



International Migration, Trade and Aid: A Survey

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Abstract

This paper surveys the voluminous literature on migration affecting trade and the somewhat less developed literature linking aid flows to migration. We aim to guide the reader through the two literatures, highlighting key contributions and identifying important lines of enquiry. Simmering below the surface of both literatures is the issue of causation. Given the macroeconomic nature of the global flows under examination and the numerous direct and indirect links that potentially exist between them, establishing causality proves particularly problematic and is thus an issue that we pay close attention to throughout. The evidence from the trade and migration literature, in which causality has been more concretely established, suggests an almost ubiquitous positive effect of migration on trade, although exceptions exist. This suggests that richer data might be required to delve even deeper into the trade-migration nexus. While policymakers often wish that aid reduces migration, the literature suggests the opposite, namely that aid increases emigration. However, the mechanism has yet to be resolutely established in this literature, which suggests a need for future research.

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Introduction

International trade, foreign aid and international migration are all key facets of globalisation, and are therefore likely to be interconnected. Between these three elements we can identify three separate dyads and therefore delineate six unidirectional pairwise links. Those between trade and aid do not belong in a paper on migration, but one might expect the remaining four to be discussed. In fact, we predominantly focus on the links running from migration to trade and from aid to migration. This choice is governed by the almost complete absence of any notable literature on the remaining two.

Simmering beneath the surface of these literatures is the issue of causation. Changes in all three phenomena are connected by the general equilibrium adjustment of the economy to shocks. Thus a trade shock might affect the returns to factors of production, which in turn change the incentives for migration, but equally, a migrant inflow will influence the baskets of goods produced and consumed and thereby affect trade. Similarly, an aid flow may increase emigration by raising incomes in the recipient country, thereby allowing greater numbers of people to more easily afford the costs of migration; but additionally, a flow of migrants might affect average incomes (in either the sending or receiving country), which in turn may alter donor's willingness to grant aid. Perhaps even more challenging, the three phenomena also share many common determinants including for example, shared culture, geographical proximity or a common (colonial) history. Pinning down causation in this melee is bound to be difficult and so the economics profession has devoted nearly all its effort to examining those links, which are both easier to identify and most pressing in terms of policy concerns.

Every significant international migration flow around the world tends to arouse some form of opposition. So if one could show that migration led to an increase in something that was almost universally held to be a 'good thing' – viz. international trade – one could start to address that opposition. This, implicitly and sometimes explicitly, is the thrust of the majority of the studies linking migration and trade. A similar motive drives the migration and aid literature: if aid were to be shown to reduce migration voluntarily, would that not represent an attractive outcome for (at least some) policy-makers? In the same vein, trade liberalisation is often touted for similar reasons, i.e. that increases in income reduces emigration from developing countries. To our knowledge, however, the academic community has failed to produce convincing evidence that establishes a direct causal link from trade to migration.

This paper first considers trade and migration. We start by identifying three seminal pieces of scholarship that have shaped the research agenda: one exploring the general equilibrium connections between them and suggesting that at least under certain conditions, trade and migration be substitutes, and two that address the ways in which migrants may directly reduce the costs and/or increase the benefits of international trade and so render them complements. From this base we discuss the methods and results of two decades of empirical research, which has explored the connection with increasing sophistication. As hinted above, the major challenge is one of identification – proving causation – and we

organise the literature around various approaches to meeting this challenge. It is a story of considerable variety and ingenuity, and while no single exercise addresses all statistical concerns concurrently, the very fact that so many different approaches seem to show migration bolstering levels of international trade is, in the end, fairly persuasive.¹

Part two of the paper examines the aid-migration connection. It begins by illustrating the extent of policy-makers' yearning to hear that aid and trade liberalisation will reduce the pressure for emigration from developing to developed countries. It suggests reasons why this is probably not true in principle and why, even if it were, the magnitude of any such effect would be likely to be vanishingly small. We then survey the main studies relating migration directly to aid flows and show that overwhelmingly they conclude that, if anything, aid boosts migration. Finally, we briefly consider the history of the European policy of co-development that attempts to place aid into a coherent policy framework, with the aim of reducing the pressure of migration to Europe. *Prima facie*, it has not been a success.

International Trade and Migration

Three Classic Papers

This section discusses three seminal pieces of scholarship that constitute the foundations of modern research on the link between international trade and migration. First, we introduce the classic statement of the connection between international trade and international migration from Robert Mundell (1957). He observes that under precisely specified conditions, the neo-classical model of international trade, in which trade is determined by differences in countries' endowments of factors of production, implies that '*commodity-price equalization is sufficient to ensure factor price equalization and factor price equalization is sufficient to ensure commodity-price equalization*'. This implies that trade and migration are perfect substitutes.

The fundamental premise of the neo-classical theory of international trade is that the incentive to trade arises from differences in countries' relative costs of producing different goods, which, in turn, arise from differences in those countries' endowments of factors of production. These endowments are assumed to be immobile between countries but mobile between sectors. Free (and costless) trade in goods between countries, ensures that goods prices are equalised across countries. Then, in its purest form, with two countries, two factors and two goods, as well as identical technologies between countries, neo-classical theory generates the remarkable prediction that free trade between two countries whose endowments are 'not too different' is sufficient to ensure that their factor prices are equalised, the so-called Factor Price Equalisation Theorem of Paul Samuelson (1949). If, on the other hand, trade in goods was restricted, so that goods prices differed, differences in factor prices would persist, and if international migration were costless, factors would move. If this occurred until factor prices were equalised, goods prices would also be equal, since technology is the same across countries. According to this theory, only the ratio of the endowments of the two factors matters for the costs of goods production, so it does not tell us whether labour, capital, or both, would move between countries, which in turn implies

¹ Of course another explanation for consistency is publication bias, but the fact that we identify a number of published studies where migration is said to reduce trade should alleviate that concern somewhat.

that labour and capital mobility are also substitutes. But if we assume that there are frictions to capital movement (as there certainly were in 1957), trade and migration would be substitutes. Intuitively, this result is clear if one thinks of goods as bundles of their constituent factors, since then trade in goods and the migration of factors are two means to the same end.

No-one, least of all Samuelson and Mundell, believes that the conditions assumed by the theory are valid in the real world. The casual evidence against them is simply overwhelming. Nonetheless, the basic insight is important and can be seen to operate, for example, in the way in which some agricultural production in developed countries depends on immigrant labour for its very existence – e.g. Martin (1997). Moreover, once we move beyond strict neo-classical theory, by allowing trade to be determined by things such as technology differences or tax structures, international migration can increase trade rather than reduce it. Markusen (1983) explores these cases in an interesting way; he shows that if something makes producing a particular good in a particular location attractive beyond factor endowments, location matters (unlike in the neo-classical model) and factor mobility will occur to take advantage of these specificities. Reasons why the equivalence of trade and migration may break down include: that the productivity of factors varies between countries, either in general or factor by factor; that not all countries can produce all goods because, for example, they lack a geographically specific input such as climate or, except in the very long run, good governance and strong institutions; that taxes and, say, labour market policies influence factor rewards; that imperfect competition in goods markets distorts the link between the costs and prices of goods; and that economies of scale allow larger economies to pay higher wages.²

It is worth noting that in the neo-classical model the effect of migration on trade is indirect, operating via general equilibrium. Immigration, say, increases the labour supply and sets off forces that tend toward reducing wages and the prices of labour intensive goods. In turn, the returns to producing these latter goods increases, which is accompanied by an increase in their supply, which fuels an increase in exports or else a reduction in imports. In fact, subject to certain limits, the quantity responses entirely offset the price effects, so that prices and wages remain at their initial levels, which is the basis of the equivalence of free trade and free factor mobility.

By contrast, the second and third fundamental contributions analyse direct connections between migration and trade, with the former affecting the relative costs or benefits of the latter. The second is a series of theoretical works led by economists at Stanford University during the early 1990s. Milgrom *et al.* (1990) study the role of the *Lex Mercatoria*, or the *Merchant Law* enforcement system, that provided incentives for economic agents to trade honestly by ‘coordinating the actions of people with limited knowledge and trust’ (Benson 1989). Avner Greif further stresses in a series of pioneering theoretical contributions, the trade-fostering roles of institutions in two historical contexts, specifically the *Maghribi Traders’ Coalition* in the 11th century (Greif 1989, 1993) and the *merchant guild* during the Commercial Revolution of the 11th–14th Century (Greif *et al.* 1994). In a nutshell, Greif’s work argues that myriad social and political forces at various times in history culminated in

² In addition there are some more technical factors that might cause the equivalence to break down – e.g. there may be more factors than goods, or technology may be such that the same goods prices are consistent with different factor prices (the case of so-called factor intensity reversals).

the formation of institutions that helped to overcome the commitment issues that would otherwise have undermined trade relations. They did so by disseminating information on members' past trading behaviour and coordinating traders' responses in order to punish aberrant behaviour, both of which serve to improve compliance with commercial agreements. Greif explicitly distanced his work from the trade theory prevailing at the time, advocating the crucial role of (social) institutions in nurturing trade relationships, as opposed to the traditional theoretical drivers of international trade such as 'endowments, technology, preferences and the nature of competition in international markets' (Greif 1992: 128).

The third pivotal work is an outstanding piece of empirical scholarship, which laid the intellectual foundations for the now burgeoning literature that examines the mechanisms and interactions underpinning the trade-migration nexus. Gould (1994) motivates his seminal contribution by observing that immigrant labour is different from the domestic work force: receiving countries do not simply benefit from a corresponding increase in labour or human capital, but additionally from the immigrants' links to their home countries. Gould proposes two key mechanisms via which migrants might bolster trade: an *immigrant preference hypothesis*, by which migrants increase the demand in their country of destination for goods produced in their country of origin, and a more important *immigrant-link hypothesis*, through which migrants lower the transaction costs of trade between the two countries by, for example, reducing communication costs through speaking the same language, lowering the costs of obtaining foreign market information through their knowledge of home markets, and by decreasing the costs of negotiating and enforcing contracts by drawing upon their trusted networks at origin. The immigrant-link hypothesis therefore suggests that the ability of migrants to foster trade is a function of the existing foreign market information in the host country and 'the ability of immigrants to relay information and to integrate their communities into the host country' (Gould 1994: 303). A corollary of this hypothesis is that migrants should exert more effect on bilateral trade in environments of weaker institutions where contract enforcement is more costly, i.e. in and with developing countries.

Gould argues that immigrants' preferences necessarily operate in the same direction as immigration, therefore fostering imports, while the immigrant-link effect can affect transaction costs for both imports and exports. He estimates separate regressions for exports and imports:

$$\text{Equation 1a (exports)} \quad \ln X_{ij} = \alpha + \beta \ln Mig_{ji} + \vartheta' Z_{ij} + \epsilon_{ij}$$

$$\text{Equation 1b (imports)} \quad \ln X_{ji} = \gamma + \rho \ln Mig_{ji} + \varphi' Z_{ij} + v_{ij}$$

Where $\ln X_{ij}$ and $\ln X_{ji}$ are the natural logarithms of respectively exports from i to j and exports from country j to i , i.e. i 's imports from j , $\ln Mig_{ji}$ and $\ln Mig_{ij}$ are the natural logarithms of the bilateral migrant stock from j to i and from i to j and ϑ and φ are vectors of coefficients for all remaining controls. For identification purposes, Gould compares the elasticities of imports and exports with respect to immigration, arguing that if immigrants affect only imports ($\rho > 0$ and $\beta = 0$) then the preference channel is the more relevant, while if they affect only exports ($\beta > 0$ and $\rho = 0$) the immigrant-link hypothesis is most likely connection. Estimating a gravity model for the United States and 47 of her trading partners, Gould finds that both elasticities are strongly positive, from which he argues that both

mechanisms are relevant. His inference is not entirely secure, however, because it is quite possible that the immigrant-link channel alone may account for this result.

Gould further examines various immigrant characteristics, namely their education levels and their duration of stay and also the size of the immigrant community. These features, which according to the immigrant-link hypothesis should affect the degree to which immigrants foster trade, do not appear again in the literature for many years to follow. Interestingly in terms of skill level, Gould shows that, except in the equation for producer imports, the estimated parameter of the ratio of skilled to unskilled workers is always *negative*. He argues that this reflects offsetting forces: all immigrants lower transactions costs through their foreign market information but educated ones are also more likely to create industries that are substitutes for traded goods; the positive effect on producer goods could arise if the educated migrants' firms use producer goods from their home nations. Gould estimates that the 'immigrant information effect' changes with the size of the immigrant community, finding that around 12,000 immigrants are sufficient to exhaust 90 per cent of the effect for aggregate exports flows, while the corresponding figure for imports is around 371,000. Finally, Gould's model includes terms for the duration of immigrants' stay and its square; the estimates suggest that for imports the immigrant effects increase bilateral trade at a decreasing rate over time – which might demonstrate the waning of preferences for goods produced in the home country – while for exports they start low and increase after about four years. This latter finding is consistent with the idea that immigrants need time to assimilate into the destination country in order to best use their foreign market information.

Aside from representing the first empirical paper in the literature, Gould's work distinguishes itself in a number of important respects. First, by distinguishing two main hypotheses he recognised that immigrant preferences might play an important role in fostering bilateral trade. Second, in contrast to many of the subsequent (and less convincing) papers that adopt rather ad-hoc specifications, Gould builds on what was, at its time, widely viewed as the most sophisticated theoretical specification for aggregate trade equations: he extended the gravity model proposed by Bergstrand (1985) by modelling inter-country transaction costs such that they could decline via the foreign market information brought by immigrants. Third, Gould's empirical specification is very rich in terms of explanatory variables, which in turn allows him to investigate the immigrant-link hypothesis in a far more nuanced way – for example, the ways in which the information effect varies according to the characteristics of the immigrant population. Fourth, in distinguishing consumer and producer imports and exports, Gould also provided the conceptual framework for subsequent theoretical models (see below); in doing so he recognised that different types of goods may embody different characteristics that reflect the differing extents to which prices convey the full set of information necessary for commercial transactions.

Aside from Gould's study being a time-series analysis, which militates against easily comparing his results with those of other studies, its principal shortcomings pertain mostly to its identification strategies. Perhaps most obviously, Gould fails to include time dummies, so that macro trends that might be driving both trade and migration are not captured in the model. Other failings of this ilk include an inability to prove that migrant preferences supplement the immigrant-link' connection (because the latter can explain the positive effects on both exports and imports), a failure to establish formally that causality runs from migration to trade and finally, as Gould himself recognises, that his specification might

evoke omitted variable bias since ‘another variable suggested by the analytical model but not included in the estimating equations here is the number of immigrants from the United States in the home countries’ (Gould 1994: 309). It is no exaggeration that these shortcomings have to a large extent motivated many of the subsequent papers in the literature.

The Subsequent Literature

The theoretical and empirical literatures were subsequently advanced by James Rauch, whose name today is often associated with the ‘network/search view of trade.’³ Relaxing the assumption in models of differentiated goods under monopolistic competition that buyers and sellers are automatically matched by some perfectly operating international market, Rauch (1996, 1999) argues that the heterogeneity in traded manufactures along ‘the dimensions of both characteristics and quality’ (Rauch 1996: 1) means that prices no longer offer sufficient information to allow them to be sold on international organised exchanges. Rather, according to his partial equilibrium theory, buyers and sellers are matched through a costly search process that is both a function of the proximity of buyers and sellers and, crucially, of ‘pre-existing ties’.

Drawing upon the terminology from one of the most cited sociological works in history, ‘The Strength of Weak Ties’ (Granovetter 1973), Rauch argues that more distant and weaker ties (e.g. older ties or ties that involve less frequent social interactions), might actually be strongest in terms of yielding the ‘best’ outcome – in our case, greater volumes of trade – because there will be less overlap between the information that they know and that which you possess. Thus the exchange of differentiated goods is fostered by international networks as opposed to traditional markets, which is all the more important given that the majority of world trade comprises differentiated goods (Rauch 1999). Rauch’s key insight therefore follows directly from Gould (1994) who noted that ‘because producer goods tend to be the least differentiated product (for instance, scrap metal) across countries, trade flows in these products may not benefit much from country-specific trade information’ (Gould 1994: 310). Rauch and Casella (2003) extend the analysis to a more formal general equilibrium matching model, in which group-ties extend complete information about their domestic markets across international borders *within* groups, thereby fostering a more efficient international matching of pairs of producers.

Despite his earlier pessimism that ‘it is doubtful that studies using data on bilateral trade flows such as Gould (1994) can be anything more than suggestive’ (Rauch 1996: 19), Rauch (1999), tests his theoretical conjecture by including in a gravity model of bilateral trade, a dummy variable that takes the value of one if a trading dyad shares either a language or a colonial link. Since the coefficient on this variable is smaller for homogenous than for differentiated goods, Rauch provides indirect support for the theory even in the absence of bilateral migration data. Rauch and Trindade (2002) go further, and while abstracting from the preference channel, use bilateral data on Chinese ethnic networks to dig deeper into the immigrant-link hypothesis by distinguishing between the (foreign) market information effect and the trust and enforceability of contracts channel. Their key tool for identification is Rauch’s (1999) classification of goods. Rauch distinguishes (i) *homogenous goods* which

³ Gould mentioned ‘networks’ but once in his paper, while Rauch uses the term 18 times in Rauch (1996) and 17 times in Rauch (1999).

comprise commodities that are sold on organised exchanges and thus can be traded efficiently because their prices are kept up-to-date such that traders can arbitrage between opportunities in the absence of additional information, (ii) *reference goods*, which are priced without mention of a brand but not sold on organised exchanges, and (iii) *differentiated goods*, the prices for which fail to transmit full information relevant to international commerce. It is the latter in which co-ethnic networks can use their intra-network foreign market information to match buyers and sellers. Rauch and Trindade's identification strategy hinges upon the supposition that the contract re-enforcement mechanism should equally apply across all types of goods, while the foreign market information channel should only apply to differentiated goods; thus while the effect of Chinese ethnic networks on homogenous goods can be taken as a 'baseline' impact through the mechanism of contract enforcement, the difference in the trade creating effects between differentiated and homogenous goods can be taken as a measure of the market information channel. The authors' central hypothesis is borne out: ethnic Chinese networks do affect trade in all types of goods but are found to exert additional effects on flows of differentiated products. Building upon Gould's previous finding, Rauch and Trindade also find diminishing marginal returns to potential network size.

At the core of the theories of Greif, Gould and Rauch, therefore, is the crucial role of social capital that operates through the twin mechanisms of diffusing *information* and maintaining *trust*. A key difference however, is that while Greif places more emphasis on networks providing information on agents' past behaviour, Gould and Rauch, instead, emphasise immigrant-links and migrant networks providing information in the form of foreign market knowledge (to surmount issues of incomplete information).⁴ The great contribution of Rauch's work is in providing a formal, tractable and ahistorical model, which includes the salient features of the models of both Greif and Gould that can be applied relatively easily to the data in a variety of alternative contexts. In doing so, the role of migrant networks has been brought closer to the vanguard of the economics literature. In addition to the network/search theory of trade being able to provide a cogent explanation for the fact that bilateral distances do not exert a more negative impact upon the volume of trade as transportation costs increase as a percentage of value,⁵ the failure of networks to eliminate informal trade barriers entirely is a leading contender to explain the *puzzle of the missing trade* (Trefler 1995; Rauch and Trindade 2002).

The literature to date focuses mainly on immigrants hosted by developed countries. This choice has largely been governed by the availability of trade and migration data and, in turn, the increasing complexity of studies generally reflects the gradual availability of richer data. What is perhaps most remarkable about the literature is the consistency with which a positive relationship between migration and trade has been found, albeit with a wide variation in magnitude, which presumably reflects differences in empirical specification. Genc *et al.* (2011), for example, in their meta-analysis of 45 immigrant-link studies, find that on average a 10 per cent rise in immigration is associated with a 1.5 per cent rise in bilateral trade, and that generally the elasticity on imports is greater than that on exports, as would

⁴ Felbermayr *et al.* (2012) build on this interpretation by distinguishing networks further militating against asymmetric information.

⁵ Rauch's solution based on his model of differentiated goods is that low transportation cost goods are traded through networks while conversely, high transportation cost commodities are sold on international organised exchanges in which case product homogeneity results in correct price signals being transmitted.

be expected given that preferences additionally operate in this direction. The majority of the trade-migration literature, however, provides evidence of a strong correlation between the two facets of globalisation. The remainder of the paper seeks to guide the reader through the highlights and the main threads of the recent literature, and in doing so, we maintain the same focus as the majority of the literature – viz. trying to identify the *causal* transmission mechanisms at play.

The ever-expanding literature examines the trade-migration nexus in a variety of geographical settings (see Table 1). The most frequent contributions study single countries and multiple trading partners, in for example: Australia (White and Tadesse (2007), Canada (Head and Ries 1998), Denmark (White 2007a), France (Briant *et al.* 2013), Greece (Piperakis *et al.* 2003), New Zealand (Law *et al.* 2013), Spain (Blanes 2008), Sweden (Hatzigeorgiou 2010), Switzerland (Vézina 2012), the United States (Dunlevy and Hutchinson 1999, 2001; White 2007b; White and Tadesse 2008, 2010), and the United Kingdom (Girma and Yu 2002). Another strand of the literature instead draws on data for national sub-divisions: American states (Bandyopadhyay *et al.* 2008; Bardhan and Guhathakurta 2004; Co *et al.* 2004; Coughlin and Wall 2011; Dunlevy 2006; Herander and Saavedra 2005; White and Tadesse 2007), Canadian provinces (Wagner, Head and Ries 2002), Italian NUTS-3 regions (Bratti *et al.* 2014), Spanish provinces (Peri and Requena 2010), or Italian, Portuguese and Spanish sub-regions (Artal-Tur *et al.* 2012). Yet another thread examines either groups of countries in a cross-sectional setting (Felbermayr *et al.* 2010; Felbermayr and Toubal 2012; Hatzigeorgiou 2010; Muller and Tai 2012; Aleksynska and Peri 2013), or groups of countries in a panel setting (Felbermayr and Toubal 2012; Sangita 2013). Still others study the links between internal migration and trade, either in France (Combes *et al.* 2005) or the United States (Millimet and Osang 2007).

Table: Methodological Overview of Immigrant-Link Literature⁶

Paper	Time Period	Data Structure	Estimator	Standard Errors	Geographic/Time Fixed Effect Sets
Gould (1994)	1970-1986	USA + 47 national trading partners	Times Series (non-linear least squares)	Unspecified	Partner Country
Head and Ries (1998)	1980-1992	Canada + 136 national trading partners	Tobit (Eaton-Tamura method)	Unspecified	Region, Year
Dunlevy and Hutchinson (1999, 2001)	1870-1910 (5 year intervals)	USA + 17 national trading partners	Scaled OLS	Unspecified/Robust	None
Girma and Yu (2002)	1981-1993	UK + 48 national trading partners	OLS	Robust	Year, (robustness with partner-time dummies)
Rauch and Trindade (2002)	1980, 1990	63 nations	Tobit (Eaton-Tamura method)	Robust	None
Wagner et al (2002)	1992-1995	5 Canadian regions + 160 national trading partners	Heckman Selection model	Robust	Partner Country
Piperakis et al (2003)	1981-1991	Greece + unspecified number of national trading partners	OLS	Robust	Year
Bardhan and Guhathakurta (2004)	1994-1996	2 US coastal regions + 51 national trading partners	OLS	Robust	Year
Co et al (2004)	1993	USA states + 28 national trading partners	Scaled OLS, Tobit	Robust	None
Combes et al (2005)	1993	95 French Departments	OLS, (2SLS), also odds and 'frictions' specifications	Robust	Department (Importer and exporter)
Herander and Saavedra (2005)	1993-1996	US States + 36 national trading partners	Tobit (Eaton-Tamura method), censored least absolute deviation estimator	Unspecified	Region
Dunlevy (2006)	1990-1992	US States + 87 national trading	Tobit	Unspecified	State, Partner Country

⁶ The papers comprising this table include those that the authors consider to belong to the core of the immigrant-link literature. Only sets of fixed-effects are recorded in, in other words should a dummy variable be included for example for a single specific region this will not be recorded in the table. 'Scaled OLS' refers to OLS when one has been added to the dependent variable prior to taking its log.

	(averaged i.e. cross-section)	partners			
Tadesse and White (2007)	2000	USA + 75 national trading partners	Tobit (Eaton-Tamura method)	Unspecified	None
White (2007a)	1980-2000	Denmark + 170 national trading partners	Tobit	Robust	Year
White (2007b)	1980-2001	USA + 73 national trading partners	OLS	Robust	Year
White and Tadesse (2007)	1989-2000	Australia + 101 national trading partners	Iterative Feasible Generalized Least Squares, Tobit, Pooled Corrected Standard Error	Unspecified	None
Blanes (2008)	1995-2003	Spain + 83 national trading partners	OLS	Robust	Year
Bandyopadhyay et al (2008)	1990 and 2000	US States + 29 national trading partners	OLS, Panel FE	Unspecified	Year, State, Partner Country, State-Country
White & Tadesse (2008)	1997-2004	USA + 54 national trading partners	Random Effects Feasible Generalised Least Squares	Robust	Year
Felbermayr and Jung (2009)	1990, 2000	OECD + all national trading partners	OLS, first-difference estimator	Robust	Importer-Year, Exporter Year
Felbermayr et al (2010)	1980, 1990 & 2000	World	OLS, PPML-DV	Cluster Robust	Importer, Exporter
Hatzigeorgiou (2010a)	2000	75 nation states	OLS, PPML	Cluster Robust	Importer, Exporter
Hatzigeorgiou (2010b)	2002-2007	Sweden + 180 national trading partners	OLS, Panel, Tobit	Robust	Year, Region
Peri and Requena (2010)	1993-2008	50 Spanish provinces + 77 national trading partners	OLS, Panel IV, 2SLS, Scaled OLS, PPML, Tobit	Cluster Robust	Province-Year, Country-Year, Province-Country
White and Tadesse (2010)	1996-2001	USA + 59 national trading partners	Random Effects Generalized Least Squares	Unspecified	Year
Artal-Tur et al (2012)	2002-2010	103 Italian & 50 Spanish provinces and 20 Portuguese districts	OLS	Cluster Robust	Province-Country, Country-Year
Felbermayr and Toubal (2012)	2000	OECD + all national trading partners	OLS	Robust	Importer, Exporter
Muller and Tai (2012)	2000	19 OECD countries + all potential worldwide national trading partners	Scaled OLS	Cluster Robust	Importer-Sector, Exporter-Sector, Importer-Exporter
Vezina (2012)	Average 1995-2009	Switzerland + 174 trading partners	OLS, 2SLS, PPML, Poisson-IV, Negative binomial, Poisson-FE	Robust/Clustered	Trading Partner (Poisson-FE model)
Aleksynska and Peri (2013)	2000	89 destinations + 233 origins	Scaled OLS, PPML, Tobit	Cluster Robust	Importer, Exporter, (Year for exact year of data collection)
Briant et al (2013)	Average 1998-2000	94 French Departments + 100 national trading partners	OLS, 2-step negative binomial model, 2SLS	Robust	Department, Partner Country
Law et al (2013)	1981-2006	New Zealand + 190 national trading partners	Heckman Selection model with Correlated Random Effects	Unspecified	Year, Partner country
Sangita (2013)	1990, 2000	OECD + 200 national trading partners	OLS, 2SLS	Unspecified	Importer, Exporter
Bratti et al (2014)	2002-2009	20 Italian regions/107 Italian Provinces + 210 national trading partners	Scaled OLS, 2SLS	Cluster Robust	Region/Province-Year, Partner Country-Year FE, Region/Province-Country

Specification

The gravity model is the work-horse of trade-migration research and this sub-section discusses some of the issues surrounding its specification. The most common objective in the literature is to distinguish ever more carefully between Gould's two effects, specifically to attempt to separate the transaction cost mechanism, which is unambiguously welfare improving, from the preference channel, otherwise termed *Nostalgia Trade* (Vézina 2012), *Transplanted Home Bias* (White 2007b), or the *taste channel* (Sangita 2013). Initial contributions typically used aggregate trade and migration data, regressing both imports and exports on the bilateral stocks of immigrants (see Equations 1a and 1b), relying on the identification strategy that the preference channel operates *solely* on imports while the information channel operates instead on both imports and exports.

As highlighted by Hatzigeorgiou (2010), however, a more satisfactory approach involves regressing one-way trade on both immigrant and emigrant stocks, viz.

$$\text{Equation 2: } \ln X_{ij} = \alpha + \beta \ln Mig_{ji} + \rho \ln Mig_{ij} + \vartheta' Z_{ij} + \epsilon_{ij}$$

This is because, as first elucidated by Ravenstein (1885), migrant flows often lead to migrant counter flows. Should this be the case, immigrant and emigrant stocks will be positively correlated and, as recognised by Gould (see quote above) and demonstrated by the empirical results of Combes *et al.* (2005), a failure to include both immigrant and emigrant stocks will result in upwardly biased coefficient estimates on the former. Second, since the emphasis of the literature is in trying to isolate the immigrant-link hypothesis, the ‘transaction channel’ can be better identified should a flow of migrants against the direction of trade be found to foster that trade flow, since it is impossible for preferences to operate in that direction. In other words, if in equation (2), $\beta > 0$ i.e. if immigrants from country j living in country i foster exports from i to j , this effect must manifest through the transaction cost channel. Isolating this effect is only possible if one controls for migration in both directions, however, since both immigrants and emigrants may establish both importing and exporting businesses.

While the complexities of the empirical models used in the migration literature mirror the advances made in the wider econometric literature, the control variables it uses are fairly standard, including the usual suspects such as measures of economic mass, distance, colonial ties, common language and regional trade agreements. Typically trade and migration enter these specifications in (log) levels, although, in order to try to reduce scale effects, a handful of papers implement either or both in terms of shares (e.g. Rauch and Trindade 2002, Felbermayr *et al.* 2010, Felbermayr and Toubal 2012).

The specification of the gravity model has evolved significantly since the ad-hoc specifications of the early literature, in which additional covariates of interest were added somewhat haphazardly into the estimated regression in the absence of more formal theoretical justifications. Gould is a notable exception since he extended the gravity model of Bergstrand (1985) by endogenising transaction costs with respect to the foreign market information provided by immigrants. In an important development, the representative consumer’s utility function is defined over differentiated varieties Combes *et al.* (2005). A weight is attached to all varieties imported from region j , which denotes the preferences that i consumers have for j varieties, i.e. a bilateral affinity term is used to weight the importance attached by representative consumers in country i to country j ’s products, which explicitly allows preferences to be included in the derivation of the model. Peri and Requena (2010) instead rely upon the distorted gravity model of Chaney (2008) to examine how immigrants affect the intensive and extensive margins of trade. Finally, Sangita (2013) introduces a simple extension to the Anderson and van Wincoop (2003) gravity model, by explicitly splitting their ‘trade frictions’ into ‘knowledge gaps’, that migrants are purported to surmount, and transportation costs.

This increasing complexity has been accompanied by evermore stringent specifications in terms of the number of controls, or more precisely the large number of fixed effects applied (in order to militate against omitted variable bias). But there is still no consensus on a number of econometric issues. The first is how best to deal with the large number of zeroes in bilateral trade data. The three most common approaches that feature in many of the earlier contributions in the literature are: (1) to use a Tobit model, setting the censoring threshold to zero; (2) to add a small value, typically one, to all cells before taking the log and proceeding with OLS; or (3) to simply drop zero observations and use OLS, which necessarily results in selection bias, which Rauch (1999) shows has significant effects on results. More

recently, in a highly influential piece of work, Santos Silva and Tenreryo (2006) argue that a Pseudo-Poisson Maximum Likelihood estimator offers a satisfactory way of dealing with zeros.

One empirical issue that should be in no doubt, however, is in terms of clustering standard errors by the relevant observational unit (as opposed to simply using robust standard errors), because observations of bilateral trade across partners will generally not be independently distributed. Unfortunately, studies correctly clustering standard errors are still in the minority (see table above). The preceding arguments, namely: the increasingly stringent empirical specifications, the inclusion or exclusion of zeroes, the variety of estimators used and the fact that relatively few papers in the literature cluster standard errors correctly, mean that any comparisons of the point estimates from across the various studies remain somewhat confounded.

Identification – Product Types

The trade and migration literature seeks to address the extent to which a causal link can truly be established from migration to trade. To this end, papers typically aim to both (a) isolate the transaction cost mechanism by drawing upon richer more disaggregated data and (b) insulate their results from both omitted variable bias and reverse causality that might otherwise confound their results.

Perhaps the most common method to isolate the transaction cost mechanism is to examine the pro-trade effect on different classifications of goods, since theory suggests that migrants should exert the greatest pro-trade effect on those most differentiated. While Gould examines consumer and producer goods (as do Herander and Saavedra 2005 and Blanes 2008), most authors instead follow Rauch's (1999) classification of goods (for example: Briant *et al.* 2013; Hatzigeorgiou 2010; Vézina 2012; Sangita 2013). Similarly, Peri and Requena (2010) and Aleksynska and Peri (2014) apply the estimated elasticities from Broda and Weinstein (2006) to categorise the degree of product differentiation in various sectors. Other authors simply use manufactured goods, which are often considered to be the most differentiated type of goods (for example Dunlevy 2006), or else simply delineate between manufactures and non-manufactures (for example White and Tadesse 2010). Dunlevy and Hutchinson (1999, 2001), in their historical studies of the United States, instead distinguish between five product categories: crude foodstuffs, crude materials, processed foodstuffs, semi-manufactures, and manufactures for consumption.

Most studies find that immigrants exert a stronger effect on differentiated as opposed to homogenous goods, although exceptions exist. White (2007a), for example, fails to find the usual effect. This might be because he fails to include a full set of controls (i.e. fixed effects) to account for omitted variable bias. Similarly, Felbermayr *et al.* (2010) do not find that immigrants generally matter more for differentiated products, but this does not worry them because it is 'not overly surprising since the theory-based gravity model signals that the estimated coefficients confound the elasticity of substitution with the trade cost elasticity of networks, so that comparing across categories of goods is not an ideal identification strategy' (Felbermayr *et al.* 2010: 63). A further weakness in drawing upon the now standard Rauch classification, is that it has not changed over time and thus while we might expect that concurrent with rapidly expanding global trade would be an increase in the

numbers and types of differentiated goods, authors typically estimate regressions with a fixed definition of what constitutes a differentiated good. Sangita (2013) takes a different tack, separating intermediate from final goods, arguing that the former should not be affected by any preference effects. Since in the absence of taste effects, the pro-trade effect of migration is maintained, this lends further support for the existence of the transaction cost channel. Interestingly, Law *et al.* (2013) also examine the pro-trade effect of both immigrants and emigrants on tourism to New Zealand and find that this effect is substantially higher than that for trade in goods. They are unable to establish, however, whether the effect on tourism is due to information about New Zealand being transmitted from the diaspora to others around the world or whether it is due to increased numbers of visits by family and friends.

Identification – Geographical Proximity

In other contexts, authors have exploited geography to isolate the causal impact of migration on trade. Since search costs and thus the social interactions that are purported to govern the trade-migration nexus will probably depend on proximity (Rauch 1999), Herander and Saavedra (2005) suggest that geographic distance within the United States between host-country agents and immigrants is crucial in terms of communicating host-country exporting opportunities. Bratti *et al.* (2014), thus, argue that the proper geographical unit from which to assess the existence of interactions and knowledge flows between natives and immigrants are small areas. Bratti *et al.* (2014) represent a great advance in the literature in this regard by using provincial data (i.e. NUTS-3 regions) on 107 Italian provinces with an average area of 2,800 square kilometres, which additionally allow for the imposition of a full battery of fixed effects to further isolate their results from omitted variable bias. Herander and Saavedra (2005) specifically highlight the role of geography as a key component of network structure, since they find that while in-state migrant populations exert the greatest state pro-export effect, out-of-state populations also foster such links. Conceptually, this avenue of research is similar to the work of Felbermayr *et al.* (2010), who document the fact that, having controlled for the general openness of states through the imposition of country fixed effects, those migrants born in neither the importing nor the exporting country can still foster international trade links. These they call indirect links, the presence of which, importantly, cannot be due to preference effects. Artal-Tur *et al.* (2012) perhaps go furthest in this regard however, since they combine regional trade and migration data for Italy, Portugal and Spain. The results from these authors' most stringent specification highlight the importance of the role of geography since they find (for all three countries in their sample) that only immigrants within a trading province – as opposed to those from the same country residing in other parts of the Southern European countries – exert a pro-trade impact. This constitutes evidence against Herander and Saavedra (2005), but it is not clear if these results are robust to the inclusion of province-year fixed effects.

Identification – Firms

Combes *et al.* (2005) importantly distinguish between migrant networks (measured by intra-region worker stocks) and networks of firms (measured as the number of potential business connections of various business groups across regions), thus separating out the effects of social and business networks. They therefore introduce an additional mechanism through which networks can foster trade, i.e. through business networks overcoming informational

asymmetries via FDI. Compared to a situation of no networks, social networks are found to double trade while business networks are estimated to boost trade by a factor of up to four. Related is the paper of Bardhan and Guhathakurta (2004), who similarly delineate between international socio-cultural networks (measured as the numbers of foreign born) and business networks (measured as the proportion of multinational exports or intra-firm exports as a fraction of total exports), and examine the impact of each on East and West Coast US exports to 53 nations worldwide. They find that business ties are important for both coasts but that social networks are only relevant for the West coast. No convincing explanation is offered for this, although the authors rather argue somewhat loosely that the industrial and immigrant structures of the two coasts differ. It seems likely that the ad-hoc gravity specification adopted in tandem with the fact that only 53 countries of origin are included in estimation might be driving these findings. Relatedly, Greaney (2005) examines network effects by comparing the trading patterns of foreign affiliates in the United States with those of domestic firms. Foreign affiliates are found to exert an unbelievably strong home bias; in particular, Japanese affiliates are found to trade over 130 times more with Japan than elsewhere. Interestingly, affiliates are found to trade less with countries located further from their home countries, even when controlling for the distance between an affiliate and the destination country, which implies the existence of regional networks (and potentially cultural connections), one based neither on trade costs nor on information. If the geographical patterns of FDI and migration are positively correlated (and presumably they are via country size as well as cultural and historical links), these results raise the possibility that studies which do not include FDI will give upwardly biased estimates of the pro-trade effects of migration.

These results naturally lead one to conjecture that migrants might exert the greatest effects on trade if they are employed by firms, although firms no doubt have access to alternative resources that would allow them trade in the absence of foreign workers. This proposition is examined by Hiller (2013), who focuses upon manufacturing firms that export to at least one destination, i.e. she does not consider firms that switch into becoming exporters. By matching employer and employee data at the firm level, Hiller documents how Danish firms adjust their product portfolios in response to both regional immigration and foreign employment. She finds strong evidence that foreign employees foster Danish exports, but only weak evidence that the local presence of foreigners increases export sales. The introduction of firm-level data potentially introduces an additional source of endogeneity, however, since it is not clear whether firms export to a particular country because they have hired migrants or vice-versa. Hiller (2013) tries to insulate her results from such reverse causality by introducing instruments into her regressions, namely the average number of immigrants from a given origin employed in other firms in the same industry or else the number of foreigners from country j who work elsewhere in the region of firm i . What remains unclear, however, is the extent to which foreigners working locally or in the sector are correlated with the 'local presence of foreigners', which she has already identified as having a (weak) positive effect, for example through employees migrating with their family that work outside of the firm. Hiller assumes that regional immigrant stocks are exogenous to the firm, but given the preceding argument this assumption may be invalid.

Muller and Tai (2012) instead match migrants by occupation to trade data across 18 manufacturing sectors, and employ a sectoral gravity model to try to pin down the causal impact of immigrants on bilateral trade. Since their results are robust to stringent

specifications saturated with fixed effects, they provide further evidence that immigrants foster international bilateral trade flows through the transaction cost channel, but have no riposte to charges of reverse causality. Bastos and Silva (2012) match 'historically determined' emigration stocks from Portugal with Portuguese firm level export data, and find that larger stocks of Portuguese emigrants increase both the export participation and export intensity of Portuguese firms and furthermore that export participation is most associated with those firms that existed prior to the emigration occurring. In other words, Portuguese emigrants affect both the extensive and the intensive margins of trade. These authors argue that emigration from Portugal stemmed largely from a mass movement in the 1960s during the *Estado Novo* regime that governed from 1933 to 1974. This implies that a large fraction of the stock in the year 2000 would comprise these older emigrants, which in turn would insulate their results from concerns of reverse causality. It is unknown to what extent Portuguese emigrant stocks in 2000 do reflect the exodus from decades beforehand, however, and so plausibly for any country that has received a fairly large number of Portuguese emigrants in recent years, the author's conjecture seems unlikely to hold.

Several authors have examined the effect of immigrants on the margins of trade. Peri and Requena (2010) base their immigrant-link study using Spanish data on the distorted gravity model of Chaney (2008), which provides a theoretical foundation for examining how immigrants affect the margins of trade. According to the model, migrants lower the fixed costs of exporting such that less productive firms (those previously below the productivity threshold necessary to export) are now able to enter the export market. Using the number of transactions and the average value per transactions as proxies for the external and internal margins of trade, they find corroborative evidence for the underlying theory, since the largest part of trade creation is through the extensive margin with little to no effect on the intensive margin. This result seems to be in contrast with Bastos and Silva's (2012), but in the latter case, since they use data on emigrants, it is possible that emigrants foster the intensive margin through the preference channel. Similarly, Hiller (2013), defining the extensive margin as 'net churning' (Iacovone and Javorcik 2010), i.e. the difference between products created and destroyed within a firm, concludes that firms increase export sales through the extensive margin. Vézina (2012) reports the same finding in the context of Switzerland.

Identification – Migrant Characteristics

While detailed firm and trade level data allow for a closer identification of immigrant-links, the majority of the literature relies on more aggregate data and typically examines migrants' occupation and education levels in order to ascertain which migrants underpin the trade-migration nexus. Highly skilled migrants and those in particular (business orientated) occupations might well have access to greater amounts of foreign market information and thus be better placed to transmit and use that knowledge. As noted by Gould (1994) however, skilled individuals are also more likely to be able to establish businesses in the destination country to produce what might otherwise have been imported, and so the net effect of more highly skilled migrants on bilateral trade is unclear *a priori*. Since highly skilled migrants are often defined by their level of education, it also matters where migrants were educated. For example, if they have received their education in the receiving country they will tend to assimilate faster but have fewer home ties than other migrants. Given these opposing forces and the level of aggregation of the data used to test these types of linkages, it is perhaps not surprising that the results are mixed.

Blanes (2008) concludes that only immigrants who have secondary education affect trade in the case of Spain, although his empirical specification is not as tight as other work, say on the role of education, in terms of avoiding omitted variable bias. Felbermayr and Jung (2009) find that those with primary and tertiary levels of education foster North-South trade links more strongly than those with secondary education. Sangita (2013), using the same migration data, finds that the impact of immigrants on trade is monotonically increasing in migrants' education level, however. Similarly, Felbermayr and Jung (2012) find in a cross-section of OECD countries in 2000 that the pro-trade effect of high-skilled migrants is more than double that of the overall effect of migrants. Finally, Muller and Tai (2012) find that while immigrants of all education levels affect trade, those with tertiary education have roughly twice the effect of others.

Head and Ries (1998) find that immigrants who entered Canada under the 'Family' and 'Independent' visa classes, exert the greatest pro-trade effect, while refugees have a negligible effect on trade. Interestingly, Head and Ries find that those entering Canada as 'Business Visitors' have no impact on trade, which they conclude might be due to their wishing to create businesses that cater to the Canadian market. Similarly, White and Tadesse (2010) find for the United States that refugees have a considerably smaller pro-trade effect than immigrants entering the labour market or those who migrated for purposes of family reunification. This, they quite sensibly argue, is due to the fact that refugees have spent considerable amounts of time in a third-party country, which might have eroded their links to the home country in addition to altering their preferences. Parsons and Vézina (2014), on the other hand, find a significant long-term impact of refugees residing in the United States on US bilateral trade with Vietnam, in the case of the Vietnamese Boat People. It does seem likely that trading links will be lower for countries that are generating refugees than for other countries, but the evidence of Parsons and Vézina (2014) suggests that if the status of such countries changes over time, the original refugee status may matter little in terms of long-run pro-trade effects.

Herander and Saavedra (2005), in their study of US States, define their ratio of skilled migrants as the number employed in the Labor Department's occupations 1-4 divided by those in categories 5-9. They consistently find that skilled workers strongly influence consumer-good exports (as opposed to total exports). Blanes (2008), in the case of Spain, finds that immigrants who are 'Managers' foster both Spanish imports and exports, while employees are not found to exert any effect, albeit using an extremely simplified econometric specification. Similarly, Aleksynska and Peri (2013), while focusing upon immigrants employed in the OECD in managerial positions, find that the pro-trade effect of these migrants is ten times larger than that of non-business network migrants. Moreover, when combined with migrants' education levels, they find that, above-and-beyond the effect of the total migrant stock, only the highly educated in management positions underpin the trade-migration nexus.

Mechanisms Governing the Trade-Migration Nexus

While the literature surveyed until now goes some way to elucidating *which* immigrants underpin the trade-migration nexus, and *how*, in this section we delve deeper into the underlying mechanisms thorough which migrants facilitate trade. To this end, the literature, drawing upon Gould's and Rauch's insights typically adopts indirect approaches in order to ascertain the underlying mechanisms by which migrants might reduce transaction costs.

An interesting starting point is Girma and Yu (2002), who distinguish between the individual effects of migrants (i.e. personal contacts) and non-individual effects (knowledge, for example, of home institutions that are not individual-specific but rather assumed known by the population). By interacting a commonwealth dummy with the immigrant stock variable, these authors find that, while the UK trades more with countries of the Commonwealth, immigrants exert no influence of exports to these countries, but that a 10 per cent rise in immigration from non-Commonwealth countries is associated with 1.6 per cent rise in UK exports. Since the countries of the Commonwealth, which include the UK, share similar laws and institutions, the authors conclude that non-individual effects are the ones that drive the trade-migration nexus. Similarly, Blanes (2008), in the case of Spain, interacts a colonial dummy with the immigrant stock variable and finds that migrants from both former colonies and non-colonies affect trade, but that the effect is stronger for immigrants from non-colonies. While an important insight, the evidence of Combes *et al.* (2005), who find significant positive influences of internal migrants on internal trade, represents strong evidence that individual effects also play important roles, because internal migrants bring no incremental benefit to local non-individual knowledge. In a similar vein, Dunlevy (2006) finds no evidence in the case of US states that the information brought by immigrants is less useful when they come from a country with similar institutions, a result also found by Herander and Saavedra (2005).

As we noted above, immigrants might not simply foster trade because of their knowledge of home market institutions, but (and perhaps more likely) might also substitute for them in weak institutional environments, where contract enforcement is problematic and issues of trust are important. Anderson and Marcoullier (2002) provide evidence that poor institutions located in the importer's country significantly deter trade. Berkowitz *et al.* (2006) further show that institutions on both sides of the trading relationship play key roles in determining the level of trade and, furthermore, that institutions matter more for more complex goods since they embody characteristics that are most difficult to include in contracts. As opposed to studying institutional similarity (as above), therefore, many studies in the literature instead address the issue of how migrants may *substitute* for weak institutions. Dunlevy (2006) examines US state level trade with foreign countries, specifically examining the roles of information and trust. Trust is represented in these studies by including an interaction term between a measure of corruption and the immigrant stock, which is postulated to sidestep the weak institutions to provide an assured, stable and profitable environment for business negotiations at export destination. Dunlevy finds that the pro-trade effect of migrants is stronger the higher the level of corruption in the destination country.

Briant *et al.* (2013) examine the complexity of French trade in tandem with the quality of institutions in partner countries. They conclude that immigrants matter for the importation of *complex* goods regardless of institutional quality at origin, while conversely, for simple products, immigrants affect imports only when institutions at origin are weak. On the export side, their results are weaker and show that immigrants affect exports only to countries with weak institutions (regardless of product complexity). Similarly, Muller and Tai (2012) find that migrants substitute for weak institutions at both origin and destination (although the former effect is more accurately identified) and that migrants matter more for trade when underdeveloped legal environments prevail. In a slightly different vein, Rotunno and Vézina (2012) provide evidence of a link between Chinese ethnic networks and tariff evasion. They

argue that networks are ideally placed to engineer tariff evasion since smuggling requires access to market information and high levels of trust. They find strong evidence of a link between Chinese networks and tariff evasion with trade both to, and from, China, an effect which is more severe when their host countries are most corrupt. These conclusions resonate with the works of Greif, Gould and Rauch and go some way to shedding further light on the mechanisms underlying the trade-migration nexus.

The other key channel via which migrants are purported to facilitate trade is through the diffusion of foreign market information. Dunlevy (2006) proxies immigrants' knowledge of market information by the use of a shared language variable, arguing that market information is more difficult to obtain across linguistic boundaries. Since Dunlevy finds that the pro-trade effect of migrants is weaker if the importing and exporting nations share a similar language, he takes this as evidence of the market diffusion aspect of the transaction cost channel, as migrant networks are likely to contribute more where the host country population has more difficulty obtaining information itself. Similarly, in the case of New Zealand, Law *et al.* (2013) find that non-English speaking immigrants and members of the New Zealand diaspora who reside in non-English speaking countries have additional pro-trade effects on bilateral imports and exports. Wagner, Head and Ries (2002), taking advantage of the variation in the level of English and French spoken across Canadian provinces, construct a language variable that is the probability that a randomly chosen immigrant and a randomly chosen individual from a Canadian province are able to speak the same language. These authors find that speaking the same language has no statistically significant effect on bilateral trade, but these results are not directly comparable with those above, since Wagner *et al.* do not interact their language variable with their immigrant stock variable.

These results suggest that culture plays a key role in determining global trading patterns, which the trade-migration literature addresses by evoking notions of cultural proximity or else cultural distance. A novel approach in this regard is Felbermayr and Toubal (2010), which uses voting patterns from the Eurovision Song Contest to construct measures of cultural proximity. They conclude, for the highest degree of cultural proximity, that bilateral trade in differentiated goods is some 16 percentage points higher, and indeed argue that these types of effects are above and beyond any impact of immigration. No effect is found for homogenous goods. It is not clear to what extent these results are driven by bilateral migration flows, however, since across all of the specifications in the paper these are never explicitly modelled. White and Tadesse (2008) construct measures of 'cultural distance' using the World Values and European Values Surveys, since home-host country dissimilarity may 'engender opportunities for immigrants to exert pro-trade influences' (White and Tadesse 2008: 1079). They show that, while trade is inversely related to the cultural distance between trading partners, migrants partially offset this effect.

Taken as a whole, we may conclude that in general migrants exert the greatest effects on trade in differentiated products and immigrants have their largest effect by lowering fixed trade costs, i.e. through the extensive margin. Migrants of all skill levels and occupations may influence trade, but these effects are likely to be strongest where migrants are more educated, employed in a firm and, most specifically, in a managerial position. To this end, migrants exploit both their personal contacts and their home market information to transmit their knowledge across international (and national) borders, to establish trusting

relationships, to substitute for weak institutional environments where contract enforcement is more costly, and, not least, where cultural differences between trading partners are greatest.

Non-Linear Effects

Until now we have said little about how such effects change either over time or with changes in the extent of migration (i.e. non-linearities). Although both Gould and Rauch devoted space to discussing possible non-linearities in the effect of migration on trade, surprisingly few studies have taken this matter up. Typically constant elasticity models are used that do not allow for the effect of migration on trade to change, although exceptions exist. Two key sources of such non-linearities are migrants' length of stay and the size of the immigrant community.

Wagner *et al.*'s (2002) random encounter model allows for diminishing returns to immigration and, like Gould, suggests that the pro-trade effect of immigrants tapers off more quickly for exports than for imports. Peri and Requena (2010) find support for a convex relationship across Spanish provinces between immigrant density and their pro-trade effect and conclude that a minimum threshold is needed for an immigrant network to operate. Finally, Law *et al.* (2013), when studying New Zealand, find diminishing returns of immigrants on exports but not on imports by including an immigrant quadratic term.

Herander and Saavedra (2005) introduce a variable to capture immigrants' length of stay and its square and find that immigrants increase US state exports at a decreasing rate as stays extend. Collectively, these results might suggest that a fairly fixed set of opportunities exist on the transaction cost side which are largely exhausted once a particular threshold is reached, but that preference effects are more persistent. Herander and Saavedra (2005) also test whether previous immigration reduces the role of current immigrants in facilitating US state exports. To this end, they interact their state level migrant stock variable with a measure of ancestor origin, defined as the number of US residents per state that report ancestors from a particular export destination. These authors find that the local state populations from high-ancestry countries increase bilateral exports by 1.1 per cent, as opposed to 1.6 per cent for those from low-ancestry countries. This indicates that, since the flow of information between the USA and low-ancestry countries is lower, the role of immigrant populations from these countries is higher.

Jansen and Piermartini (2009) specifically examine the effects of temporary migration in the US on trade, using H1B visa admissions as a proxy for temporary migration, while additionally controlling for permanent migration as captured through the total stock of immigrants. They argue that while permanent migrants are likely to have better host-country contacts, temporary migrants will tend to have more up-to-date home country information that can be exploited to the benefit of trade. These authors find not only that temporary migration has a positive and statistically significant impact on trade, above and beyond permanent migration, but also that the effects of temporary migration are significantly larger. Establishing causality in the case of temporary migration is more difficult, however, since firms might well aim to hire workers of particular nationalities in order to take advantage of specific trading opportunities.

Negative Effects

While the overwhelming majority of results across all of the papers surveyed in this paper uncover a positive relationship between trade and migration, it is important to note that in a limited number of cases authors have found negative results. Dunlevy and Hutchinson (1999), for example, in the case of immigrants from ‘New Europe’, find a strong negative effect on US imports. They argue that this result might hinge on the characteristics of this migrant group, which arrived predominantly after 1890, typically stayed for shorter periods and thus had less time to establish host country contacts, and, perhaps most pertinently, possessed little capital with which to import native goods or indeed establish importing businesses. Moreover, the authors argue that some of these immigrants originated from small regions, such as the Azores, that might have exported little anyway. Girma and Yu (2002) also find a negative, trade-substituting, effect on UK imports for immigrants from Commonwealth countries.

These results all occur on the import side of the trade-migration relationship, which might imply that such effects operate through the preference channel. One plausible explanation offered by Díaz (1970), however, is that immigrants might establish import-substituting businesses in the country of destination. It is also not inconceivable that the presence of large numbers of immigrants whose preferences differ from the domestic population will increase the incentives of local nationally-owned firms to produce substitute products. A second alternative from Rauch’s (2001) network/search view of trade is that

‘...less desirable network members may choose to enter the anonymous international market where their characteristics are not known, harming non-members even though the existence of a transnational network still increases world output in the aggregate. Second, a transnational network can have an effect analogous to harmful trade diversion if it links the “wrong” countries. Third, organization of international trade through networks may hinder its growth if transnational networks tend to be closed to new members’ (Rauch 2001: 1200).

Since the overwhelming methodology of migration-trade studies is the regression model, which estimates average effects across origin countries and migrant characteristics we might conclude that negative effects exist, but that they usually dwarfed by the positive, pro-trade, effects of immigrants. An interesting avenue for future research, therefore, might be to apply richer, more disaggregated, data so as to identify exactly under which circumstances these negative effects arise.

Omitted Variables and Causality

Both trade and migration data typically suffer from measurement error. Such measurement issues are no doubt exacerbated among those studies that impute migration data, which they do often, relying on a stock-flow rule (examples include Head and Ries 1998, Piperakis *et al.* 2003, White (2007), White and Tadesse 2007, White and Tadesse 2010, Law *et al.* 2013). With regards to endogeneity, however, the trade-migration literature focuses not on these errors but on addressing concerns about omitted variable bias and reverse causality.

It is beyond the scope of this paper to provide a detailed account of the received wisdom on the specification of the gravity model – see, for example, Baldwin and Taglioni (2006) on the trade aspects of the question. As mentioned above, however, and as recognised in Gould’s

original study, arguably the most commonly omitted variable on the migration side is the failure to include migrants in both directions of a bilateral link. Since these variables are highly positively correlated – according to Özden *et al.* (2011) the correlation is 0.604 for all decades between 1960 and 2000, but has sharply decreased from 0.811 in 1960 to 0.334 in 2000 – if both sets of migrants matter, the absence of one will necessarily lead to overestimates of the effect on trade of the other. The most notable omitted variables in the general gravity model literature are the various combinations of fixed effects that can be used to account for various unobserved heterogeneities. Wagner *et al.* (2002: 514) note ‘omitted variable bias may underlie the large elasticities estimated in cross-sectional studies’. More broadly, the seminal contribution of Anderson and Van Wincoop (2003) highlights the need to account for multilateral resistances to trade, and as Feenstra (2004) notes, one convenient way of accounting for these price indices is through the imposition of country fixed effects (or country-time fixed effects in panel models). Their omission often comes at a high price. Felbermayr *et al.* (2010), for example, demonstrate that Rauch and Trindade’s original results are 2-4 times larger than they should be when one accounts for multilateral resistance terms. Cheng and Wall (2005) also argue for the need to include origin-destination fixed effects in gravity models of trade, although given that this requires quite long panels of data, it is only the most recent studies that can do so.

Authors address the issue of reverse causality in a variety of ways. Gould argues that immigration is subject to binding quotas and occurs before the onset of trade and hence that reverse causality is not relevant. Felbermayr and Jung (2009) rather argue that causality runs from migration to trade on the basis of a regression based test for strict exogeneity (Wooldridge 2002: 285). Without question, however, the most widely accepted approach to address reverse causality is to implement instrumental variable regressions. Drawing upon the seminal work of Altonji and Card (1991) and Card (2001), Peri and Requena (2010) and Bratti *et al.* (2014) instrument changes in immigrants at the sub-national level with an imputed inflow of immigrants calculated by applying the net growth of immigrants at the national level to historical sub-regional immigrant stocks. ‘If immigrants tend to settle, at least initially, where other persons of the same nationality are already settled, then this constructed inflow of immigrants will be correlated to the actual one. On the other hand, as it is based on the distribution of immigrants across provinces as of 1993, the constructed flows are not affected by any province-specific demand shock during the considered period’ (Peri and Requena 2010: 1447). This approach is not free from criticism, however: Chalfin and Levy (2012) have argued recently that the province-specific element of the instrument will reflect persistent sub-regional characteristics which may affect trade behaviour other than via migration, and thus lead to inconsistent estimates. These authors further argue that the exclusion restriction will be violated if the total outflow of emigrants from a particular origin country was correlated with conditions in particular receiving sub-regions, which would be the case if such immigrants tended to cluster strongly in those provinces. Combes *et al.* (2005) rather instrument 1993 migrant stocks in France with historical migrant stocks from 1978.

In an alternative approach, Vézina (2012) uses Swiss visa restrictions and migration to a neighbouring country (France) as instruments for Swiss immigration. Sangita (2013) proposes an instrument based on the variation in destination country citizenship laws, i.e. the number of years of residency required in order to obtain citizenship, arguing that such changes are exogenous to changes in trade, investment, business and political climate.

While all of the above can be argued to be pretty-much exogenous, it is not obvious that any of them pass the exclusion restriction, since unobserved cultural and historical factors might be confounding meaningful interpretation.

Most recently Parsons and Vézina (2014), draw on a unique natural experiment to identify causality running from migration to trade – which as Felbermayr *et al.* (2012) notes is potentially the most convincing method for addressing endogeneity concerns – namely the exodus of the Vietnamese boat people to the United States between 1975 and 1994. These authors note that the large influx of Vietnamese refugees entered the US at this time during a complete trade embargo of Vietnam. Moreover, the first wave of refugees that entered the US under the auspices of the Indochina Migration and Refugee Assistance Act 1975 were exogenously allocated across US states. Parsons and Vézina (2014) are thus able to insulate their results from fears of either simultaneity or endogenous location decisions of immigrants. After trade was opened up in 1995, Parsons and Vezina explain state-level trade flows by migration stocks in 1995, but are able to instrument the latter securely with the corresponding 1975 stocks. They find a robust positive causal link from migration and trade. This lends considerable credence to the positive impacts found in the majority of the literature, although the very particular circumstances of this case mean that one can never be entirely sure of its external validity, i.e. its applicability to other cases.

Aid and Migration

This section focuses attention on the literature on aid and migration, which has parallels with that on trade and migration: there are multiple links – in each direction, direct, indirect, general equilibrium – as well as exogenous third factors such as former colonial links that affect both. The bugbear is again establishing causality, and the focus is again almost entirely on one direction – in this case the extent to which aid flows affect (actually reduce) migration flows from recipient to donor countries. The section comprises four elements. The remainder of this introduction shows how widespread is the view that trade and aid might be used to reduce immigration to developed countries. Subsequently, we discuss the general equilibrium route that operates via recipient countries' income levels. We then look at a number of studies that simply regress migration on aid flows before finally considering 'co-development', which is an essentially European construct that attempts to put an intellectual and policy framework around an anti-immigration stance.

The influence of international trade policy and overseas development aid on migration flows is an issue of some intrinsic interest, but its intellectual interest is dwarfed by its relevance to the policy debate over the last twenty years (and, we predict, the next twenty). Governments in developed countries often justify aid to developing countries, or the liberalisation of their import barriers, in terms of helping countries to develop – get richer – so that their people will not 'come over here.' The following Figure from *'The Times'* puts this sentiment into the mouth of David Cameron, the British Prime Minister.

Figure



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On aid, for example, the European Union's High Level Working Group on Asylum and Migration, established in 1999, was charged with assessing 'the effectiveness of aid and development strategies in the battle to limit economic migration' (see van Selm, 2004). As recently as 9th October 2013, the President of the European Commission, José Manuel Barroso said, following the fatal sinking of a refugee boat off Lampedusa, Italy, that 'we must also continue our political and development action to improve the living conditions in the countries of origin, working with them there, so that people do not have to flee their homes'.⁷

At a global level, Lucas (2005) estimates a regression of aid inflows per head on net out-migration together with a few control variables, on a sample of 77 developing countries over 1995-2000. He shows a significantly positive relationship. At a bilateral level, aid and migration are likely to be connected via a common cause – colonial or other longstanding links between countries (Nyberg-Sørensen *et al.* 2002) – but, given that there are many donors, this cannot explain Lucas's aggregate relationship. Moreover, no positive correlation is observed between aid inflows and developing countries' net in-migration; hence Lucas argues that it is highly plausible to believe that western countries' aid to developing countries is indeed partly geared towards stemming migration flows.

Similar claims are made for trade liberalisation. Schiff (1994), for example, cites Germany's then Foreign Minister, Klaus Kinkel, as declaring in 1994 that in the context of concern about emigration from East and Central Europe, opening the West European markets to goods from the East was the highest priority of EC policy towards the region. When NAFTA was being negotiated and seemed under threat, US Attorney General Janet Reno is reported to have said: 'If NAFTA passes, my job guarding the border will be easier. If NAFTA fails, my job stopping the flow of illegal immigrants will become even more difficult', and Mexican

⁷ http://europa.eu/rapid/press-release_SPEECH-13-792_en.htm.

President Carlos Salinas that ‘we want NAFTA because we want to export goods, not people’^{8,9}.

Do Trade and Aid Influence Migration?

The transmission mechanism implied in all these views about trade, aid and migration is indirect: trade liberalisation and aid are expected to affect the determinants of migration, most obviously incomes in developing countries, under the assumption that higher incomes reduce emigration. In principle, this reasoning is correct, but trade policy and aid might also affect other determinants of migration and so encourage flows, e.g. the creation of networks or the immediate effect of higher incomes that might encourage emigration because greater numbers of individuals can finance migration costs. Hence the net effect in practice is wholly unclear.

In the very long run, income effects are probably the major determinant of international migration flows. Consider Korea, among the poorest of countries in the early 1960s. Around two million Koreans left for temporary employment overseas between 1960 and about 1990 (Park 1994) and permanent exits ran to approximately 30,000 per year throughout the 1980s (Lee 1997). By 1993-4, following what were then unprecedented rates of economic growth, permanent exits had fallen to 18,000 per annum, the stock of temporary workers abroad to just 20,000 and immigration was starting to grow – to perhaps 200,000 by 1996 (Lee 1997). But in Korea, GDP per head (in constant prices) had grown relative to 1960 by 73 per cent in 1970, 191 per cent in 1980, 498 per cent in 1990 and 883 per cent in 2000 (GDP per capita in constant local currency prices, WDI Online 10th January 2014).

Aid and the openness of export markets clearly contributed to Korean growth, but the growth miracle consisted of far more than these changes alone. Moreover, current policy towards migration has horizons much shorter than four decades and so Korea is not the ‘killer fact’ that links aid to declining emigration. A quick back-of-the-envelope calculation shows that the effects of aid as a policy instrument for tackling migration must be very small. A thoughtful account of the effectiveness of aid on economic growth, Clemens *et al.* (2012: 591) suggest that ‘a one percentage-point increase in aid/gross domestic product (GDP) (at mean aid levels) [is] typically...followed within several years by...a 0.1–0.2 percentage-point increase in growth of real GDP per capita’. That is, *ceteris paribus*, an increase in aid of this magnitude takes five years or more to add one percent to a developing country’s income per capita.

A typical income gap between developed and developing country GDP per head (measured in PPP) is, say, 2700 per cent of the latter’s income (this is the gap between Mozambique and Portugal in 2011). A one per cent increase in Mozambique’s GDP is not going to influence the incentives for migration – and at one percent of GDP (approximately \$14.2 billion for Mozambique in 2012), it would cost \$142 million a year. Even if aid were much more effective than Clemens *et al.*’s calculations suggest, and even given the much stronger growth effects likely to emanate from increased trade (see, for example, Winters and Masters, 2013), the qualitative story would not be much changed inside several decades.

⁸ (Migration News, February 2000 Volume 7 Number 2, http://migration.ucdavis.edu/mn/more.php?id=2025_0_2_0).

⁹ According to Morrison (1982), however, Salinas was echoing a previous President, Lopez Portillo in 1978.

Even should one argue that migration does not respond to simple income gaps but to more subtle differences in welfare and opportunity, these are still massive between rich and poor countries and it is hard to believe that aid will address them in anything other than the very long run.

Use of a second envelop might allow one to compare the aid-or trade-induced gain in income with the overall relationship between national migration and national income, as sometimes represented by the so-called migration hump. The migration hump is far from uncontentious (see Lucas, 2005 Chapter 2, for example). To the extent that it exists, however, at incomes below about \$7,500 per head, further increases in income appear to encourage migration – probably by directly or indirectly relaxing financing constraints – and even once over the hump, the migration-reducing impact of income growth will initially be small.

The links between development and migration are surveyed by Nyberg–Sørensen *et al.* (2002) and de Haas (2007), both of whom conclude, for several reasons, that the hope that development will stem the tide of migrants from low and lower-middle income countries is a vain one. Early discussions essentially unpacked the aid-migration relationship into its indirect links, but more recently, economists have estimated reduced form relationships running directly from aid to emigration (from developing countries). Such direct estimates of the effects of trade on migration are very scarce, and while several authors explore whether trade and migration are substitutes or complements, explicitly recognising that causation may run from trade to migration, none has been able convincingly to separate that link from the opposite one discussed above.¹⁰

Aid

An early, thoughtful and partly quantitative discussion of aid and migration is Morrison (1982). He observes the likelihood of considerable heterogeneity between cases, but argues that there is little to suggest that realistic improvements in development would curtail migration to the USA, even over decades. He reports some suggestive evidence that ‘good jobs’ are a way of accumulating the money required to finance emigration from the Dominican Republic and that the ‘social, commercial and political ties’ engendered by aid, also contribute to increases in migration flows, initially by reducing costs and/or information deficits. He identifies aid-financed employment programmes as the most likely to ease migration pressures, but concedes that ‘given the relative magnitude of foreign assistance, it cannot be expected that migration “push” factors will be arrested’ (Morrison 1982: 15). Rhoda (1983) makes somewhat similar points about the improbability of stemming rural to urban migration by means of rural development programmes.

Faini and Venturini (1993) take up the same issues a decade later, but from a more macro-economic perspective. Citing Stanton Russell and Teitelbaum (1992), they argue that income growth may fail to curtail emigration because it relaxes credit constraints and that, given that the latter are more frequently binding in the poorest countries, we should expect to see a migration hump. They then offer a simple regression exercise on four European

¹⁰ Faini, Zimmerman and de Melo (1999) contains several chapters on the substitute/complement question and Del Río and Thorwarth (2009) offer an interesting discussion of NAFTA and illegal Mexican-US migration.

countries that supports this expectation. Although they are careful not to over-claim the results from their exercise, this paper has been heavily cited in favour of the view that trade liberalisation and aid are not suitable instruments for controlling migration.

An important innovation in this area of research is to conduct the analysis at the level at which migration decisions are made, i.e. at the individual or household level. Angelucci (2004) studies the Mexican conditional cash transfer programme *Progresa* (now continued as *Oportunidades*), which is targeted at poor rural households. The programme includes an unconditional nutrition support grant and some (larger) schooling subsidies that are conditional upon attendance in the last four years of primary school and the first three years of secondary school. Angelucci categorises the nutrition and primary education grants as unconditional, the latter on the grounds that almost all families would continue their children's education to the end of primary school anyway, while considering the secondary schooling grant as genuinely conditional. As discussed above, unconditional transfers may discourage migration by increasing its opportunity cost (making staying put more attractive), or encourage it by relaxing credit constraints on financing migration. The latter effect would be stronger for international than for internal migration because it is costlier. The conditional secondary education grants also increase income and relax credit constraints, but additionally incentivise behaviour that requires families to remain in Mexico. *Progresa* is additionally attractive from a research perspective since in 1998 and 1999, the years examined, eligibility for *Progresa* grants varied across space, grant levels showed considerable heterogeneity across eligible households and grants were large for poor families (e.g. for secondary school attendance grants rose to around two-thirds of the wage that a teenager might otherwise earn).

While Angelucci's results are not very well determined statistically, they are strong enough to suggest some very interesting forms of behaviour. The programme, for example, is associated with an increase in average international migration but not average domestic migration. This effect is evident largely for households that previously did not have any migrants. Moreover, migration occurred after the transfer of small sums, suggesting that the grants were used to underpin borrowing to finance migration. Households receiving large grants for secondary schooling, on the other hand, showed reduced international migration with *Progresa*, suggesting that the conditions mattered. Moreover, migration was not enhanced, as one might have expected, once schooling was finished and the condition no longer bound. In other words, the effect appeared permanent. Since around one-third of Mexican international migration comprises individuals aged between 13 and 19, such effects could influence overall migration.

The obvious import of these results is that 'aid' targeted at households can affect migration outcomes. The bulk of the aid and migration literature operates at an aggregate level though, which is clearly different. For at least some developing countries, however, conditional cash transfers are supported by donors either directly (they pay for the programme), or indirectly (they support other activities so that government money can be devoted to the conditional cash transfer). Angelucci's results therefore suggest that while some transfers tend toward encouraging emigration, that need not necessarily be so if conditions are drawn up with sufficient subtlety.

An influential cross-country study that relates migration directly to aid flows is Berthélemy, Beuran and Maurel (2009). They postulate a two equation model in which the stock of migrants from developing country i , in developed country j , is potentially influenced by bilateral aid flows, because aid increases the amount of contact between residents of the two countries, by i 's total aid receipts because these might relax a budget or liquidity constraint and by j 's policies towards migration in general. They estimate a gravity model explaining migration as a function of each partner's GDP and population, bilateral trade flows and a series of control variables capturing the cultural and political proximity of the bilateral relationship (e.g. a previous colonial link or sharing a common language). To these they add the bilateral aid flow, i 's total aid inflow and a measure of j 's openness to immigrants. Berthélemy *et al.* recognise the possible endogeneity of bilateral aid. To this end, the authors estimate a second equation modelling aid as a function of i 's GDP per head, population and institutional development – the usual variables used to explain aid flows – j 's total aid expenditure, i and j 's bilateral trade and historical links. This equation seeks to explain the amount of aid, given that an aid flow exists, but not the selectivity process, whereby donors choose the recipients of their aid, which they assert is unimportant.

The results obtained from estimating this model on a cross section of 22 OECD migrant-recipient countries and 187 sending countries, suggest strongly that both bilateral aid and i 's total aid receipts have significantly positive impacts on migrant stocks. A 10 percent increase in bilateral aid is associated with (perhaps causes) an approximately 3 per cent increase in the bilateral migrant stock, while a 10 per cent increase in total aid is associated with approximately a 1.5 per cent increase in the migrant stock. The migration policy effect is also significant with more liberal policies inducing greater migration. Berthélemy *et al.* investigate the migration hump by allowing for the effects of GDP per head on migration to be non-linear and add to it by recognising that their model also allows an indirect effect whereby, as developing countries get richer, their aid flows decline thereby reducing migration. The turning point of the combined effect is around \$US7,300 in terms of 2000 PPP prices, which they argue is approximately the same level as other scholars have found in terms of nominal US dollars.

An interesting disaggregation is between skilled workers (with secondary and tertiary education) and unskilled workers. The latter are more responsive to total aid and less responsive to bilateral aid than the former. This re-enforces Berthélemy *et al.*'s preferred interpretation of their results – namely that total aid operates on the budget/liquidity constraint (which we expect to be far tighter for poorer/less skilled workers), while bilateral aid operates at least partly on the basis of making connections (which are typically more important for skilled workers).

A potential problem that Berthélemy *et al.* recognise in their specification, is that their dependent variable is the migration stock – the number of people in country j born in country i – which is determined over many years, whereas their aid variables refer to averages over five or ten years. For example, in their migration data (from Parsons *et al.* 2007) the country that provided the most emigrants in 2000 is the UK, almost certainly due to the length of time over which Britons have been emigrating for reasons quite unrelated to inflows of foreign aid. Two further problems according to Azam and Berlinschi (2009) are the control variables that Berthélemy *et al.* choose to include and their failure to allow adequately for the endogeneity of aid. Almost unremarked, Azam and Berlinschi switch

from a stock to a flow measure of migration and focus on aggregate rather than bilateral immigration. They seek to explain aggregate inflows of migrants from low and lower-middle income countries to 22 OECD countries from 1995 to 2003. Their control variables in the migration flow equation are GDP per head, social expenditures and unemployment in j , the stock of native born people from the sending countries in j and a set of fixed effects capturing time invariant characteristics of receiving countries. With no correction for endogeneity, they replicate Berthélemy *et al.*'s positive effect of aid on migration (albeit not significant in this exercise). However, when they instrument aid flows, they instead find large negative effects, i.e. that aid discourages immigration.

This, of course, is exactly the result that popular debate and the politicians hope for, but unfortunately for them, Azam and Berlinschi's results are not convincing. Their instruments for aid, which, recall, ought to explain aid flows, while not having any direct effect on migration, are the recipient country's public expenditure on order and security and the percentage of right-wing members in the parliament, each of which they show to have a positive effect on aid flows. The difficulty is the ease with which one can imagine that countries with strong right-wing parliamentary representation and high law and order spending make unattractive destination for migrants, and so have lower immigration *ceteris paribus* than other countries. In Azam and Berlinschi's estimates, this direct negative effect is falsely attributed to aid. Thus while Azam and Berlinschi offer an interesting discussion of migration and the effectiveness of aid (the issue on which their work aims to contribute), it does not overturn the widespread finding that aid to low and lower middle income countries is more likely to encourage emigration.

Another off-shoot of Berthélemy *et al.* (2009) is Moullan (2013), who analyses the medical brain drain and health-related overseas aid flows. Moullan analyses a panel comprising eight years (1998-2005), 17 destination countries and 192 source countries, using a model which relates the annual outflow of physicians from sending countries (strictly the pseudo-flow derived by differencing stock data), to receipts of health aid over the three preceding years together with some controls. The relationship between the two appears to be positive in a simple OLS regression, but when he allows for the endogeneity of aid by applying General Method of Moments (GMM), it turns out to be significantly negative. In fact, in the long run, the effect is large. A doubling of health aid reduces the outflow of physicians by 71 per cent. Interestingly, Moullan finds that aid in the form of technical assistance is more effective than financial aid in stemming outflows. He speculates that this is because financial aid is vulnerable to both fungibility and predatory or inefficient bureaucracies, which reduce the net amounts getting through to health services. It may also arise if the medical brain drain reflects physicians' frustration with their inability to get good training or to provide good health services at home, as well as their low rewards as is often claimed (Kangasniemi *et al.* 2007). One might also question the ability of GMM to really neutralise endogeneity (see, for example, Clemens *et al.* 2012), but in fact Moullan's result is perfectly consistent with the general results of Berthélemy *et al.* Physicians are much less subject to budget or liquidity constraints than are less skilled workers, and the links from health aid to physicians' welfare in the absence of migration are much more direct and easily internalised than are those between official assistance in general and the overall workforce.

Co-Development

We assess the evidence as showing fairly strongly that aid flows to low and lower-middle income countries will tend to encourage rather than discourage emigration. Nonetheless, as we noted above, and as the image captures so crisply, politicians persist in believing or wishing the opposite was true.¹¹ The most evident manifestation of that desire is the European policy of co-development, a tortured combination of development and migration policies – that aspires to reconcile the interests of developing countries in terms of leveraging migration for development – and the overwhelming desire of European policy-makers to curtail inflows of immigrants, especially illegal immigrants and asylum-seekers, but also, in truth, legal labour migrants.¹² The torture reflects the near impossibility of reconciling these interests, the divisions among European bureaucrats about development policy and the sensitivity of discussing migration without being (or appearing to be) racist, or at least condescending about developing country residents.

The essence of the term ‘co-development’ in the migration context, is captured in the Conclusion of the European Council Meeting in Tampere in 1999, which stated the EU’s need for:

‘a comprehensive approach to migration addressing political, human rights and development issues in countries and regions of origin and transit. This requires combating poverty, improving living standards and job opportunities, preventing conflicts and consolidating democratic states and ensuring respect for human rights ...Partnership with third countries concerned will also be a key element for the success of such a policy, with a view to promoting co-development’ (European Council, 1999, paragraph 11, quoted by van Selm, 2004)’

Van Selm (2004) gives a fascinating account of the evolution of the European policy positions around co-development since 1998. There was always more to it than just incentivising developing countries to introduce policies to reduce emigration in return for flows of foreign assistance, but this aspect was never far from the surface. In principle, other elements could include policies to encourage remittance flows and other diaspora contributions to development, return programmes, repatriation agreements for asylum seekers, more active policies to discourage illegal migrants from setting off for Europe, ‘ethical’ recruitment whereby Europe did not poach skilled workers (notably medical staff) and easier visa formalities for those workers who were permitted to migrate (Weil 2002). But as Weil shows, actual policy fell a long way short of such aspirations.

The initial European statements were pretty direct about curtailing migration flows. For example, an Austrian Strategy Paper for the Presidency in 1998 states that EU migration policy ‘must obviously cover... Reduction of migratory pressure in the main countries of origin’ (van Selm 2004). However, over time, the rhetoric became a little more conciliatory and policies became a little more developing country-oriented, although at the cost of becoming much vaguer – see for example Reslow (2010), on the ‘Global Approach to Migration’ and the ‘Policy Plan on Legal Migration’, both of 2005. This was partly in

¹¹ Or maybe they just pretend to wish that. In the field of international trade policy, Jagdish Bhagwati (1988) has coined the phrase ‘porous protection’ to cover precisely those cases where policy makers pursue ostensibly vigorous anti-import policies while understanding that they will have little actual effect.

response to complaints from developing countries – for example, there was considerable friction with Morocco (Reslow, 2010) – and partly because of the resistance of the development agencies of the European Commission and national administrations to having aid monies devoted to curtailing legitimate migration, especially that of asylum seekers who may be fleeing human rights abuses.

The difference between co-development and the more general discussion above is that the former supplements the hope that development will curtail migration flows, with the explicit orientation of aid flows towards policies that will have that effect. During the 2000s, the volume of aid increased quite substantially and significantly faster than most elements of government expenditure. Home Affairs and Justice Ministries hoped to use some of that resource for migration policies, while development specialists resisted – often citing the requirements that for the OECD to count a flow as aid (and the OECD's Development Assistance Committee is the official arbiter of what does so count), it must be focussed on the recipient's development needs.

Despite the objections by aid agencies, however, aid has been geared to reducing migration in quite significant amounts, as Adepoju, van Noorloos and Zoomers (2009) report.¹³ For example, the EU had 'to provide substantial assistance to ensure the long-term sustainability of control efforts' in Morocco. The EU-Mali migration control agreement signed in 2006 promised €426 million in aid over 2008-13. Spain 'offered Gambia and Guinea €5 million each in direct development aid in exchange for signing global migration agreements involving re-admission, migration control and labour migration'. Finally, in 2003 the UK and Spain suggested punitive cuts in aid flows against countries that failed to 'actively collaborate in the fight against illegal migration', although other members blocked the policy.

Because of the difficulties of devising a counter-factual, it is impossible to evaluate the effectiveness of co-development. Certainly we know of no attempts to do so. Adepoju *et al.* (2008) report that in 2001, 500 immigrants volunteered to return to Mali from France in return for US\$3,600 each to start a business, and that after two years 80 per cent of them were still in business. What we do not know, of course, is how many of them were intending to return anyway.

It is easy to see where the idea of co-development comes from – the application of an instrument concerning developing countries (aid) to an objective concerning developed countries (that they stop their people from coming to Europe). It is gradually evolving towards a more constructive and co-operative form, but only slowly and it is difficult at present to see it as either elegant or successful. Developing countries are generally not willing participants and the bulk of the expenditure is fairly obviously devoted to developed not developing country objectives and should not be considered as aid. Flows of resources may thus buy a reduction in migration, but only by spending on what are basically coercive measures; the reductions do not arise because aid, properly conceived, reduces migration.

¹³ Not all financial support for migration control policies in developing countries was billed as aid, but we do not make a distinction here.

Conclusion

We have reviewed the literature on some of the connections between international trade, international migration and international aid. It is a flawed and frustrating literature but this is because the subject is complex and resistant to many of the recent advances in economic methodology based on micro-economic data. It does not reflect a lack of interest – indeed it is now quite a large and active literature – and that is because migration is becoming one of the most sensitive and contentious policy issues to confront economists. This in turn means that the profession cannot turn its back on the question in a fit of methodological purity, but instead must do the best job it can in difficult circumstances.

The fundamental challenge is identifying causation – a necessary step if one is to make useful contributions to policy. General equilibrium theory implies that everything potentially depends on everything else, but the elegant neo-classical theory of international trade says more – namely that international migration and international trade are perfect substitutes, such that you need only one of them to achieve exactly the outcome that you would get with the other. Thus empirical work, which observes outcomes and seeks to infer causes, faces a Sisyphean task. Fortunately, however, the assumptions of the neo-classical model are manifestly not true and we can identify many ways in which trade and migration are linked either indirectly or directly. The literature essentially tries to quantify these links and to insulate itself as best it can against the possibility that other causal channels are in play.

Nearly all the extant empirical results suggest that migration and trade are positively related and considerable ingenuity has gone into trying to identify the relevant causal channels. Migrants may affect trade directly by demanding products from their home countries and/or facilitating trade with other countries via their information about or networks in those countries. Different elements of trade are potentially affected by these different links to different extents and different sorts of migrants may deliver them in different mixes. By exploiting these differences, economists have started to map out the details of the direct (i.e. non-general equilibrium) links between the two. Thus empiricists have sought identification by examining differences in the sensitivity of trade to migration across product types, geographical distance, firm vs. personal networks, and migrant characteristics. One persistent result is that migrants have a stronger pro-trade effect when other pro-trade features – such as sound institutions, the rule of law, common language or shared cultural background – are weak or missing.

Turning to aid and migration, we observe the strength and ubiquity of the wish that aid flows from rich to poor countries might curtail the flow of people in the opposite direction. Little of the evidence lends weight to this hope and indeed most seems to suggest that aid increases migration – probably either because it raises incomes and hence relaxes constraints on financing emigration or because it results in more frequent interactions and network-formation between donor and recipient countries. Nevertheless, European policy makers have sought to leverage aid to reduce migration through policies of so-called co-development, which, inter alia, use donor finance to fund or incentivise policies that operate on emigration directly. We note that this has been neither elegant nor successful.

Clearly the literature is primarily devoted to quantifying the effect of international migration on international trade and the effect of international aid on international migration. We argue that this is because these links are both easier to isolate and identify, while also being of great policy relevance. While there is a small literature on the link from trade to migration, it fails to convince. This is a strong candidate for future research however. Future research on all links is likely to be facilitated by richer data, especially more detailed micro-economic data on migrants, which includes their histories and their activities. Such data are unlikely to be collected for other purposes, however, so it will require a concerted effort by academics and funders of research to generate them, which given the topicality of migration we deem extremely worthwhile.

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About the Migrating out of Poverty Research Programme Consortium

Migrating out of Poverty is a research programme consortium (RPC) funded by the UK's Department for International Development (DFID). It focuses on the relationship between migration and poverty – especially migration within countries and regions - and is located in five regions across Asia and Africa. The main goal of **Migrating out of Poverty** is to provide robust evidence on the drivers and impacts of migration in order to contribute to improving policies affecting the lives and well-being of impoverished migrants, their communities and countries, through a programme of innovative research, capacity building and policy engagement. The RPC will also conduct analysis in order to understand the migration policy process in developing regions and will supplement the world renowned migration databases at the University of Sussex with data on internal migration.

The **Migrating out of Poverty** consortium is coordinated by the University of Sussex, and led by CEO Professor L. Alan Winters with Dr Priya Deshingkar as the Research Director. Core partners are: the Refugee and Migratory Movements Research Unit (RMMRU) in Bangladesh; the Centre for Migration Studies (CMS) at the University of Ghana; the Asia Research Institute (ARI) at the National University of Singapore; the African Centre for Migration & Society (ACMS) at the University of the Witwatersrand in South Africa; and the African Migration and Development Policy Centre (AMADPOC) in Kenya.

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