies), and it is worth noting that the tariff term is $\ln(1+t_{c,cc})$ not $\ln(t_{c,cc})$ as in many gravity models.

The number of fitted residual border cost coefficients, $\phi_{c,cc}$, is far greater than the number of dummies estimated in a gravity model. Effectively the gravity modeller is rewriting these as $\phi_{c,cc}$= $DUM_{c,cc}$ + $f(\varepsilon_{c,cc})$, where $DUM_{c,cc}$ is whatever combination of country dummies happens to apply to trade between countries c and cc, and $\varepsilon_{c,cc}$ is the estimated equation residual. Because there are more coefficients to estimate in our version, there are fewer degrees of freedom, making calibration more appropriate than econometric estimation.

Since we are particularly interested in the fitted residual border cost coefficients, $\phi_{c,cc}$, we rearrange equation (4):

$$E_{c,cc} = \beta^{\sigma}.(1-\phi_{c,cc})^{(\sigma-1)}.X_c.Y_{cc}.T_c^{-1}P_c^{1-\sigma}.\pi_{cc}^{\sigma-1}.(1+\tau_{c,cc})^{1-\sigma}(1+t_{c,cc})^{-\sigma}$$

To eliminate the consumer price indices, the easiest way is to say that for cc=c we can replace $E_{c,cc}$ with H_{cc} (home use). For Hcc we have a simpler version of equation (4), since $\tau_{cc,cc}$=$t_{cc,cc}$=0:

$$H_{cc} = \beta^{\sigma}.(1-\phi_{cc,cc})^{(\sigma-1)}.X_{cc}.Y_{cc}.T_{cc}^{-1}P_{cc}^{1-\sigma}.\pi_{cc}^{\sigma-1}$$

-(4b)

And dividing (4) by (4b) gives us:

$$E_{c,cc}/Hcc = ((1-\phi_{c,cc})/(1-\phi_{cc,cc}))^{(\sigma-1)}.(X_c/X_{cc}).(T_{cc}/T_c).(P_c/P_{cc})^{1-\sigma}(1+\tau_{c,cc})^{1-\sigma}(1+t_{c,cc})^{-\sigma}$$

-(6)

We can rearrange this to put $(1-\phi_{c,cc})$ on the LHS, and if we assume $\phi_{c,cc}$ = 0 if c=cc we can simplify somewhat:

$$(1-\phi_{c,cc}) = \{(E_{c,cc}/Hcc).(X_c/X_{cc}).(T_{cc}/T_c).(P_c/P_{cc})^{1-\sigma}(1+\tau_{c,cc})^{1-\sigma}(1+t_{c,cc})^{-\sigma}\}^{1/(1-\sigma)}$$

-(7)

An interesting result is found if we multiply together these expressions for trade in both directions between a pair of countries, c and cc, since a lot of terms can then be eliminated:

$$(1-\phi_{c,cc}).(1-\phi_{cc,c}) = \left\langle E_{c,cc}.(1+\tau_{c,cc})^{1-\sigma}.(1+t_{c,cc})^{-\sigma} \times E_{cc,c}.(1+\tau_{cc,c})^{1-\sigma}.(1+t_{cc,c})^{-\sigma} \,\middle|\, H_c.H_{cc} \right\rangle^{1/(1-\sigma)}$$

-(8)

or

$$(1-\phi_{c,cc}).(1-\phi_{cc,c}) = \left\langle \sqrt{\widetilde{E}_{c,cc}.\widetilde{E}_{cc,c}} \,\middle|\, \sqrt{H_c.H_{cc}} \right\rangle^{2/(1-\sigma)}$$

-(8a) where the tild represents exports adjusted for the effects of tariffs, NTBs and transport costs. Effectively, if the geometric average volume of trade between two countries, once tariffs and transport costs have been corrected for, is significantly smaller than the geometric mean of home-based consumption in the two countries, then the model implies there must be residual border costs present.

Once an elasticity of substitution, σ has been chosen, all the other terms on the RHS of (8) are economic variables whose value is known. Effectively, for given data sets, the values for $(1-\phi_{c,cc})$ and $(1-\phi_{cc,c})$ are not independent: their product can be written:

$(1-\phi_{c,cc}) \times (1-\phi_{cc,c}) = K_{c,cc,\sigma}$

-(9)

This means that for a given data set, the higher the value of the trade cost for imports from c to cc, $\phi_{c,cc}$, the lower will be the trade cost in the other direction, $\phi_{cc,c}$.

Appendix 2: The 2004 Accession States to the European Union: key data.

Appendix Table 1: Accession States to the European Union, 2004.

	1999 Population million	GNP $bn	GNP per capita $	Region in GEMEE model
Poland	39	153.1	3960	*POL*
Czech Republic	10	52	5060	*OCEC*
Hungary	10	109	4650	*HUN*
Slovakia	5	19.4	3590	*OCEC*
Slovenia	2	19.6	9890	*OCEC*
Lithuania	4	9.7	2620	
Latvia	2	6	2470	
Estonia	1	5	3480	
Cyprus	0.8	9	11960	
Malta	0.4	3.5	9210	
CEC candidates still under consideration				
Romania	22	34.2	1520	*OCEC*
Bulgaria	8	11.3	1380	*OCEC*

(also others eg Turkey are currently under consideration)

Source: World Development Report 2000-1 (World Bank).