Chapter 2

Immigration "Pull" Factors in OECD Countries over the Long Term

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Introduction

Immigration into the more developed countries of the OECD has been on the upswing for the last decade and more. Their economic opportunities are a strong attractor for migrants while the projected demographic aging of the more developed members has heightened interest in the possible future role of migration. In anticipation, many countries have instituted policies that are more welcoming to immigrants. While there is reason to suspect that policies do not always work exactly as intended, there is every reason to expect that the OECD countries will continue to exert a substantial pull on international migrants. And policymakers are likely to attempt to attune admission policies with the evolving pull factors.

If demography is destiny, aging societies will have increasing number of dependents who will place a burden on retirement systems and a drag on productivity growth – in many countries that scenario is abetted by a slowing of the growth of the working-age population (McDonald and Kippen, 2001). The resulting labour shortages, as well as ongoing wage differentials will likely continue to attract migrants to the most developed and prosperous countries (Dawkins and Lim, 2004). The alternatives are to compensate for negative population and labour force growth, by increasing total fertility rate back to replacement levels and improving labour force participation – changes difficult to accomplish and unlikely to operate forcefully in the next two decades. Of course, increasing immigration by multiples from its current levels is also not without its own problems (Holzmann, 2005).

But immigration will surely play a beneficial role in dealing with future demographic dilemmas and, regardless, it is likely that economic opportunity and existing migrant networks will continue to attract migrants. That returns us to the purpose of this paper, which is to evaluate the "pull" factors that will impact on future migration. The concept of migration push and pull, while overly simplistic, neatly focuses attention on the polar forces between which migrants oscillate. This paper's mandate is to "examine available projections, forecasts and quantitative assessments of factors in OECD countries likely to attract migrants to OECD countries," *e.g.* the pull factors that will operate in the future.

We turn first to a discussion of current trends in migration in the OECD countries. In order to place migration pull in its proper context we next discuss the theories of academics and the expectations of policymakers. The body of the paper addresses pull factors, drawing on projections of appropriate elements where possible and ranking countries in terms of their relative future pull. Because there is little agreement on these issues, we consider seven factors typically included in most conversations between experts – namely economic and demographic factors; network effects, labour market factors, education and training, health care and other primarily

Table 2.1. **Trends in total and temporary inflows of foreign population**

Country	Total inflows (1000s)			Temporary inflows (1000s)		
	1995	2000	2005	2003	2004	2005
Australia	87	115	167	152	159	183
Austria	--	66	101	30	27	15
Belgium	53	57	77	2	31	33
Canada	213	227	262	118	124	133
Czech Republic	6	4	59	--	--	--
Denmark	33	23	--	5	5	5
Finland	7	9	13	--	--	--
France	49	92	135	26	26	27
Germany	788	649	579	446	440	415
Greece	--	--	--	--	--	--
Hungary	14	20	19	--	--	--
Ireland	14	28	51	--	--	--
Italy	--	272	--	69	70	85
Japan	210	346	372	217	231	202
Korea	--	185	266	75	65	73
Luxembourg	10	11	14	--	--	--
Mexico	30	24	39	45	42	46
Netherlands	67	91	63	43	52	56
New Zealand	56	38	54	65	70	78
Norway	16	28	31	21	28	22
Poland	--	16	39	--	--	--
Portugal	5	16	28	3	13	8
Slovakia	7	5	8	--	--	--
Spain	--	331	683	--	--	--
Sweden	36	43	51	8	9	7
Switzerland	88	86	94	142	116	104
Turkey	--	168	132	--	--	--
United Kingdom	150	260	407	137	239	275
United States	720	841	1,122	577	612	635
Total	2,659	4,050	4,868	2,181	2,359	2,402
Annual growth %	--	8.8	3.7	--	8.2	1.8

Source: Data extracted from OECD immigration database, 2008, http://stats.oecd.org/wbos/MIG.aspx

integration factors. It is most unlikely that any single factor will dominate future pull forces or that all countries will show a similar balance of pull factors. The final section of the paper constructs scenarios for future pull forces, ranking nations across all factors either for the predominance of economic or demographic pull. These factors primarily impact the number or level of future migration, to which we add an assessment of how countries may shift the composition of future migration.

The current situation

The number of international migrants has increased steadily in the more developed OECD nations. Yet, it may be that the composition of the "type" of migrant may vary in the future, at least as much as the absolute numbers.[1] Of course, the single best source on all types of international mobility is the OECD's yearly report the *International Migration Outlook* (a.k.a. the SOPEMI report). We have no intention of reviewing the many categories that it comprehensively covers, but it is important to touch on three major aspects of migration: the predominance of family-based migration in most all countries, the simultaneous trend toward increasing admissions of highly skilled workers and the deployment of temporary work programs. On average, the OECD countries admit about 44% of total migration for family-related reasons and only about 14% for the express purpose of labour (OECD, 2008, p. 36). We will indirectly address the skill composition of the immigrant stock in the section on education below, but note that many countries are devising policies to attract more skilled workers (Lowell, 2005).

Statistics on the total flow of both permanent and temporary migration are shown in Table 2.1. Clearly, the flow of permanent migrants has increased over time being 83% greater in 2005 than a decade earlier in 1995 for all OECD countries. Some countries posted phenomenal growth over that decade, *i.e.* the Czech Republic at 890%, Portugal at 459%, Ireland 275% and the UK with 171% growth in their annual flow. For reasons of exposition, the table also shows the available numbers for temporary workers that are not fully comparable with the permanent flows which include the admission of both family and working categories. As of 2006 the OECD estimates that there were over 2.5 million temporary workers or roughly three times the number of permanent-type labour migrants (*op. cit.*, OECD, 2008, p. 34). Nevertheless, while substantial in size, the number of temporary workers has not been increasing as rapidly as permanent migration.[2] But there could be further increases in temporary migration as there is increasing interest in temporary programs to bypass concerns about permanent settlement, as well as to boost development in source countries.

We turn next from measures of migrant inflows to net change in Table 2.2 that shows statistics for the OECD nations generated by the United Nations. These data have the benefit of being available for long time periods and using consistent definitions. The countries are ranked in ascending order by their rate of net migration and, somewhat surprisingly, New Zealand is ranked as the OECD country with the least rate of net (out) migration. Australia also has a low rate of net migration. Yet; these traditional countries of immigration are correctly seen as being primary migrant magnets and the inflow data substantiates that observation. Of course, the reason for these trends is that both countries also experience high rates of emigration (*op. cit*., OECD, 2008, pp. 32 to 34). Even countries that are established as leaders in attracting migrants and are so positioned to remain leaders in the near future, may have to manage emigration as well as immigration. The ability

Table 2.2. **Trends in net migration**

Country	Immigrant % of population			Average net annual immigration (1000s)			Net rate of immigration (1000s)		
	1985	1995	2005	1975 to 1985	1985 to 1995	1995 to 2005	1975 to 1985	1985 to 1995	1995 to 2005
New Zealand	16.3	20	15.9	3.5	18.3	-8.2	1.1	5.3	-2.1
Belgium	9	9	6.9	10.5	1.9	-17.3	1.1	0.2	-1.7
Poland	3.5	2.5	1.8	-44.5	-32.4	-23.6	-1.2	-0.9	-0.6
Korea	1.4	1.3	1.2	23.2	2.2	-3.0	0.6	0.1	-0.1
Czech Republic	--	4.4	4.4	--	--	-0.1	--	--	0.0
Australia	21.9	22.7	20.3	67.1	57.8	2.6	4.6	3.4	0.1
Turkey	1.8	1.9	1.8	73.2	25.8	10.7	1.6	0.4	0.2
Mexico	0.6	0.5	0.6	22.6	-1.1	16.1	0.3	0.0	0.2
Slovakia	--	2.1	2.3	--	--	0.9	--	--	0.2
Hungary	3.2	2.8	3.1	-5.7	-4.2	2.1	-0.5	-0.4	0.2
Japan	0.6	1	1.6	7.0	49.5	71.5	0.1	0.4	0.6
France	10.8	10.5	10.7	35.0	12.0	34.7	0.6	0.2	0.6
Finland	1	2	3	1.2	5.0	4.8	0.2	1.0	0.9
Germany	--	11.1	12.3	--	--	95.6	--	--	1.2
Netherlands	5.3	9	10.1	37.9	56.9	22.8	2.7	3.8	1.4
Italy	2.2	2.6	4.3	19.6	23.7	94.2	0.4	0.4	1.6
United Kingdom	6.5	7.3	9.1	38.7	52.3	110.0	0.7	0.9	1.9

Table 2.2. **Trends in net migration**
(continued)

Country	Immigrant % of population			Average net annual immigration (1000s)			Net rate of immigration (1000s)		
	1985	1995	2005	1975 to 1985	1985 to 1995	1995 to 2005	1975 to 1985	1985 to 1995	1995 to 2005
Portugal	3.5	5.3	7.3	16.5	16.5	21.5	1.7	1.7	2.1
Sweden	7.8	10.3	12.4	7.1	23.4	19.2	0.9	2.7	2.1
Norway	3.7	5.3	7.4	4.3	7.0	10.3	1.0	1.6	2.3
Denmark	3.7	4.8	7.2	4.6	5.5	12.6	0.9	1.1	2.4
Switzerland	18.4	21	22.9	10.4	24.4	17.2	1.6	3.6	2.4
United States	7.5	10.6	12.9	588.5	936.3	893.9	2.5	3.7	3.1
Canada	15.1	17.1	18.9	34.3	100.7	100.3	1.4	3.7	3.3
Greece	3.1	5.1	8.8	16.9	21.8	38.6	1.8	2.1	3.5
Iceland	3	3.9	7.8	0.2	0.4	1.1	0.8	1.4	3.9
Austria	3.7	8.9	15.1	6.0	39.5	47.0	0.8	5.1	5.8
Ireland	6.4	7.3	14.1	4.9	3.5	29.2	1.5	1.0	7.5
Luxembourg	28.3	33.4	37.4	2.6	2.8	3.5	7.3	7.3	8.2
Spain	1.1	2.5	11.1	9.6	54.8	343.7	0.3	1.4	8.3
Average	7.0	8.2	9.8	37	56	65	1.3	1.9	2.0
33rd percentile	3.2	3.4	5.8	6	5	4	0.7	0.7	0.4
66th percentile	6.7	9.0	11.3	20	25	30	1.4	2.2	2.3

Source: Authors' tabulations, UN Population Division, World Population Policies database, http://www.un.org/esa/population/unpop.htm

to increase both attraction and retention may be related to where migrants come from.

The sources of international migrants may change in the future as wage differentials lessen or migrants from certain countries become less available. Nations that draw most of their migrants from more developed nations, which will be facing the challenges to be discussed below, may seek to get migrants from today's emerging economies. Much of the casual discussion of international migration explicitly portrays the phenomenon as one of movement from the developing to the more developed world (south to north), even if the reality is somewhat different.[3] In the first, place substantial numbers of migrants travel between developing nations and some observers expect those flows to strengthen over time which could lessen numbers available to travel to more developed nations. On the other

hand, some of todays least developed and most rapidly growing countries, typically in Africa, might be anticipated to contribute more migrants in the future (Hatton and Williamson, 2003). There may be little decline in potential migrants, regardless, as there is a nearly six-to-one ratio of the population of the lesser as compared with more developed nations (*op. cit.*, Lowell 2005). In fact, OECD nations vary tremendously in where they source their migrants. Table 2.3 ranks countries by the proportion of their resident foreign-born population that comes from more, less and least developed source countries. At the one extreme, Luxembourg gets nearly all of its migrants from more developed nations and it and other countries that draw primarily from Western Europe may face the greatest pressure to source migrants from less developed countries. While Australia, Canada and New Zealand get roughly half of their migrants from other more developed nations, that may suggest they are well poised to benefit from established flows from a diversity of sources. The USA and Japan source most of their migrants from a few less developed nations in close geographic proximity, so their future flows may depend on how those source countries change in the future. Of course, our focus here is on pull and not push factors, but these data suggests that the power of pull may, in part, depend upon the national mix of source countries

Table 2.3. **Sources of the adult foreign-born population, 2000**

Country	Source world region, %					Source level of development, %			
	Europe	North America	Latin America & Carib.	Asia & Oceania	Total	Least	Less	More	Total
Luxembourg	99.0	0.7	0.0	0.2	100	0.0	0.2	99.8	100
Poland	97.9	0.9	0.0	1.2	100	0.0	1.3	98.7	100
Slovakia	97.8	0.8	0.2	1.3	100	0.2	1.4	98.3	100
Turkey	96.2	1.2	0.0	2.6	100	0.0	2.6	97.4	100
Hungary	95.0	0.9	0.4	3.8	100	0.4	4.2	95.4	100
Czech Republic	94.6	0.4	0.3	4.7	100	0.2	5.1	94.7	100
Ireland	86.1	5.9	0.4	7.6	100	0.5	11.3	88.2	100
Iceland	72.6	10.7	1.3	15.4	100	0.3	17.4	82.3	100
Switzerland	82.5	1.9	3.8	11.7	100	2.1	17.0	80.9	100
Austria	80.0	0.8	1.0	18.2	100	0.7	20.2	79.1	100
Finland	76.2	3.7	1.7	18.4	100	5.0	20.4	74.6	100
Belgium	86.8	1.3	1.1	10.8	100	5.3	20.7	73.9	100
Sweden	69.8	1.7	5.2	23.2	100	4.1	27.7	68.2	100
Greece	60.3	10.2	3.6	25.9	100	2.5	33.4	64.1	100

Table 2.3. **Sources of the adult foreign-born population, 2000**
(continued)

Country	Source world region, %					Source level of development, %			
	Europe	North America	Latin America & Carib.	Asia & Oceania	Total	Least	Less	More	Total
Mexico	22.2	39.4	33.2	5.3	100	0.2	37.2	62.5	100
Germany	59.4	1.8	1.3	37.5	100	1.9	38.5	59.7	100
Australia	59.1	1.8	1.9	37.1	100	4.2	36.8	59.0	100
Norway	55.4	6.8	4.3	33.5	100	5.0	37.4	57.7	100
Canada	47.9	4.5	11.0	36.7	100	4.3	45.5	50.2	100
France	77.2	1.3	2.5	19.0	100	7.6	43.5	48.9	100
New Zealand	46.9	3.1	0.6	49.4	100	11.2	39.9	48.9	100
Denmark	50.1	2.5	2.1	45.3	100	6.3	45.6	48.1	100
Italy	61.7	2.7	13.1	22.5	100	5.6	47.1	47.3	100
Spain	47.4	1.5	42.2	8.8	100	3.3	58.5	38.2	100
United Kingdom	36.4	5.1	9.1	49.4	100	10.2	54.8	35.0	100
Netherlands	36.4	1.9	20.2	41.6	100	5.3	63.1	31.6	100
Korea	2.4	10.7	0.0	86.9	100	5.1	71.9	23.0	100
United States	18.0	3.0	50.1	28.8	100	4.3	74.0	21.7	100
Portugal	67.4	0.8	18.3	13.5	100	81.7	6.2	12.1	100
Japan	2.4	3.5	16.0	78.1	100	1.7	92.4	5.9	100
Average	62.8	4.4	8.2	24.6	--	6.0	32.5	61.5	--
33rd percentile	53.1	1.5	1.1	11.3	--	1.3	19.0	48.9	--
66th percentile	77.6	3.2	4.4	29.5	--	5.0	40.4	75.2	--

Source: Authors' tabulations, see International migration by educational attainment (1990-2000) – Release 1.1, Frédéric Docquier and Abdeslam Marfouk, http://www.ires.ucl.ac.be/CSSSP/home_papers/docquier/oxlight.htm

Note: Based on estimated population of adults ages 25 and over.

upon which a host exerts its pull. Some OECD countries are already first-in-queue for selected source countries and, thus, may exert a powerful pull on those nations compared with nations that have not yet established binational linkages.

Immigration pull factors

The literature on immigration "pull factors" is somewhat divided between academic theorists, policy analysts and demographers. Academics posit competing theories that variously identify economic opportunity (primarily wages) as the primary pull factor driving migration or embed economics in familial, social and political factors that condition migration flows. More strictly on the pull side, policy analysts use economic and especially demographic forecasts to posit conditions that will generate a future need for migrants. Demographers tend to dominate the actual business of population projections, but their projections of immigration mostly depend on refinements in assumed trends and rates of in-migration.

Theories and research on migration

Theories that derive from neoclassical economics tend to expect wage-pull to be the major determinant of migration. Empirical research tends to reinforce that expectation finding that economic pull factors are the dominant driver and that push factors play no substantive role in migration (Mayda, 2005). Wage-pull is the most important variable in migration models for OECD countries, albeit there are notable differences in the attractive power of the traditional countries of immigration as compared with most European nations (Peri, 2005). While pull factors were critical in historical migrations, the role of economic pull factors may not operate when policies effectively restrict immigration (Hatton and Williamson, 2003).

However, as summarized in Box 2.1, some argue that economic differentials are only part of the story and less-pecuniary drivers of migration may persist into the future. The most prominent economic theories concern neoclassical models, the new economics of migration, world systems theory and dual labour market theory. A premise of the non-classical theories is that it is necessary to draw a distinction between the initial causes for migration between two countries and the reasons that preexisting patterns of migration continue once established. Theories focused on the perpetuation of existing migration patterns indentify the strength of social networks, cumulative causation, institutions and migration systems.

Theories differ in their level of analysis, assumptions, relative emphasis on push and pull factors and the use of quantitative or qualitative analysis. Some focus more on isolated individuals as wealth maximizers, others take into account the family or community setting of migration decisions; or the even cultural significance of such moves. However useful these theories are for specifying statistical models or providing frameworks for in depth research, there is not yet a consensus among social scientists as to which

theory (or theories) performs best. Albeit, empirical research tends to reinforce the expectation that economic opportunity in the receiving countries is the fundamental driver of year-to-year fluctuations in international mobility.

Box 2.1. **Theories of migration**

Neoclassical economic theories of migration posit that "differences in net economic advantages, chiefly advantages in wages, are the main causes of migration" (Hicks 1932: 76). At the same time, capital flows in the reverse direction into the capital-poor country until equilibrium is reached and migration attenuates.

Dual labor market theories emphasize the causal significance of pull factors within recipient societies rather than push factors within the source countries. Modern economies have a chronic demand for immigrants in low-status jobs which continue to be attractive to growing numbers of immigrants without effecting an equalization of wages.

The new economics of migration theory rejects individualism and the emphasis on wage differentials. The decision for members of a family to migrate makes sense even when the wage differential is not significant because remittances can provide a useful form of financial diversification in the face of risk. The focus here is on source countries and push factors.

World systems theory suggests that migration is rooted in the historical structure of the global market and colonial relationships are maintained through cultural and economic ties. Foreign investment in developing economies is managed from a small handful of "global cities" that require immigrant labor to fill low-wage jobs. Once established, the "lead" and "periphery" economic relationship symbiotically maintains migration.

Social networks reduce the costs and risks associated with immigration. Network theories, like world systems theory and theory of dual labor markets, suggest a path dependency to migration patterns. Once a migration flow has begun, it gains a life of its own and may not be easily stopped by policy or even economic changes.

Theories of migration policy find that policy matters, but there is relatively little nuance as to which sets of policies are more successful in say increasing the total number of immigrants or shifting the composition toward skilled, long-term immigrants. Much of this literature focuses on how policy is formulated and not it's content or impact.

Economies of Scale theories attempt to explain how and why certain cities and locations become hubs for creative innovation, high skilled immigrants, and investment. Governments wishing to attract high skilled immigrants can consciously promote nascent economic clusters and attract the creative class of workers both from within their own country and abroad.

Future challenges of aging and globalization

Most policy analysts readily accept that the factors that drove historic European migration are likely to continue to be major drivers today: gaps in living standards, financial constraints on realizing mobility, as well as demographic dynamics. If anything, the cost-benefit analysis for mobility and the demographic differentials that fuel migration are greater today than in the past (Williamson, 2003). But analysts rarely model the two future scenarios they believe will drive future mobility, *i.e.* demographic aging of the most developed nations and increasing global competition in the knowledge economy. Few, however, question whether or not these pull factors will be important, particularly as they impact specific classes of workers.

We will discuss demographic projections below, suffice it to say here that most policy analysts are focused on population aging and not the population-gap between the more and less developed nations. Nevertheless, rapid population growth in the European periphery was a key factor in driving migration in the past and differentials in population growth are poised to play a similar role in today's world.[4] But if population push was the historic dynamic, today's aging is a powerful pull factor generated by slowing population growth and changes in the age pyramid. On the one hand, there will be a latent demand to replace the relative loss of young workers in the labour force to refuel retirement funds, as well as to generate productivity growth. On the other hand, the growing number of aging persons will generate latent demand for caregivers and a host of other aging services.

These demographic dynamics will combine with the globalization of the knowledge economy to create a heightened international competition for knowledge workers. The competition is fueled by the growing dependence of technology fueled economies on innovation to boost productivity. Migrants from emerging economies already supply many workers to meet that demand in most Anglophone nations, while many European nations seek to augment their human capital from the same sources. Demand in some nations will grow because the endogenous supply of these workers, in principle, may slow as the number of young native-born persons decline in coming years – the pull here is for skilled workers. In the second instance, fewer natives are expected to take on the low-paying and difficult jobs in many sectors including healthcare while demand for services escalates – much of the pull here is for low skilled workers.

Demographic projections

Most of the long-term projections of migration rarely incorporate a range of predictive variables, they are not based on statistical models but rather are demographic models incorporating assumed rates of change. It is not so much

that the academic theories of migration are thought to be irrelevant, but the necessary statistical models would require the projection of multiple variables and not just migration itself. Thus, most statistical modeling of future migration is constrained to the short term, perhaps no more than 2 to 5 years.[5] Even so, projections can be markedly off given unforeseen calamities such as 9/11 or, in contrast, stronger than assumed rebounds in economic conditions (Krepps, *et al*., 2005; Department of Homeland Security, 2007).

From a practical viewpoint Passel and Cohn conclude, based upon their review of the literature and while undertaking population projections for the United States, that:

> Immigration has been the most difficult demographic component to forecast in the last several decades. It is directly affected by national policies and other events in ways that fertility and mortality are not. Although many of the social and economic factors affecting migration trends are reasonably well known, no broadly accepted theoretical framework can be readily applied in a projections framework (Passel and D'Vera Cohn, 2008).

Like most demographic projections, migration is predicted extrapolated largely from historical trends. The rate of in-migration is on the "pull side" of the ledger as the rate's denominator is that of the receiving nation population and incorporates, thereby, the sociodemographic forces of inertia inherent in the host nation. The future trend or pattern of in-migration must be based on judgment best based on assumptions about future drivers. One comprehensive review of the empirical literature concludes that future trends should be grounded and modeled, with agreed-upon factors incorporated into projections based on several drivers. Perhaps unsurprisingly, demographic drivers are first on the list with economic, non-policy and then policy factors ranking as second order drivers and among the least reliable (Howe and Jackson, 2006; Cohen, *et al*., 2008).

Pull factors through 2030

Even if experts disagree on what drives migration, especially the dynamics of mutually reinforcing drivers, they tend to agree that there are a general set of factors that will shape tomorrow's most important pulls on migration. The leading factors in the more developed OECD countries will be the fundamental importance of economic opportunity in interaction with demographic dynamics; aging and slow population growth clearly being tomorrow's challenges. Altogether we explore seven factors below, *e.g.* economic factors, demographic factors, network effects, labour market factors, education and training, health and long-term care and integration.

Economic factors

International changes in economic growth and productivity will play a significant role in driving immigration in coming decades. Classical theories of migration argue that an individual's decision to migrate is primarily to maximize their earnings, to have better living standards, or more stable sources of income. Projections of the relative economic strength of OECD countries in coming years are an important lead indicator of migration-pull and future mobility patterns. Like others, we use per capita GDP to proxy for wages and economic opportunity.

Trends in economic growth

We consider projections made for the United Nations Economic Commission for Europe and the scenario whereby there will increasing convergence in economic opportunity between countries by 2030. Declines in the rate of economic growth are projected to occur in countries confronted by the greatest demographic challenges and which fail to make technological progress and to develop human capital. Countries projected to fare the best will be those that undertake aggressive policy measures, in particular increasing investment in R&D and education. Of course, one should take seriously the injunction that over such a period there may be "deep and unpredictable changes may take place in the direction of the technological progress, political situation and social stability of nations, international flows of production factors and institutional development" (NOBE Independent Centre for Economic Studies, 2002; United Nations Economic Commission for Europe, n.d.).

The UN projects continued economic growth for OECD countries for the period 2000-2040, but with falling GDP growth rates for some over time. We consider the "base case" projections which assume a continued improvement in the policies that accelerate "knowledge-based growth" and more "favorable demographic trends" (the medium UN demographic variant). It represents business as usual variant as compared with a set of low projections (based on the weakest technology, human capital and demographic outcomes); or a high variant (aggressive policies to improve education and R&D and best-case demographic trends). We opt not to include economic growth rates in our final migration-pull scenarios; rather we will use the per capita GDP projections to proxy for migration pull (see Table 2.5 below, to be used in the scenario section toward the end of the paper).

In Table 2.4 we sort countries by their rate of per capita GDP growth in order to better see the anticipated trends behind a projected convergence in economic attraction. The table shows projections for the average yearly growth of capital, labour, total factor productivity (TFP), GDP, population and per capita GDP. Tomorrow's top growth countries contain seven of

Table 2.4. **Projected average yearly economic growth, 2000-2040**

Country	Average Yearly Growth 2000-2040 (UN Base Projection)					
	Capital	Labor	Total Factor Productivity	Population	GDP	per capita GDP
Turkey	--	--	--	0.9	5.2	4.2
Poland	--	--	--	-0.1	3.7	3.8
Slovakia	--	--	--	-0.1	3.2	3.3
Hungary	--	--	--	-0.5	2.6	3.2
Czech Republic	--	--	--	-0.4	2.4	2.9
Mexico[1]	--	--	--	0.1	2.7	2.7
New Zealand[1]	--	--	--	-1.0	1.5	2.7
Portugal	2.6	-0.1	1.4	-0.3	2.4	2.7
Greece	2.4	-0.1	1.1	-0.4	2.0	2.4
Finland	1.9	0.3	1.4	-0.1	2.3	2.3
Spain	2.5	0.0	0.9	-0.4	1.9	2.3
Austria	2.6	0.0	1.0	-0.2	2.0	2.2
Ireland	2.5	0.8	1.1	0.5	2.6	2.1
Italy	1.8	-0.2	0.9	-0.6	1.5	2.1
Japan	2.8	0.0	0.7	-0.2	1.9	2.1
United Kingdom	1.7	0.2	1.2	0.0	2.0	2.1
Australia	2.5	1.0	1.1	0.7	2.7	2.0
Denmark	2.0	0.1	1.0	-0.1	1.8	2.0
France	1.9	0.4	1.0	0.1	2.0	2.0
Iceland	2.0	0.7	1.3	0.5	2.5	2.0
Korea[1]	..	..	..	0.3	2.2	2.0
Netherlands	2.3	0.1	0.9	-0.1	1.9	2.0
Sweden	1.5	0.2	1.3	0.0	2.0	2.0
Belgium	2.1	0.1	0.7	-0.2	1.6	1.8
Germany	2.1	0.1	0.7	-0.2	1.7	1.8
Switzerland	2.0	0.1	0.8	-0.1	1.6	1.7
Canada	2.0	1.0	0.9	0.7	2.2	1.6
Norway	0.9	0.4	1.2	0.2	1.8	1.6
United States	1.9	0.7	0.8	0.5	2.0	1.5
Luxembourg	1.9	0.3	0.4	0.1	1.3	1.2

Table 2.4. **Projected average yearly economic growth, 2000-2040**
(continued)

Country	Average Yearly Growth 2000-2040 (UN Base Projection)					
	Capital	Labor	Total Factor Productivity	Population	GDP	per capita GDP
Average	2.1	0.3	1.0	0.0	2.2	2.3
33rd percentile	1.9	0.1	0.9	-0.2	1.9	2.0
66th percentile	2.3	0.3	1.1	0.1	2.3	2.3

Source: NOBE Independent Centre for Economic Studies, 2002. http://www.fao.org/documents/pub_dett.asp?lang=en&pub_id=189492

1. Per capita GDP values based on WHO values for New Zealand, Korea and Mexico.

today's ten lowest per capita GDP countries, but practically in inverse order. Of today's ten highest per capita GDP countries only two, Ireland and Iceland, are in the highest growth group in this projection. Otherwise, the highest average annual GDP growth is projected for Turkey, Poland, Slovakia and Mexico that have low-to-moderate per capita GDP today. The high growth group also includes lower income Hungary, the Czech Republic and Portugal.

Meanwhile, a full five of the top ten countries today are projected to be in the lowest growth group through 2040 (Luxembourg, Switzerland, Belgium, Norway and Denmark). Four of today's largest Western European economies (Germany, France, the United Kingdom and Italy) have growth rates below the median for the OECD; and two (Germany and Italy) are projected to have among the six lowest GDP growth rate averages in the OECD. On the other extreme, the lowest growth rate countries include Luxembourg, Italy, New Zealand and Switzerland. Among the lowest growth are also found Germany, Norway, Denmark, Netherlands and Japan. The UN projections do not look comparatively favorable for the richest countries, even if we consider per capita GDP growth. Luxembourg, Norway, Switzerland, Germany, Belgium and Netherlands have among the lowest ranked per capita GDP growth rates. The United States has the second lowest growth rate in per capita income and Canada has the fourth lowest. Turkey, the Central and Eastern European OECD members and Mexico show the most significant growth rates. They are joined by the poorer Southern European countries, Portugal, Greece and Spain. Thus, these projections suggest a pattern of economic convergence across OECD countries in coming decades. The wealthiest countries show

the least growth in GDP and per capita GDP while the poorest and least developed nations make strides in overall and per capita GDP growth.

Projected relative per capita GDP

The divergence in growth rates leads to a convergence in per capita GDP over the coming decades. Table 2.5 shows a comparison of today's per capita GDP and that projected for 2040 – in 2000, the lowest per capita GDP was only 15% of the highest; by 2040 this projection suggests that the lowest will be approximately 49% of the highest. In terms of migration-pull, we are particularly interested in per capita GDP in relative terms because theory and research tells us that migration flows are strongly associated with differentials in per capita income. The table further ranks countries by the ratio of their GDP per capita against a benchmark of the lowest quintile per capita GDP, as well as against the average per capita income of the three largest countries of out migration Mexico, Poland and Turkey.

We will return below to the ranking relative to these three countries of out migration, but first note that the OECD countries are also effectively sorted by today and tomorrow's per capita GDP which demonstrates some striking shifts between countries. Among today's least developed countries, changes are for the most part small rearrangements between countries, *e.g.* Spain and Portugal switch order; and Hungary passes Mexico. More significantly, Greece is surpassed by the four post-communist Central European OECD member states and by Mexico, leaving it with the second lowest per capita GDP just ahead of Turkey.

Perhaps, the most striking rearrangements occur within and between the wealthier countries. Several of the major OECD member economies either switch position with each other or with numerous smaller states. The United States' per capita GDP is surpassed by that of Iceland, Ireland and Austria; leaving it the fifth highest ranked. The largest European economic powers also shift order. In 2000, Germany had the highest per capita GDP in Europe, followed by France, Italy and the United Kingdom. In 2040, this projection shows Italy leading, followed by France, the UK and Germany.

There are also some notable shifts by smaller but wealthy countries which are influenced by either demographic shifts or declining productivity, *e.g.* Norway drops from third to eleventh in the ordering, Switzerland from fifth to twelfth; and Canada moves from seventh to twentieth and is passed by Korea. Finland, on the other hand, moves from fifteenth to sixth; Austria from tenth to fourth; Ireland from sixth to third; and Iceland gains the second highest per capita GDP behind Luxembourg. The OECD's populous Asian members, meanwhile, gain relative to the major Western states. Japan's per

Table 2.5. **Differences in per capita GDP, 2000 and 2040**

Country	2000 GDP $USD billions	2000 GDP per capita	2000 Ratio 20th per-centile	2000 Ratio MX, PL, TK	Country	2040 GDP $USD billions	2040 GDP per capita	2040 Ratio 20th per-centile	2040 Ratio MX, PL, TK
Luxembourg	19	43 600	64.4	78.9	Luxembourg	31	70 100	39.5	45.8
United States	9 267	33 300	53.3	72.4	Iceland	21	63 500	33.3	40.2
Norway	129	29 000	46.4	68.3	Ireland	289	62 200	31.9	39.0
Iceland	8	28 400	45.3	67.6	Austria	463	61 600	31.2	38.4
Switzerland	200	28 000	44.5	67.2	United States	20 660	60 300	29.7	37.0
Ireland	103	27 500	43.5	66.6	Finland	302	60 000	29.4	36.7
Canada	829	27 200	42.9	66.2	Denmark	293	58 400	27.4	35.0
Denmark	141	26 400	41.1	65.2	Japan	6 641	56 900	25.5	33.3
Belgium	269	26 300	40.9	65.1	Australia	1 404	56 200	24.6	32.4
Austria	209	25 800	39.8	64.4	Netherlands	840	56 000	24.3	32.2
Australia	482	25 400	38.8	63.8	Norway	268	55 700	23.9	31.8
Japan	3 183	25 100	38.1	63.4	Switzerland	384	55 300	23.4	31.3
Netherlands	394	24 900	37.6	63.1	Belgium	509	53 900	21.4	29.6
Germany	1 968	24 000	35.3	61.7	New Zealand *	143	52 977	20.0	28.3
Finland	123	23 800	34.7	61.4	Sweden	462	52 600	19.4	27.8
New Zealand[1]	98	23 721	34.5	61.3	Italy	2 369	51 600	17.9	26.4
France	1 382	23 600	34.2	61.1	France	3 111	51 400	17.5	26.1
Sweden	208	23 400	33.6	60.7	United Kingdom	3 012	51 100	17.1	25.7
Italy	1 310	22 700	31.5	59.5	Korea *	26 073	50 575	16.2	24.9
United Kingdom	1 347	22 600	31.2	59.3	Canada	2 009	50 300	15.7	24.5

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Table 2.5. **Differences in per capita GDP, 2000 and 2040**
(continued)

Country	2000 GDP $USD billions	2000 GDP per capita	2000 Ratio 20th per-centile	2000 Ratio MX, PL, TK	Country	2040 GDP $USD billions	2040 GDP per capita	2040 Ratio 20th per-centile	2040 Ratio MX, PL, TK
Korea[1]	10 274	21 383	27.3	57.0	Germany	3 802	49 800	14.9	23.8
Spain	737	18 700	16.9	50.9	Portugal	421	47 800	11.3	20.6
Portugal	166	16 600	6.4	44.6	Spain	1 549	46 900	9.6	19.0
Greece	169	16 000	2.9	42.6	Czech Republic	366	42 700	0.7	11.1
Czech Republic	140	13 700	-13.4	32.9	Hungary	331	41 100	-3.1	7.6
Mexico[1]	1 271	12 065	-28.8	23.8	Mexico *	4 154	40 999	-3.4	7.4
Hungary	119	11 800	-31.7	22.1	Slovak Republic	208	40 700	-4.1	6.7
Slovak Republic	60	11 000	-41.3	16.5	Poland	1 467	38 900	-8.9	2.4
Poland	344	8 900	-74.6	-3.2	Greece	293	34 500	-22.8	-10.0
Turkey	441	6 600	-135.5	-39.2	Turkey	3 297	34 000	-24.6	-11.7
Avg. (MX, PL, TK)	685	9 188	-79.6	-6.2	Avg. MX PL TK	2 973	37 966	-12.3	-0.6
Average	1 180	22 382	18.0	51.5	Avg. (unweighted)	2 839	51 602	15.3	24.1
20th percentile	122	15 540	-0.4	40.6	20th percentile	292	42 380	-0.02	10.4
33rd percentile	155	22 077	29.6	58.3	33rd percentile	351	50 085	15.4	24.2
66th percentile	518	25 456	39.0	63.9	66th percentile	1 613	55 742	24.0	31.9

Source: NOBE Independent Centre for Economic Studies, 2002. http://www.fao.org/documents/pub_dett.asp?lang=en&pub_id=189492

1. Per capita GDP values based on WHO values for New Zealand, Korea and Mexico.

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capita GDP moves to become the eighth highest, while the per capita GDP of Korea moves past that of Canada and close behind that of the UK and France.

These trends towards economic convergence and change in relative position could have significant implications for each nation's migration pull. As this occurs, it will greatly reduce the wage differential incentives driving migration flows between poorer and richer states. This could have particularly significant effects on the existing flows of immigrants from Turkey into Germany, from Mexico into the United States and from Central European into Western Europe. While economic differences will persist for some time, at some point reduced wage differentials may be insufficient to prompt relocations. The relative decline of several major European economies, due to a combination of demographic shift and poor labour utilization, could reduce their attraction to migrants from inside or outside the OECD. But the economic gains projected for the OECD's East Asian members suggest pull factors favorable for migration to Japan and Korea.

Finally because migration is motivated by improvements in income, each country's per capita GDP is ranked relative to lower-income countries, *e.g.* the lowest quintile for these countries and the average for the three largest countries of out migration. Of course, sorting against either benchmark leaves the ranking unchanged, although the measured gap in income varies markedly depending on which benchmark one chooses. Of greatest interest is, perhaps, the ratio of per capita GDP to the largest nations of out migration Mexico, Poland and Turkey. These three countries also represent relatively well the per capita gap income that exists today between emigration from many developing countries and that likely to exist tomorrow. But what do we know about the responsiveness of immigration to the income gap? Some early observers noted that migration from Spain northward was minimal following its inclusion in the Shengan zone of free movement in 1992 (Martin, *et al*., 2006), leading to the conclusion that a reduction in wage gaps could attenuate incentives to migrate.[6]

Researchers estimate that migration begins to attenuate when wage differentials are no greater than 30% to 40% (Mansoor and Bryce Quillin, 2007). Considering the gap from the average of Mexico-Polish-Turkish per capita GDP and assuming a threshold of 30%, all but five countries had income gaps of greater than 30% in 2000. Indeed, the average income gap in 2000 was 52% which suggests quite considerable migration pull in almost all OECD countries, while fully twenty countries had gaps of 60% or greater. But by 2040 these projections show an average income gap that has decreased to 24% and only 13 countries have wage differentials of about 30% or greater than the simple average of Mexico-Poland-Turkey. Just 12 countries retain income gap of 30% or greater by these projections. Several of today's leading countries of immigration remain in the first triptile, *e.g.* Luxembourg, the

USA and Australia, while there is otherwise a substantial reordering of countries in terms of the income gap. On the one hand, this suggests that the migration pull of many OECD countries will be diminishing in the future. On the other hand, even if the economic pull is declining it will remain substantial and, if costs of travel are lower and differentials in living costs also converge, the logic of mobility may still remain strong. The degree to which that is so may, in part, depend on other pull factors that will generate demand for foreign labour in OECD host countries.

Demographic factors

Recent studies verify that the world population has entered an unprecedented period of aging. Depending on the starting conditions, this trend has varying effects on the demographic and economic outlook for nations. As the median age of a population shifts upward, this drives a proportional decrease in the size of the working-age adult population relative to children and elderly persons, *i.e.* there is an increase in the ratio of the dependent-age population to the working-age population. In general, those states at the beginning of the population aging process will benefit in coming decades from a proportionate and absolute increase in the working-age population. Nations already further along in the demographic shift face a proportionate increase in the elderly proportion of their populations and a relative decline in the working-age population.

Growth and decline of the total and working-age populations

Table 2.6 ranks orders OECD countries by the percentage change in the size of the working-age population from 2005 to 2030 (measured as the population 15 to 59 years of age). This provides a sense, in absolute terms, of the impact that demographic trends are likely to have on the size of each country's workforce if all other factors stay equal. The table also shows projected change in the size of the total population. While only seven countries show a decline in total population, a full sixteen or more than half of the OECD members are predicted to experience a decline in their working-age population. The seven countries with overall population decline are also among those worst hit by decline in their working-age populations (in order Hungary, Poland, Japan, Czech Republic, Germany, Slovakia and Italy). Any discrepancies between projected change of the total and working-age populations can be attributed largely to varied trends in life expectancy and, to a lesser degree, to differences in fertility.

Regional differences in the change of the total population are pronounced, particularly so in the Central European and East Asian OECD member states. The UN regional data shows that Europe is the only world region expected to show an overall decline (-3%) in population. A closer look reveals that this

decline is driven mostly by Central Europe where the total population (including nonmember states) is expected to decline by an extraordinary -15.3% between 2005 and 2030. Yet, total population growth in other parts of Europe, while positive, is not particularly robust. Central Europe's precipitous population decline is followed by a very low population growth of 4.3% in Western Europe, 4.5% in Southern Europe and a still quite moderate 11.3% in Northern Europe.

Similarly, there are marked differences in projected changes in the working-age population. In Central Europe it is predicted to take a dramatic plunge of -19.1%, followed by Western Europe with -10.1% loss and Southern Europe with a -7.9% loss. Only Northern Europe will show a minor increase in its working-age population of 1.3%. Germany and, to a lesser extent, Italy, Finland and the Netherlands stand out among West European states for their rapid declines in working-age population. These countries are hit hard by the demographic shift and aging of the population. Since their relatively low birth

Table 2.6. **Projected total and working-age population**

Country	Total Population			Population 15-59		
	2000	2030	Percent change	2000	2030	Percent change
Japan	127 034	118 252	-6.9	78 884	60 842	-22.9
Germany	82 309	79 348	-3.6	50 329	40 670	-19.2
Poland	38 433	35 353	-8.0	24 608	20 732	-15.8
Hungary	10 214	9 259	-9.4	6 460	5 458	-15.5
Czech Republic	10 220	9 728	-4.8	6 666	5 643	-15.3
Italy	57 692	57 519	-0.3	35 479	30 265	-14.7
Korea	46 780	48 411	3.5	31 680	27 568	-13.0
Finland	5 176	5 469	5.7	3 206	2 874	-10.4
Slovakia	5 388	5 217	-3.2	3 507	3 144	-10.3
Netherlands	15 924	17 141	7.6	10 066	9 057	-10.0
Austria	8 111	8 643	6.6	5 084	4 620	-9.1
Greece	10 975	11 179	1.9	6 827	6 208	-9.1
Denmark	5 335	5 602	5.0	3 295	3 016	-8.5
Portugal	10 227	10 607	3.7	6 373	5 932	-6.9
Belgium	10 193	10 780	5.8	6 167	5 774	-6.4
Switzerland	7 263	8 104	11.6	4 573	4 360	-4.6
France	59 187	66 605	12.5	35 828	36 145	0.9
Spain	40 229	46 682	16.0	25 619	25 872	1.0

Table 2.6. **Projected total and working-age population**
(continued)

Country	Total Population			Population 15-59		
	2000	2030	Percent change	2000	2030	Percent change
United Kingdom	58 868	66 162	12.4	35 480	36 338	2.4
Sweden	8 868	10 012	12.9	5 268	5 397	2.5
Norway	4 489	5 366	19.5	2 726	2 960	8.6
Canada	30 689	39 105	27.4	19 705	21 622	9.7
Iceland	281	344	22.4	173	194	11.7
New Zealand	3 854	4 895	27.0	2 373	2 735	15.2
Australia	19 139	25 287	32.1	12 016	14 061	17.0
United States	284 857	366 187	28.6	177 415	208 711	17.6
Luxembourg	437	601	37.6	272	350	28.8
Mexico	99 735	128 125	28.5	59 297	79 853	34.7
Ireland	3 804	5 475	43.9	2 405	3 311	37.7
Turkey	68 158	92 468	35.7	42 127	58 902	39.8
Average	37 795.6	43 264.2	12.4	23 463.6	24 420.5	1.2
33rd percentile	8 542.5	8 994.2	4.5	5 189.0	5 063.2	-9.5
66th percentile	38 684.4	40 165.8	16.5	24 749.7	22 217.2	3.3

Source: UN Data on Population Projections by Age group (Medium Variant Projection); http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3a87

rates are paired with relatively high life expectancies, only Germany and Italy show small declines in total population during this time.

The OECD's East Asian member states show, by far, the greatest expected decline in the size of their working-age populations. Japan will have the single greatest percentage (and net) decline in working-age population, with a loss of -22.9%. Japan will also experience significant overall population decline (-6.9%) during this period. Korea is projected to lose -14.7% of its working-age population while experiencing a very small total population growth of 3.5%. These numbers are striking when compared to other East Asian countries where the UN projects a growth of 1.3% in the working-age population and 12.6% in total population.

Anglophone OECD countries – especially those that are traditional immigration recipient countries – fare somewhat better in population projections. Ireland, the United States, Australia, New Zealand, Canada and

the United Kingdom are all among the states whose working-age populations will continue to grow and the projected supply of new immigrants is a major reason that these countries are expected to experience such growth. Scandinavian countries are also better off than most of their fellow European countries, with Iceland, Norway and Sweden also showing growth in their working-age populations.

Table 2.7. **Population dependency ratios (population age 15-64 relative to children and the elderly)**

Country	Dependency Ratio		Percentage point change
	2005	2030	
Finland	50	71	21
Japan	51	71	20
Netherlands	48	67	19
Canada	44	63	19
Germany	50	68	18
Switzerland	47	65	18
Austria	47	63	16
Australia	48	63	15
Korea	39	54	15
Belgium	52	66	14
Denmark	51	65	14
Italy	51	65	14
Spain	45	59	14
Czech Republic	41	55	14
Sweden	53	66	13
Poland	42	55	13
France	53	65	12
United Kingdom	52	63	11
New Zealand	51	62	11
United States	49	60	11
Portugal	48	59	11
Norway	52	62	10
Iceland	51	61	10
Greece	48	58	10
Slovakia	40	50	10

Table 2.7. **Population dependency ratios (population 15-64 relative to children and the elderly)** *(continued)*

Country	Dependency Ratio		Percentage point change
	2005	2030	
Hungary	45	53	8
Luxembourg	49	55	6
Ireland	47	51	4
Turkey	51	45	-6
Mexico	58	48	-10
Average	48	60	12
33rd percentile	48	59	11
66th percentile	51	63	14

Source: UN Data on Dependency Ratio Projections (Medium Variant Projection), World Population Prospects: The 2006 Revision and World Urbanization Prospects, http://esa.un.org/unpp.

Still, the most pronounced growth of the working-age population is predicted in four countries: Turkey, Ireland, Mexico and Luxembourg. Two are among the smallest, wealthiest nations on a per capita basis in the OECD, while two are among the most populous, poorest and least developed OECD member states.

Increasing population dependency ratios

In Table 2.7, countries are ordered by their projected dependency ratios in 2030; defined as the ratio of the dependent populations aged 0-14 and over 64 relative to the working-age population 15 to 64. In countries with a high dependency ratio, the working-age population has more dependents per capita to support and take care of. The effect of increasing dependency ratios may be counteracted to some degree by stable or growing working-age populations. Nations projected to have both increasing dependency ratios *and* declining working-age populations face the greatest future challenges.

The countries with the highest dependency ratios tend to be those with both declining working-age populations and long life expectancies. This includes many of the East Asian and Western European OECD members noted previously for their declining working-age populations namely Finland, Japan, Germany, Netherlands, Belgium, Italy, Denmark and Switzerland. But

some countries have quite high dependency ratios in spite of some growth in the working-age population including Sweden and France. In these cases, a high life expectancy accounts for a higher dependency ratio, as a larger proportion of the population beyond working-age lives on for many years. As should be expected, the Anglophone and Scandinavian countries, which we saw previously are expected to maintain high or moderate growth in their working-age populations, are projected to have somewhat moderate dependency ratios. At the same time, some countries with the lowest dependency ratios have the most significant growth of their working-age population. Turkey and Mexico have the lowest projected dependency ratios, while Ireland and Luxembourg have the fourth and eight lowest ratios in the OECD respectively.

However, many of the countries with the lowest dependency ratios are also among those with declining working-age populations. This includes countries in Central Europe particularly Slovakia, Hungary, Poland and the Czech Republic which have among the lowest projected dependency ratios in the OECD, in spite of each also having among the most extreme declines in working-age population. The low ratios in these cases are explained by high mortality rates of the elderly population. The same pattern is seen in the projections for South Korea which has a low projected dependency ratio in spite of a steep decline in its working-age population. In 2000, all five of these countries had among the lowest life expectancies in the OECD and are projected to continue to have life expectancies below the OECD average.

The fourth column of Table 2.7 shows the change in dependency ratio (percentage point difference) expected to occur between 2005 and 2030 for each country. This provides a sense of how rapidly the demographic balance in a particular country is changing and thus might indicate which countries will have the hardest adjustment problems dealing with increasing dependency. Finland, Japan, Netherlands, Canada, Germany and Switzerland all appear to face particularly dramatic increases in their demographic age composition over the next twenty to twenty-five years with corresponding pressures on their economic situations. Simultaneously, the declines in dependency ratios in Mexico and Turkey corresponding with strong growth in their working-age populations opens up a window of demographic opportunity for boosting economic growth.

The future of replacement migration

The vulnerability of different OECD countries to the demographic crisis caused by population aging also depends on how well the country copes with the shift in age. One way to think about this focuses on the financial challenges of caring for growing elderly populations. For example, the Global Aging Initiative constructs an "aging vulnerability index" to assess

the prospects of nations in dealing with their aging populations.[7] The index covers 12 OECD countries and incorporates four factors: the public spending burden caused by entitlement programs for the elderly, the fiscal room for change in these programs in state budgets, the relative dependency of the elderly upon state programs and the relative affluence of the elderly portion of the population. While very useful for gauging the looming financial challenge, the vulnerabilities index does not address the concomitant ability for immigration to offset the financial problems created by the growing demographic imbalance. The degree to which aging generates demand for immigrants also depends on the number of immigrants required to offset increasing dependency ratios.

Furthermore, differences in the stage of population aging will create shortages of labour in some of the most developed states while increasing the supply of labour in other less-developed states. The 2006 United Nations *World Population Prospects* report projected that the proportionate decline of working-age population would begin in Europe, North America and Oceania as soon as 2010, in Asia by 2015 and in Latin America and the Caribbean by 2025. As we have seen, in some regions the decline in working-age population will not only be proportional but absolute. The 2000 report by the United Nations Population Division projected that by 2020 the populations of the world's most developed regions would largely have begun to decline in absolute terms. The need for additional sources of labour in states with aging and declining populations could become a significant pull factor encouraging immigration from less developed states with more youthful populations.

Yet, most all research on the subject concludes that migration is not a viable solution to maintaining population growth, dependency ratios, or retirement systems. The UN report considered both the possibility of "replacement migration" to maintain overall population levels and to maintain the existing support or dependency ratio. It concluded that the magnitude of the immigration that would be required to maintain most populations would be extreme. For example, in order to offset population losses due to below replacement fertility the level of today's immigration would have to be 9 times higher for the United Kingdom, 44 times for Austria and 54 times higher for Japan (Nyce and Schieber, 2001). Most observers agree that the "substituting migration for low fertility requires politically insupportable levels of migration" (Keely, 2002).[8] The numbers required for full replacement would likely have enormously destabilizing effects on social cohesion. And as immigrants age they would, in turn, generate even greater demands on future retirement systems.

Thus, while population aging is likely to create a significant immigration "pull" in many OECD states, it is also clear that immigration is not a sufficient answer to the challenge. It will not be easy to determine how much immigration should increase to address demographic trends, because while

small increases will have minor favorable effects, truly significant increases would obviously generate their own problems. The most agreed-upon conclusion is that aging will generate a selective need for immigrants for the most affected parts of the labour market. These shortages might be general, caused by the decline in working-age populations, or they might be sector-specific. Low-skilled workers may be in demand much as they are today, as well as for the care and support of the elderly. Highly skilled workers may be in demand in sectors that drive economic productivity such as business or research and development.

Network effects

Social networks are the interpersonal linkages that tie migrants to family, kin, community and other social relationships that foster migration. Like theories of world systems and dual labour markets, network theory suggests a path dependency to migration patterns. In the beginning, immigrants who are already established in the new environment can help their relatives and friends make the trip, locate work and get settled. Eventually, social networks sustain migration once started, reducing the costs and risks associated with immigration. We discuss here possible differences in the effect of networks and apply this discussion to examine the possible influence of networks on future trends.

Strong and weak network effects

Scholars and researchers have proposed rival models for predicting the magnitude of the effects of preexisting migration flows on future migration trends. There is room to debate whether networks are in and of themselves a primary pull factor prompting immigration, or if they facilitate flows while other factors are more important – that is networks simply lower the associated costs and risks of migration and increase information transfer between the recipient and source countries. Some observers predict that networks will drive a continual growth in migration flows, while others suggest these flows eventually lead to their own attenuation.

Networks may be incidental to long run migration if, as a weak form of network theory suggests, other factors are more fundamental. By increasing the knowledge of and personal connections to the source country, networks in the recipient country reduce the upfront risk and cost associated with migration. However, migration can be expected to last only so long as the primary incentive that motivates migration remains strong. Emigration choices, according to this analysis, are generally seen as rational decisions by individuals based on their probable economic gain associated with migration

and networks effects would be expected to attenuate with declines in wage differentials.

On the other hand, a strong variant of the network theory suggests that networks can in fact perpetuate migrant flow independent of other pull factors. Advocates of this model claim that once a migration flow has begun it gains a life of its own and may not be easily stopped by policy or even economic changes and disincentives. At the least, networks reduce the cost of migration, but they also structure job markets and are reinforced by a culture of migratory expectations in source countries. Employers may become dependent upon hiring from within immigrant networks and certain industries may become "colonized" by particular immigrant groups. The reinforcing effects of sectorial demand and expectations in source countries could drive immigration in the absence of strong wage differentials

Perpetuating migration or cumulative causation

A seminal formulation of a strong form of network effects Massey and Zenteno make the case for a "cumulative causation" path dependency of migration (Massey and Zenteno, 1999). They argue that projections of emigration based on the assumption of consistent rates by age and sex grossly underestimate actual rates that result from social capital buildup. As individuals immigrate to the same destination, the link between source and destination communities is reinforced. As greater knowledge of and personal experience with, the destination country builds up within the source community, this leads to higher probabilities of immigration for individual community members and a gradual increase in the overall rates of mobility.

In modeling of Mexico-US migration patterns, Massey and Zenteno suggest that the actual rates of emigration from Mexican communities into the US can be expected to increase over time. Their simulations result in far greater growth in the overall Mexican immigration rate into the US over the next fifty years than is predicted by fixed migration-schedule projections based on constant migration probabilities. The authors argue that fixed rate projections such as those conducted by the US Census Bureau underestimate the number of Mexican immigrants in the US in 2050 by a remarkable 85%. Likewise, they suggest, fixed rate projections overestimate the size of the Mexican population at that time by 5%, because they fail to account for the extent to which Mexico will be reduced by high emigration rates. While these projections are based on network momentum alone and no other factors, they appear to be consistent with a general increasing level of Mexico-to-US migration since the 1960s.

Transitory effects and the migration hump

Conversely, a predominantly economic model incorporating the effects of trade on migration between source and recipient countries within a migration network leads to the expectation of attenuating network effects (Martin, 2006). While there is some controversy over the impacts of free trade agreements, most theories predict that they will eliminate the economic incentives for migration over the long run. But empirical research shows that there is often a significant lag time before such effects are observed. In spite of the elimination of tariffs, network effects continue to play a significant causal role for a period of some years as the market adjusts to trade liberalization. This results in a "migration hump" or a period of increased migration immediately following the establishment of free trade.

In the short term, integration creates additional unemployed labour supply within the source country with an incentive to migrate in order to find higher-paying work. Existing networks help facilitate this migration so long as such an incentive exists. The migration hump, Martin (2002:15) explains, is a product of "continued demand-pull in the destination country […], increased supply-push in the origin country as a result of economic integration and [the persistence of] migration networks that can move workers across borders." Thus, existing migration networks initially facilitate mobility as economic conditions improve, but ultimately improved opportunities in source countries reduce migration. For example, the earlier EU expansion that incorporated southern European countries (Spain, Italy, Portugal) in a broadened migration zone did not lead to increased migration because prior economic integration has lowered wage differentials and offset the migration incentive.[9]

The migration hump model suggests that even a moderate account of network effects on international migration – based primarily on wage differentials and the labour market, not only familial or personal reasons for immigration – could lead to the persistence of migration flows along established networks, even for some time under conditions of economic integration. Ultimately, network effects attenuate as economic conditions converge in the receiving and source nations. And wage differentials need not collapse; they need only attenuate so that they are not as great as in the period before trade liberalization. Of course, the general story here has more to do with convergence in economic opportunity whether or not it is generated by liberalization of trade relationships.

Future network pull

Network theories suggest that migration patterns and rates are rooted in the demographic dynamics of both recipient and source countries. In the receiving country, it is immigrants who "pull" potential migrants while, rather obviously,

the source country population provides those potential migrants. On the one hand, absent restrictions in the host country any increase (decrease) in immigrant numbers then should increase (decrease) the number of new arrivals. On the other hand, any increase (decrease) in the source population sets the stage for an expanded (reduced) network of potential migrants. So the impact of networks on migration may depend either upon the growth of the immigrant population in the receiving nation or the potential pool of migrants in the source country.[10]

Which population, that of the receiving or source country, should one consider in projecting the impact of networks on future mobility?[11] Even if network theory implies a pull-side effect of the immigrant population, the notion that networks create expectations (lower costs) for those considering moving suggests that it is the size of potential pool of emigrants that is critical to the number of potential migrants.[12] The strong form of network theory posits that expectations cumulate and actually increase the rate of out-migration – given rapidly diverging population trends between most source and receiving countries, an assumption of increasing emigration rates would translate into nonlinear growth of immigrant populations. The weak form of network theory places no explicit weight on the population growth of migrants in either receiving or host country. Albeit, it would be consistent to expect that networks effects independently drive migration up to a point. Network effects generate expectations among emigrants but one might assume those expectations to be constant over time and not to cumulate – so the rate of out-migration would be constant and future flows would be driven only by the growth in the source country population.

We assume that network effects generate their primary impact on the source country population while adopting the weak expectation that rates of emigration are constant (not accelerating). Projections are made of tomorrow's immigrant population in each receiving country by assuming today's rates of emigration as measured only for the ten largest source countries for each recipient nation. The actual projection is the sum of the product of today's rate of emigration for each leading country multiplied by the independently projected future population of each of those leading source countries.[13] Having made the assumption that it is correct to emphasize the source population in considering future network effects, we make the conservative assumptions that future networks will be dominated by existing binational linkages with constant rates of attraction (emigration) exerted by those networks.

We make this projection in order to rank order nations by the degree to which network effects might generate pressures for a greater or lesser number of future migrants and not as an independent projection of immigration. It is all too obvious that any increase in the number of migrants may be constrained by policies or labour demand. And we readily subscribe to the notion that a full modeling of network effects might best include both receiving and source country populations. But for what we are doing here it

is also obvious that there is no effective way to make mechanical projections of immigration in order to rank nations on the potential "pull" of networks – that would be tautological. For many OECD countries, facing declining population growth rates or declining populations, this fact is extremely relevant. A number of the less developed countries from which these states receive many of their immigrants have both larger populations and higher population growth rates. Projections based solely on domestic demographics might suggest declining migration, whereas it is possible that future migration will be bolstered by significant differences in population growth.

Table 2.8 rank orders OECD nations by our projections of immigrant populations, *i.e.* projections of the change in the immigrant percentage of the receiving population using constant rates of emigration multiplied by the projected populations of major source countries. The ranking itself is based on the column showing the percentage-point change which is the difference between today's immigrant percentage and that projected for 2030. For example, immigrants were 6.5% of the Portuguese population in 2000 and these projections suggest that unimpeded network forces could increase that percentage to 11.6%, or a difference of 5.1 percentage points. Portugal is the OECD country that is projected to have the highest latent network pressures, while Luxembourg is rated as having the least latent network pressure. The major reason for these dramatic differences in rankings is combination of today's rate of emigration, already high in a country like Luxembourg and the mixture of source countries. Thus, Portugal draws on many developing nations which will have robust population growth in the future, while Luxembourg draws many of its immigrants from other European nations with declining populations.

Table 2.8. **Projected foreign-born population assuming constant rates of emigration from major source countries, 2030**

Country	Foreign Born Population %	Percentage point change
Luxembourg	30.6	-5.8
Ireland	9.0	-2.0
Turkey	1.5	-0.9
Australia	26.8	-0.4
Slovak Republic	2.8	-0.1
Poland	2.3	-0.1
New Zealand	22.4	0.0
Mexico	0.3	0.0

Table 2.8. **Projected foreign-born population assuming constant rates of emigration from major source countries, 2030** *(continued)*

Country	Foreign Born Population %	Percentage point change
Hungary	3.4	0.1
Czech Republic	5.5	0.4
Japan	1.5	0.5
Finland	3.4	0.7
Spain	6.2	1.1
United States	14.4	1.2
Austria	15.0	1.2
Switzerland	25.1	1.3
Norway	9.6	1.4
Canada	23.3	1.5
Italy	5.5	1.5
Greece	13.0	2.2
Sweden	16.6	2.3
Netherlands	11.2	2.5
Denmark	10.0	2.7
Belgium	14.9	3.0
United Kingdom	12.4	3.1
France	14.9	3.3
Portugal	11.6	5.1
Germany	--	--
Iceland	--	--
Korea	--	--
Average	11.6	1.0
33rd percentile	5.9	0.3
66th percentile	14.5	1.5

Sources: Author's tabulations, UN data on population projections by age group (Medium Variant Projection), http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3a87; OECD data on foreign born in OECD Countries in 2000, http://stats.oecd.org/wbos/Index.aspx?usercontext=sourceoecd.

The labour market

Current demographic trends have the potential to create a significant labour market demand for immigrant workers. As discussed previously, there will be declining working age populations in the world's most developed countries. How extensive shortages will be depends in no small part on how individual countries develop their labour forces. The size of the workforce is the product not only of the size of the working-age population, but also of the degree to which individuals choose to work. Labour force participation rates, particularly for women and the elderly, can substantively increase the number of workers. Policies that facilitate hiring can reduce unemployment and job vacancies ameliorating labour shortages that would otherwise be caused by demographic trends.

Unemployment and labour market policies

A reduction of unemployment could play a significant role in facilitating labour demand in OECD economies in coming years. Some OECD states have had more persistent problems with high unemployment rates in recent years than others. Unemployment rates are relatively low in the OECD's Asian, Scandinavian and Anglophone members, as well as in Mexico, Switzerland and Austria. Unemployment is significantly higher in some Central and Southern European states, as well as in some of the most significant labour markets of continental Europe. In Western Europe, Germany, France and Finland stand out for their high unemployment rates despite being among the most developed economies of the OECD. While Japan and the United States have only experienced cyclical fluctuations, unemployment rates across Europe have tended to increase.

One conclusion is that policies and institutions matter in determining both a country's level of structural unemployment and its speed of labour market adjustment. It has long been argued that overly generous unemployment benefits and employment protections contribute to increased unemployment and reductions in how quickly labour markets adjust to shocks (Scarpetta, 1996). High European unemployment rates appear to be, at least partly, a result of government policies (*ibid*., Scarpetta, 1996). While the exact effects of particular possible labour market and industry reforms remain unclear, there is reason to believe that some regulatory reforms combined with the increasing labour demand due to demographic pressures could be sufficient to significantly reduce unemployment rates and also increase labour market participation. Compared with the United States and Anglophone nations, Europe may benefit most from the reforms in which it is already engaging (Sapir, *et al*., 2004). However given that many nations face a decline in their working-age population, increases in labour force participation will be a fundamental response to labour shortages.

Female labour force participation

An increase in female workforce participation would have a significant impact on overall labour market participation and the size of tomorrow's labour force. Women are half of the working-age population and in most countries have historically had low rates of labour force participation. In fact, many projections assume that female labour participation rates (FLPR), which have risen notably in past decades, will stay more or less constant in coming years. While lower rates are in some cases a cultural phenomena, in some countries low rates are also a result of "market failures and policy distortions" that create disincentives for women to work (OECD, 2004). There is evidence that reforms in policies surrounding second earner taxes, parental leave, child benefits and part-time work incentives could significantly reduce the gender gap in participation rates during the prime adult years. Nevertheless, while one econometric analysis of OECD countries finds such policy effects, it suggests that female education, general labour market conditions and cultural attitudes remain primary determinants of female participation (Jaumotte, 2003).

Regardless, in some OECD states an upward shift in FLPR is already in evidence particularly among younger women compared with the post-war generation. In the United States younger women already participate at rates similar to males from outset to mid-career suggesting that rates may not go much higher (Nyce, and Schieber, 2001). Research on the EU-15 finds that since 1995 there has been a 1% per year growth in employment per capita as a result of changes in female labour market participation, even controlling for policy and institutional variables. Some researchers argue that social norms regarding female labour force participation are changing particularly across southern Europe (Boeri, *et al*., 2005). Since 1985, female labour force participation rates in Italy and Spain, for example, have been converging with the much higher rates of Scandinavia. Such a process, if it continues and is further encouraged by proactive policies, could play an important role in expanding the labour force in some of the OECD states hit the hardest by aging and shrinking populations (Dew-Becker and Gordon, 2008).

Table 2.9 shows male and female labour force participation rates. In Scandinavian and Northern European countries the gap between male and female participation rates is quite low, followed by Anglophone and Central and Eastern European countries. The gaps tend to be larger in Asian (Korea, Japan), Southern European (Spain, Greece, Italy) and the least developed OECD countries (Mexico, Turkey). Ireland and Luxembourg also stand out for their low relative female participation rates. A set of projections for the 18 most developed OECD nations indicates that increasing female participation will have a substantial impact on increasing the size of tomorrow's labour force (*op. cit*., Nyce and Schieber, 2001). The greatest increases are projected for today's low FLFP countries such as Spain, Italy and

Korea. Nations with already high rates of female labour force participation are projected to remain about the same and to remain higher than the OECD average. The projections of notably increased female participation offsets expected small declines in male participation, leading to a 1.3% growth of the total labour force for these 18 OECD countries by 2030; with growth rates between 5 and 8% for the Netherlands, Spain, Korea and Italy. Thus, the expectation is for a path dependency whereby countries with low female participation rates today will remain lower than average in the future.

Labour force participation of the elderly

However it might be accomplished, simulations demonstrate that increasing "the actual retirement age is, in most but not all cases, the most effective policy measure to compensate (partially) for low or negative population growth" (Holzmann, 2005). Because older persons will be a growing proportion of tomorrow's population, if more of them choose to postpone retirement they can significantly boost the size of the labour force. Research shows that even modest increases in the labour force participation of persons ages 60 and over would substantially contribute to maintenance of the labour force. At the same time, the age at retirement varies widely in different countries and labour force participation, particularly for men, has been trending downward over time.

Table 2.9. **Labour force participation rates**

Country	Select projections, 2030		Labour Force Participation Rate, 2007			Gender Gap
	Male	Female	All Persons	Male	Female	%
Turkey	--	--	52.1	77.1	27.2	49.9
Mexico	--	--	66.1	88.1	46.8	41.3
Japan	89.9	74.1	80.2	93.5	66.8	26.7
Italy	79.5	59.4	63.5	75.9	51.1	24.8
Greece	--	--	68.2	80.7	55.8	24.8
Korea	83.5	72.6	70.6	82.6	58.7	23.9
Spain	81.1	66.4	73.1	83.3	62.6	20.7
Luxembourg	--	--	65.8	75.8	55.5	20.3
Ireland	--	--	73.8	83.6	63.7	19.9

Table 2.9. **Labour force participation rates**
(continued)

Country	Select projections, 2030		Labour Force Participation Rate, 2007			Gender Gap
	Male	Female	All Persons	Male	Female	%
Czech Republic	--	--	70.8	79.3	62.1	17.1
Slovak Republic	--	--	68.4	76.0	60.9	15.1
Australia	86.0	69.4	78.0	85.4	70.5	14.9
New Zealand	84.2	70.6	80.8	88.3	73.6	14.7
Austria	--	--	75.9	83.2	68.7	14.5
United Kingdom	86.2	72.0	78.0	85.3	71.0	14.4
Switzerland	--	--	83.7	90.8	76.6	14.2
Hungary	--	--	62.3	69.5	55.5	14.0
Poland	--	--	64.1	71.2	57.2	13.9
Belgium	74.2	70.4	67.2	73.8	60.4	13.4
United States	84.7	79.4	78.3	85.0	71.7	13.3
Germany	83.1	74.0	76.7	83.2	70.2	13.0
Netherlands	79.3	72.4	77.9	84.0	71.7	12.4
Portugal	84.5	70.0	78.7	84.7	73.0	11.7
France	78.6	69.9	69.9	74.6	65.2	9.4
Canada	80.7	73.5	80.0	84.6	75.4	9.2
Denmark	84.1	79.8	81.5	85.8	77.2	8.6
Iceland	--	--	90.8	94.9	86.4	8.5
Norway	84.6	77.2	81.2	84.4	77.9	6.5
Sweden	86.3	83.6	82.1	84.9	79.3	5.6
Finland	79.2	77.6	76.6	78.7	74.5	4.2
Average	82.8	72.9	73.9	82.3	65.6	16.7
33rd percentile	80.9	70.5	70.3	80.1	61.6	13.1
66th percentile	84.5	74.0	78.0	84.7	71.7	15.4

Source: OECD Labour Data, Labour Force Participation Rates, http://stats.oecd.org/wbos/Index.aspx?usercontext=sourceoecd

There is a substantial literature that addresses this issue complete with considerations of the policies that might induce older individuals to stay in the labour force. The OECD has a number of projects that investigate possible approaches to increasing participation among older workers. Of course, legal changes in the required age at retirement could increase the labour force participation rate of older persons. But workers may opt to retire when pensions are available and distortions that encourage early retirement create implicit taxes on postponed retirement. Restructuring retirement incentives so that workers could realize increased pension payouts might induce older persons to remain in the labour force (Duval 2003). Research suggests that even staying in the labour force no more than four additional years substantially increases retirement pay outs and could largely offset concerns that increasing numbers of tomorrow's retirees will live on inadequate incomes (Munnell and Sass, 2008). Employers would have to have an incentive to continue to employ older workers and that might be facilitated by encouraging life long learning with training programs. Research in the United States also suggests that older workers increasingly desire to stay on the job and that employers can benefit from their experience, save money by avoiding the costs of hiring new workers, as well as benefit from lower employee turnover rates (Towers Perrin, 2008).

Then too individuals are both living longer and living healthier lives. Individuals may need to work longer to ensure enough earnings for their eventual retirement, they will have the health to do so and as mentioned above many desire to continue to work. Projections of demographic change that use alternative measures of age suggest that population aging in the world's most developed countries is not nearly so dramatic as is often thought. One proposal is to use "mortality risk" and "remaining life expectancy" to measure "age" for the purposes of assessing its effects on the potential effects of aging on the population and economy. For example, by conventional standards the fraction of the population that is over 65 years will grow by about 66% in the United States by 2050. However, the fraction of the population that is greater than a mortality rate that corresponds to over 65 years today will grow by only 20% (Shoven, 2007).

It can be argued that reforms should aim to encourage maintenance of constant participation rates over time relative to life-expectancy-based measures rather than chronological age. During the past century, the ratio of retirement length to career length has increased steadily, with the entire increase in male life expectancy contributing to longer retirement rather than longer working years. So if retirement ages do not begin to adjust with lengthening life expectancy, tomorrow's workers could spend as much as 40% of their adult life out of the workforce. If labour force participation rates were held constant relative to remaining life expectancy, individuals would still enjoy the same average retirement length. But the total U.S. labour supply would be 9.6% larger

Table 2.10. **Average years of total and healthy post-retirement**

Country	Life Expectancy, 2003-2006		Life Expectancy, 2030		Retirement Age, 2002-2007		Effective Retirement Years, 2030	
	Overall	Healthy	Overall	Healthy	Official	Effective	Total	Healthy
France	80.0	72.0	83.3	76.0	60.0	59.1	24.2	16.9
Austria	79.1	71.0	82.5	75.1	62.7	58.5	24.0	16.6
Belgium	78.4	71.0	82.2	74.7	60.0	59.0	23.2	15.7
Italy	80.2	73.0	83.1	75.8	57.0	60.8	22.4	15.0
Luxembourg	78.9	72.0	81.6	74.1	65.0	59.6	21.9	14.4
Finland	78.4	71.0	82.3	74.9	65.0	60.6	21.7	14.3
Spain	80.2	73.0	83.5	76.2	65.0	62.1	21.4	14.1
Australia	80.8	73.0	84.2	77.0	64.1	63.4	20.8	13.6
Canada	80.1	72.0	83.4	76.1	65.0	62.6	20.8	13.5
Netherlands	79.1	71.0	82.2	74.8	65.0	61.5	20.8	13.4
Slovak Republic	73.6	66.0	78.2	70.3	62.0	57.2	21.1	13.2
Germany	79.0	72.0	82.1	74.7	65.0	61.6	20.5	13.1
Greece	79.0	71.0	82.2	74.8	58.0	61.8	20.5	13.0
Switzerland	81.0	73.0	84.2	77.0	64.5	64.7	19.5	12.3
United Kingdom	78.4	71.0	82.2	74.8	62.7	62.6	19.6	12.1
Norway	79.4	72.0	83.0	75.7	67.0	63.7	19.3	11.9
Sweden	80.3	73.0	83.5	76.2	65.0	64.4	19.1	11.8
Czech Republic	76.0	68.0	79.8	72.1	60.7	60.6	19.3	11.6
Poland	74.4	66.0	78.9	71.1	62.7	59.7	19.2	11.4
Denmark	77.9	70.0	81.2	73.6	65.0	62.4	18.7	11.2
New Zealand	79.2	71.0	83.3	76.0	65.0	65.3	18.0	10.7

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Table 2.10. **Average years of total and healthy post-retirement**
(continued)

Country	Life Expectancy, 2003-2006		Life Expectancy, 2030		Retirement Age, 2002-2007		Effective Retirement Years, 2030	
	Overall	Healthy	Overall	Healthy	Official	Effective	Total	Healthy
Hungary	72.3	65.0	77.3	69.3	61.1	59.0	18.3	10.3
Japan	82.1	75.0	85.4	78.4	62.2	68.2	17.2	10.1
Iceland	80.6	73.0	84.2	77.0	67.0	67.3	17.0	9.8
United States	77.5	69.0	80.9	73.4	65.8	64.3	16.7	9.1
Ireland	78.5	70.0	81.8	74.3	65.0	65.3	16.5	9.0
Portugal	77.7	69.0	81.1	73.5	65.0	66.1	15.0	7.4
Korea	77.4	68.0	81.6	74.1	60.0	69.9	11.8	4.3
Turkey	71.4	62.0	75.9	67.8	59.5	63.7	12.2	4.1
Mexico	74.1	65.0	79.9	72.2	65.0	73.7	6.1	-1.6
Average	78.2	70.3	81.8	74.4	63.2	63.0	18.9	11.4
33rd percentile	78.2	70.0	81.6	74.1	62.5	61.2	18.5	11.0
66th percentile	79.2	72.0	83.0	75.7	65.0	63.8	20.8	13.2

Source: WHO estimates healthy and total life expectancies, http://www.who.int/whosis/; OECD estimates effective and official retirement ages, http://stats.oecd.org; UN projections total life expectancies, http://data.un.org/Data.aspx?q=Life+Expectancy+2030&d=PopDiv&f=variableID%3a68%3btimeID%3a116%2c117.

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than in projections assuming stable participation rates based on chronological age. In turn, the increased labour supply would result in a 7-10% higher GDP (Shoven, 2007).

We approximate the potential for greater labour force participation among older workers with data on retirement, life expectancy and healthy life expectancy. Table 2.10 shows the official and average effective retirement ages across the OECD during the years 2002-2007.[14] Subtracting these from the healthy life expectancy, we have ranked countries by the average years of healthy retirement enjoyed by former labour force participants. Clearly, some countries hit the hardest by population aging are also in the habit of enjoying very long years of retirement. Of countries among those with the longest healthy life expectancies, only three have average effective retirement ages at or above 65 (Japan, Iceland and New Zealand). On the other hand, of the fifteen countries with lower healthy life expectancies, there are four with effective retirement ages at or above 65 (Mexico, Korea, Portugal and Ireland). Continental Western European countries typically have quite low effective retirement ages, in spite of long healthy life expectancies. This is particularly noticeable in the cases of France, Austria, Luxembourg and Belgium, each with effective average retirement ages below 60 and healthy life expectancies over 70. Italy also has a very long effective healthy retirement, with average retirement at 62 years of age. These patterns are likely to persist with extended periods of healthy retirement of an additional three to four years by 2030.

Education, student mobility and skilled immigration

In today's climate of more rapid technological change a higher rate of general high-level education is needed to maximize economic growth potential. Changes in education within OECD countries have ramifications for future international migration patterns. On the one hand, many OECD countries are interested in attracting more foreign students to benefit their educational systems and to streamline their integration into permanent residency. They are also pursuing more "selective" admission policies to attract highly educated immigrants creating a competition for the "best and the brightest." On the other hand, the domestic output of tertiary-educated students has been increasing in most OECD countries. The European countries in particular are committed to improving their educational strategies. Immigration may complement those strategies, but successfully increasing domestic output should also reduce demand for significant increases in the number of highly skilled immigrants.

International students

International students have become an integral part of the increased global competition for highly skilled foreign workers. Policymakers today

see foreign students as an important component of policies on international mobility, not simply as a part of their educational apparatus and international obligations. Foreign students supply diversity to domestic student bodies, increase the tuition base in many countries, but they are also a valuable pre-socialized source of highly skilled immigrants. While the OECD dominates the global marketplace for international students, there is room to speculate about the future given growing global competition especially in typical, less developed source countries.

Table 2.11. **Foreign students in the OECD area: Top OECD receiving and sending countries, 2001**

Host Country	Foreign Students	Country of Origin	Students Abroad in OECD
United States	475 169	China	124 000
United Kingdom	225 722	Korea	70 523
Germany	199 132	India	61 179
France	147 402	Greece	55 074
Australia	110 789	Japan	55 041
Japan	63 637	Germany	54 489
Canada	40 667	France	47 587
Spain	39 944	Turkey	44 204
Belgium	38 150	Morocco	43 063
Austria	31 682	Italy	41 485
Italy	29 228	Malaysia	32 709
Switzerland	27 765	United States	30 103
Sweden	26 304	Canada	29 326
Turkey	16 656	Indonesia	26 615
Netherlands	16 589	Spain	26 196
Denmark	12 547	United Kingdom	25 198
Hungary	11 242	Hong Kong	23 261
New Zealand	11 069	Russian Federation	22 004
Norway	8 834	Singapore	19 514
OECD Total	1 580 513		

Source: OECD education database.

Today, the OECD countries are the world's major hosts of foreign students and their numbers have doubled over the past 20 years to 1.6 million (OECD, 2004). Table 2.11 shows the top destination countries and the most prominent countries of origin. The total number of foreign students enrolled in tertiary education programs outside their countries of origin worldwide has increased in recent years from 1 875 567 in 2000 to 2 651 144 in 2004. These worldwide totals represent a 41% growth and 84% of that growth occurred in enrollments in OECD countries. Today, about 85% of all students studying outside their countries of origin are found in the OECD.

Foreign students enrolled in tertiary institutions and students from certain sources, concentrate in different countries. Three-quarters are enrolled in just six OECD countries: the United States (30%), the United Kingdom (14%), Germany (13%), France (9%), Australia (7%) and Japan (4%). The majority of foreign students come from non-OECD countries: 43% come from Asia, 35% from Europe, 12% from Africa, 7% from North America, 3% from South America and 1% from Oceania. China alone accounts for 10% of foreign students and India another 4%. Regionally, Europe is the leading recipient region and North America is the most open to other regions. There are 840 000 foreign students studying in Europe and 52% are residents of other European countries. There are 520 000 foreign students in North America (US, Canada, Mexico) and 60% come from Asia alone.[15] Concurrently, 70% of all international Asian students are located in the US, the UK and Australia.[16]

Many factors will shape the ability of individual countries with in the OECD to attract international students. The United States lost some of its share of foreign students following the recession of 2001 and the events of 11 September 2001, but the number of students it admits has been strongly recovering (Lowell, *et al*., 2007). This turn of events has heightened controversy over the effects of increasing international competition for foreign students. Many European and English speaking nations are implementing policies to attract foreign students through streamlined admissions, curricula designed for foreigners;[17] outreach and university marketing programs;[18] and policies to retain students after graduation.[19] Policymakers have become keen to allow for an easier transition from student to worker, especially for science and engineering students. How successful these policies will be depends on many things.

In the first place, while targeted admission policies affect which countries foreign students consider, they are not unlike other migrants in that economic opportunities are a primary motivator. The available empirical research finds that wage differentials are the most important correlate of student flows to North America (Rosenzweig, 2006; Lowell and Khadka, 2008; DeVoretz, 2006). Additionally, the cost of education plays an important role in the decision of where to migrate for the pursuit of a college degree and increases in

tuition costs deter student flows. However, while the competition from other countries depresses some of the student flow to the United States, the major destination of international students, it does not appear to have a consistently significant effect. In short, economic factors matter to students and, thus far, international competition among OECD countries has benefited individual countries but not significantly reconfigured who dominates the "student marketplace."

Looking toward the future, however, educational trends lead some observers to believe that the competitive edge may increasingly go to less developed countries that are the source of the majority of international migrants. The rate of enrollment of students in most countries and particularly in the less developed nations has been increasing significantly in the past decade. For example, a lot of attention has been given to the growing number of engineers and scientists graduated from colleges in India and China. The trend is widespread and is coupled with the growth of research and development capacity, to say nothing of growing employment opportunities for skilled workers in many less developed economies. Even though the pool of potential international students is increasing, will fewer students choose to go abroad for their studies or to stay abroad after graduation?

The available empirical evidence suggests the contrary, *e.g.* that students will continue to go abroad as long as economic opportunities, educational quality and future jobs are better abroad. Again, the available econometric evidence finds that wages are the most important attractor of foreign students, but that there is an interactive relationship between economics and educational capacity. The educational output of source countries is associated with higher numbers of their students going abroad, but at a decreasing rate when interacted with wage differentials. This indicates that, for example, there will be relatively little student migration between two OECD countries that produce high numbers of students and offer similar economic opportunities. But student flows from poorer countries will respond positively to increases in their income or output of students (*op. cit.*, Lowell and Khadka, 2007).[20] So it is rather more likely that the marketplace for foreign students will be growing in size, not diminishing; albeit individual countries may be more or less successful in competing for international students. And immigration policies as well as labour market dynamics are then likely to determine whether foreign students stay in the recipient countries upon completing their degrees.

The highly skilled, tertiary-educated foreign-born population

Policymakers are keenly interested in admitting highly skilled immigrants. The foreign born contribution to the human capital profile of receiving countries results from a process of selectivity which, in turn, is the result

of policies on how immigrant admissions are regulated. But the selectivity of the foreign-born is also the result of the socioeconomic attractiveness of a country and that makes it difficult to separately gauge the success of policies. Arguably, selectivity policies are only a tactic waged in order to succeed in admitting an optimal number of highly skilled immigrants. If human capital is something that is accumulated like other forms of capital, then the foreign-born share of human resources is a rough measure of strategic success, at least for countries which otherwise have few natives who are well educated.

Table 2.12 demonstrates that there is a great deal of variation across OECD countries in the proportion of the adult education that has completed college or tertiary education.[21] The Anglophone and Scandinavian countries, as well as Japan, tend to have large shares of the adult (15 years and over) population that have completed a tertiary education. Over 25% of the adult population has completed a tertiary degree in Canada, Japan, New Zealand and the United States. Just over 20% of the adult population has completed tertiary education in Ireland, Norway, Finland, Belgium, Sweden, United Kingdom, Australia and Denmark. Continental European countries tend to be in a middle range between 10 and 20%, while Central European countries tend to be below 10%.

In most OECD countries the foreign-born are better educated than are the native adult population.[22] On average for OECD countries, 24% of foreign-born adults have completed a tertiary education as compared with 20% of native-born adults. Thirty percent or more of the foreign-born have completed a tertiary education in Ireland, Canada, Mexico, United Kingdom, New Zealand, Norway and Japan. The United States stands out among traditional countries of immigration where the foreign born are not markedly better educated than natives. A few countries in which few natives are tertiary educated have foreign-born populations that are better educated than the native, *e.g.* Turkey, Portugal, Slovak Republic, Hungary and Mexico.

The proportion of the foreign born with a tertiary education is often taken as a measure of their contribution to the skill profile of the host country, as well as an indirect gauge of the success of policy in "selecting" highly skilled migrants. The OECD has created two indexes that differentiate the degree to which the share of tertiary-educated foreign born is a result of the mix of source countries or the selectivity of migrants. If a country admits immigrants from source countries with poorly educated populations, on average, then that should be expected to lower its share of the foreign born with a tertiary education. If a country selects immigrants who are better educated than the average adult in their country of origin, then it is successful in attracting the best and the brightest. By this measure, Canada, Ireland and the United States are most successful in attracting or selecting highly skilled migrants, but so too is Mexico which has rather few immigrants over all.

Table 2.12. **Tertiary educational attainment by nativity**

Country	Tertiary of 15+ population %			Ratio Foreign %		Density %	Share OECD Pop. %		
	Total	Native	Foreign	to Native %	to Average%	Foreign of all Tertiary Population	of total popula-toin	of foreign tertiary	Ratio Foreign to Total
Mexico	12.8	12.8	34.8	2.7	1.5	1.0	8.9	0.4	0.1
Korea	--	--	38.1	--	--	--	4.1	0.3	0.1
Japan	27.8	27.8	30.0	1.1	1.3	1.0	10.8	1.6	0.1
Turkey	7.0	6.8	15.2	2.2	0.7	5.1	6.3	0.9	0.1
Poland	10.5	10.4	11.9	1.1	0.5	2.7	3.2	0.5	0.2
Slovak Republic	10.5	10.6	15.7	1.5	0.7	4.2	0.5	0.1	0.2
Finland	23.3	23.4	18.9	0.8	0.8	2.1	0.4	0.1	0.3
Italy	8.3	8.1	12.2	1.5	0.5	6.1	5.0	1.4	0.3
Hungary	11.0	10.7	19.8	1.9	0.9	5.8	0.9	0.3	0.4
Czech Republic	10.3	10.2	12.8	1.3	0.6	6.4	0.9	0.3	0.4
Spain	18.2	18.0	21.1	1.2	0.9	6.4	3.7	2.3	0.6
Portugal	8.5	7.7	19.3	2.5	0.9	15.3	0.9	0.6	0.7
Denmark	20.1	19.9	23.9	1.2	1.1	7.6	0.5	0.4	0.8
Germany	18.7	19.3	14.9	0.8	0.7	--	7.0	5.7	0.8
Austria	11.0	10.9	11.3	1.0	0.5	14.3	0.7	0.6	0.8
Greece	14.2	14.0	15.9	1.1	0.7	12.1	0.9	0.9	0.9
New Zealand	27.9	27.2	31.0	1.1	1.4	24.6	0.4	0.4	1.1
Netherlands	18.9	18.8	19.2	1.0	0.8	11.3	1.4	1.5	1.1
France	17.0	16.9	18.1	1.1	0.8	12.4	5.2	5.7	1.1
Belgium	23.3	23.3	23.0	1.0	1.0	10.6	0.9	1.1	1.2

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Table 2.12. **Tertiary educational attainment by nativity**
(continued)

Country	Tertiary of 15+ population %			Ratio Foreign %		Density %	Share OECD Pop. %		
	Total	Native	Foreign	to Native %	to Average%	Foreign of all Tertiary Population	of total popula-toin	of foreign tertiary	Ratio Foreign to Total
Iceland	--	--	31.4	--	--	--	0.0	0.0	1.5
UK	21.6	20.1	34.8	1.7	1.5	16.0	5.1	7.7	1.5
Sweden	23.0	22.8	24.3	1.1	1.1	14.2	0.8	1.2	1.5
USA	27.3	27.4	26.1	1.0	1.1	13.9	25.7	46.2	1.8
Ireland	24.7	22.7	41.1	1.8	1.8	18.1	0.4	0.7	2.0
Norway	23.5	23.0	30.5	1.3	1.3	8.1	0.4	1.0	2.4
Switzerland	19.2	18.1	23.7	1.3	1.0	27.7	0.6	1.6	2.5
Australia	21.4	20.0	25.8	1.3	1.1	32.3	1.7	5.0	2.9
Luxembourg	16.0	12.8	21.7	1.7	1.0	49.0	0.0	0.1	3.4
Canada	32.9	31.5	38.0	1.2	1.7	25.8	2.8	11.4	4.1
Average	18.2	17.7	22.7	1.3	1.0	13.1	100.0	100.0	1.2
Percentile, 33%	14.1	12.8	19.1	1.1	0.8	6.4	0.7	0.5	0.5
Percentile, 66%	21.6	20.1	25.8	1.3	1.1	14.3	3.3	1.4	1.3

Source: OECD.Stat
Note: Total population as of 2007 and foreign tertiary-educated population as of 2000.

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Somewhat surprisingly, New Zealand and Australia are not ranked that well in terms of this index of selectivity. The more rough-and-ready ratio of a country's share of tertiary-educated immigrants over the OECD average, shown in Table 2.12, corresponds with the more casual impression that the traditional immigrant and Scandinavian countries are the most successful at selecting immigrants.

However, while selective admission policies are the focus of the competition for highly skilled immigrants, they might be seen in the extreme as a tool for maximizing a country's share of the pool of global human capital – a strategy sometimes known as neuromercantilism. So Table 2.12 ranks the OECD countries by their relative share of the OECD's pool of tertiary- educated migrants. This index is the ratio of each country's percent of the OECD's 17.8 million tertiary migrants relative to each country's percent of the OECD's total population of 1.2 billion. Thus, Japan has 10.8% of the OECD's total population, but only 1.6% of all tertiary-educated foreigners living in OECD countries (ratio = 0.1). Canada's market share of the OECD's highly skilled foreign population, on the other extreme, is 4.1 times as great as one might anticipate from its relative population size. If the global competition is about capturing market share of human capital it is also about importing highly skilled immigrants into the domestic market. Immigrants bring diversity and a qualitatively different human capital from the native type. Countries that are non-selective and have relatively few highly skilled immigrants – and have relatively low rates of domestic tertiary education – may be most likely to demand increased levels of highly skilled migration in the future.

Future of domestic tertiary enrollments and the tertiary population

Even if relatively large numbers of highly skilled migrants are selectively admitted, as in Luxembourg or Australia, a nations' future human capital profile will be primarily the result of trends in its domestic population. The future number of adults with a tertiary education will be predicated upon trends in the number of young people and the rate at which they continue their education in tertiary institutions.[23] As obvious as that is, we discuss below enrollment rates because we do not have projections of completion rates for youth or adults. Just as the historic trend in enrollments and tertiary completion have been upward, the future is likely to see further increases.

The Anglophone and Scandinavian countries, of course, already have high rates of enrollments and some observers think that the rate of college completion is unlikely to get much higher. Yet, there is room for increased tertiary enrollments even in these nations. In Europe since 1999 the Bologna Process has been moving toward the creation of a common "European Higher Education Area" across which academic degree and quality assurance standards will be made uniformly compatible. The Bologna declaration now

has 43 signatories, including 23 of the 30 OECD member countries.[24] (This includes all member states of the EU, Turkey, Russia, Ukraine and all but two members of the Council of Europe.) It is hoped that a shorter, three year, bachelor degree will lead to increased rates of tertiary education among European citizens.[25]

Considering possible trends in the domestic supply of competitive applicants, two contradictory forces are at play within many OECD countries. On the one hand, within the next two decades, the aging of the population currently underway will result in a shrinking of the population of college age youth. This could result in shrinking student populations, a reduction in the supply of future college-educated workers and an increase in demand for foreign students and workers. On the other hand, this trend is countered by an increase in the rate at which students are attending college. While the expansion of tertiary education systems is widespread, increases in tertiary enrollment have been particularly notable in certain countries (led by the Canada and the USA). This trend is expected to continue across the most developed OECD countries in coming years. As a higher proportion of young adults enroll in tertiary education, this could counterbalance population decline among the same age bracket and might lead to equal or increasing overall levels of tertiary enrolment.

To evaluate these countervailing trends, Table 2.13 considers projections of youth populations and future rates of enrollment. We use available UN projections of the population 15 to 24 years of age between 2000 and 2030 (the approximate range of student ages).[26] A report to the United Nations on projected economic growth based its scenarios on the assumption that OECD countries would continue to "move towards the general proliferation of the tertiary education".[27] We use those projections for changes in rates of enrollment. The product of the youth population and the enrollment rate yields the estimated rates of enrollment in tertiary education. This is not an estimate of the completion of a tertiary education; much less an estimate of the type and extent of tertiary education of the student enrollees, but it is directly correlated with both. We are unaware of detailed projections of future college completion rates for all OECD countries and we use these available data as a reasonably proxy.

There are, of course, notable differences between countries. Some countries particularly the traditional immigrant receiving, Anglophone and Scandinavian countries exhibit moderate growth or constancy in the student age population. Of course, this is to some degree a function of the population projections which include a healthy number of second-generation children of the immigrants to these countries. However, in the 22-year time frame of the exercise undertaken here, this is simply factoring in the past. However, the majority of OECD countries will face declining student age populations. In

Table 2.13. **Projected young population enrolled in tertiary education**

Country	Population 15-24			Tertiary Enrollment Rare			Tertiary Enrolled Youth		
	2000 (1000s)	2030 (1000s)	Change %	2000 (1000s)	2030 (1000s)	Change %	2000 (1000s)	2030 (1000s)	Change %
Poland	6 508	3 514	-46.0	53.2	87.8	64.9	346 487	308 379	-11.0
Korea *	919	529	-42.4	57.3	89.4	56.1	52 694	47 339	-10.2
Hungary	1 502	924	-38.5	61.6	90.4	46.9	92 507	83 528	-9.7
Canada	4 128	4 187	1.4	87.8	95.5	8.8	362 447	399 836	10.3
Slovakia	7 656	4 285	-44.0	37.6	74.7	98.6	287 777	319 940	11.2
Finland	660	612	-7.2	70.4	89.1	26.5	46 463	54 538	17.4
Czech Republic	1 559	958	-38.6	41.0	78.4	91.3	63 869	75 060	17.5
Greece	1 585	1 078	-31.9	42.3	78.7	86.1	67 031	84 878	26.6
Australia	2 621	2 960	12.9	72.9	90.0	23.5	191 083	266 376	39.4
Germany	9 163	7 355	-19.7	46.1	80.1	73.8	422 407	589 118	39.5
Belgium	1 232	1 153	-6.4	56.3	83.9	49.0	69 340	96 769	39.6
United States	39 234	47 835	21.9	80.9	93.0	14.9	3 174 035	4 446 217	40.1
Spain	5 848	4 982	-14.8	47.8	80.8	68.9	279 527	402 330	43.9
Japan	16 100	10 227	-36.5	35.0	81.1	131.7	563 490	829 412	47.2
Portugal	1 481	1 109	-25.1	38.8	77.4	99.5	57 452	85 865	49.5
Austria	954	844	-11.5	47.4	80.6	70.0	45 203	68 022	50.5
Italy	6 686	5 455	-18.4	42.3	78.7	86.1	282 821	429 303	51.8
France	7 670	7 718	0.6	51.0	81.9	60.6	391 165	632 095	61.6

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Table 2.13. **Projected young population enrolled in tertiary education**
(continued)

Country	Population 15-24			Tertiary Enrollment Rare			Tertiary Enrolled Youth		
	2000 (1000s)	2030 (1000s)	Change %	2000 (1000s)	2030 (1000s)	Change %	2000 (1000s)	2030 (1000s)	Change %
Norway	543	609	12.2	58.6	84.7	44.5	31 807	51 569	62.1
Netherlands	1 886	1 860	-1.3	48.0	80.8	68.3	90 515	150 314	66.1
Denmark	611	629	2.9	48.2	80.9	67.7	29 440	50 819	72.6
New Zealand *	527	600	13.9	58.8	89.9	53.0	30 958	53 938	74.2
United Kingdom	7 162	7 697	7.5	49.6	81.4	64.1	355 242	626 520	76.4
Sweden	1 026	1 138	11.0	46.7	80.3	71.9	47 891	91 403	90.9
Mexico *	20 063	18 089	-9.8	23.4	53.6	129.4	468 485	968 821	106.8
Ireland	650	718	10.5	39.6	77.7	96.2	25 742	55 818	116.8
Iceland	43	43	1.4	35.4	76.2	115.1	1 512	3 296	118.0
Luxembourg	50	68	34.3	50.0	81.6	63.1	2 521	5 521	119.0
Turkey	13 610	13 303	-2.3	22.6	52.2	131.0	307 337	694 038	125.8
Switzerland	839	835	-0.5	32.6	75.2	130.5	27 357	62 721	129.3
Average	5 417	5 044	-8.8	49	81	73.1	273 820	401 126	55.8
33rd percentile	995	889	-16.4	42	79	62.0	50 629	72 034	39.5
66th percentile	5 940	4 201	1.4	51	82	86.1	283 515	331 126	67.0

Sources: UN 2000, 2008; OECD 2008; calculations by authors.
* projected enrollment rate imputed by authors based on linear trend of other OECD nations.

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some cases this decline will be quite rapid particularly in Central European, Asian and South European OECD member states.

At the same time, the changes in enrollment rates can be quite remarkable. By 2030, the lowest gross enrollment ratio in the OECD, that of Switzerland at just 33%, is projected to grow to 75%. The country with the current highest tertiary enrollment rates is Canada at 88% and it is, nevertheless, projected to increase to 96%. The most rapid growth in enrollment rates will likely occur in those developed countries in which enrollment rates have previously stayed relatively low. The most extreme increases are projected to be Japan, Switzerland and Iceland. On the other end of the spectrum, states that have already reached high enrollment rates have less room to increase. Notably, Canada, the USA, Australia and Finland already have very high enrollment rates; above 70%. Taken into account beside population trends, this could mean that these countries will face more rapid leveling out of net student enrolments.

The countries in Table 2.13 are sorted by their ultimate projected tertiary enrollment which partly obscures the fact that the student-age population will be declining in most OECD countries. In contrast, all countries are expected to experience increasing rates of tertiary-enrollments and that cancels out the casual expectation that the future tertiary-educated population will also decline in size. On average, the student tertiary-aged population is projected to decline by -9% by 2030. At the same time, the projected increase in rates of enrollment is quite substantial, averaging an increase of 73% of the OECD countries. In turn, the magnitude of this increase effectively counters the falling size of the student-age population yielding an increase of 47% in the size of the enrolled population on average by 2030. Thus, Japan is projected to face a 37% decline in its student-aged population, but increases in its enrollment rates yield a projection of a 47% growth of its tertiary-enrolled population. The United States which is projected to have a favorable 22% increase of its student-age population is projected to have an even greater 40% increase it its tertiary-enrolled population. Most countries by these projections will have a much better educated population in the future.

Health factors

Many observers believe that there are already shortages of healthcare workers in many OECD countries and that, particularly in countries with rapidly aging populations, there are likely to be more widespread shortages in future years. There is likely to be an increased demand for both intensive medical care and a variety of related services for the elderly. Assuming a demand for healthcare services that may not be met by domestic supply, many OECD countries are likely to make efforts to address the fundamental causes of weak supply. However, given the long duration of training for the most skilled medical professions, it is unlikely that domestic policy changes to

encourage training or even retention will result in a rapid enough turnaround to completely remedy near term shortages. If shortages prove to be as great as some projections indicate, immigration of foreign healthcare workers is likely to play a role in meeting the health care demands (OECD, 2004).

Anticipating shortages of doctors and nurses

In the next 20 years, OECD countries will face new challenges meeting their domestic demand for health care workers. This is a result both of increases and changes in the nature of demands for health care and of some possible reductions in supply as well. As a the elderly population grows there will be an increase in the need for certain kinds of medical care, especially long term care and associated services. At the same time, as the proportionate (and in some cases, overall) population of youth decrease, this could potentially reduce the supply of healthcare providers at all skill levels. Shortages are anticipated medical personnel or caregivers of various sorts, particularly nurses and providers of home care for the elderly.

Significant changes in health care demand are driven by changes in the health of the population. Current factors contributing to increased demand for medical care in some OECD countries include the prominent health problems caused by obesity, sedentary lifestyle and bad diet. Change in population health becomes a significant factor when considering longer term trends related to the demographic shift underway across the most developed countries. As populations age, even greater increases in health care demand can be expected targeted at the growing elderly population. The demographic shift also brings with it a demand for particular types of health care. In an aging population, the need for long term and direct care targeted at the chronically ill will become ever greater. The OECD countries have completed their epidemiological transition. In the Americas, Europe and the Western Pacific, the rate of mortality due to non-communicable diseases already far outstrips that due to all other reasons put together (UN-DESA, 2007).

Cultural shifts in the provision of care for the elderly complicate the picture. As one UN study points out, "family- or community-based informal support for older persons is under growing pressure due to falling fertility rates, smaller family sizes, increased longevity of older persons and changing cultural norms regarding caring for older persons (UN-DESA, 2007, p. 116). As smaller families become increasingly unable to provide the necessary care for aging and chronically ill relatives, the demand for long term care provision will likely continue to grow. Unlike traditional hospital-based work structured around physician visits by patients or hospital stays at times of acute illness, long term care requires more constant supervision of patients. This sort of "direct care" can be provided at nursing homes by nurses or other health care workers at patients' places of residence. Even in countries

without severe physician or nurse shortages, there is often an unmet demand for lower-skilled long term care providers.

There are concerns about future supply of workers to meet the growing demand. The last fifteen years have seen a slowing of the growth rate of the density of physicians and nurses across OECD countries. While from 1975 to 1990 physician density growth averaged 3% per year, from 1990 to 2005 this number declined to 1.6%. Similarly, increases in the density of nurses went from 2.6% to 1.6%. While it could be argued that perhaps the slowing of supply growth could be a reaction to market saturation, there is evidence that this slowing has occurred in spite of increasing demand. There are many possible reasons for the slowing growth; one reason has been the existence of caps on the numbers of students that can enrol in training programs for medical professions in some European nations. In the United States, inadequate capacity has led many schools to turn away nursing applicants.

At the same time, the structure of work has been changing. Doctors and nurses have begun to work fewer lifetime hours, meaning that a larger number of physicians are required to meet the same level of health care demand. Some countries have been affected by policy reforms reducing the weekly hours required of medical professionals (this is true in the EU and the USA). The feminization of the medical workforce might also contribute to reductions in lifetime hours. On average, the percentage of physicians who are female has increased from 28.7% to 38.3% in the last 15 years. As female doctors tend to work fewer weekly hours or have shorter working careers this too may have decreased the supply of medical care. Other recent changes include the tendency toward a greater degree of specialization and more overall health care activity for each patient (tests, referrals, specialist consultation). Across the OECD, the average ratio of specialists to general practitioners rose from 1.5 to 2.0 between 1990 and 2005. All of these trends contribute to a growing concern about future shortages of medical care workers in several categories (*op. cit*., OECD-ELSA, 2007).[28]

Domestic solutions to shortages

Shortages of healthcare workers can be met in many ways and it is likely that a number of different approaches need to be taken. Of course, the immigration of foreign medical professionals is embraced by some policy makers as one attractive solution. International migration of health workers is already helping some countries meet healthcare labour market demands and it is likely that the increasing demand for certain types of health care workers will be an important pull factor affecting international migration flows of health professionals in coming decades (OECD, 2008).

Domestic policies and employ strategies will impact supply and demand. If a country increases the rate at which it trains domestic doctors, nurses and caregivers, it will have less need of immigrants. There actually was a decrease in the overall production of medical professionals in many OECD countries in the 1980s and early 1990s. And in several countries a dramatic increase in the immigration of medical professionals occurred in the late 1990s. But despite an upswing in the number of students being trained since the mid-1990s, the average number of medical students graduating annually across the OECD in 2005 was still below the level it had reached in 1985.[29] This "U-shaped curve in training" was in part a result of caps placed by countries on either student-intake rates or on funding for medical education programs.

Importantly, initiatives might aim to improve retention rates among existing medical personnel, improving the workforce organization and increasing incentives for workers to continue work (Simoens, and Hurst, 2006; Simoens, *et al*., 2005). Special focus is needed on remote rural locations and other areas facing particular scarcities of healthcare workers. Improved working environments and benefits could be used to encourage retention of nurses and other workers that often leave the workforce early. Employers may also be open to reentry into the medical workforce fore workers who have left it previously. Productivity of existing medical personnel could also potentially be improved in some countries by linking the level of pay more directly to performance.

Projections of healthcare demand and shortages

We could not find any detailed projections of shortages for a large number of countries, particularly out to 2030. Individual national studies can be relatively detailed, however, they are too few and different methodologies make comparison difficult. Compounding the problem is the lack of projections for other than physicians or nurses or, conversely, the aggregation of all types of healthcare workers; or separate projections only for the future of long-term healthcare services (Lowell and Dumas, n.d.). There are several approaches to estimating the future healthcare labour force: needs-based planning, personnel-to-population ratios, service targets, demand-based approaches, extrapolating school admissions and benchmarking (Zurn, *et al*., 2002). Also complicating the picture are the many different ways of assessing "shortages" from unemployment and vacancy rates, to the uneven provision of services by geography or income class, to problems with retention that reduce potential supply. Indeed, "it is clear that imbalance in the health workforce encompasses a large range of possible situations and is a complex issue" (*op. cit*., Zurn, *et al*., 2002).

One approach using personnel-to-population ratios through 2050 included regional estimates of the percentage of the workforce that would need to be in healthcare in order to provide different levels of care (Matthews, *et al*., 2006). It found that the projected growth in the number of healthcare workers would

grow more slowly in Europe than in North America, but that both regions would converge in the number of workers by 2050. At the same time, conservative projections to 2025 for the percent of the total workforce needed to maintain current levels of healthcare ranged from a low for Southern Europe of 7.9%, 9.2 for Northern Europe, 9.6 for Japan, 10.1 for Western Europe and 11.6% for Northern America. Roughly, this suggests that labour forces that already have about 10% of workers in healthcare are well positioned to meet this projection of tomorrow's increased level of demand. Of course, that must be taken with all of the caveats discussed above of how future supply will meet demand.

From another angle, a World Health Organization study contrasts need- and demand-based methods of projecting global physician shortages (Scheffler, *et al*., 2008). Examining data from 158 different countries between 1980 and 2001, it used two alternative models. A needs-based model assumes that a minimal necessary number of physicians per capita would be the number sufficient to

Table 2.14. **The population density of all physicians and nurses and the percent of foreign-born working in the healthcare industry**

Country	Percent of Foreign Workforce	Density per 10 000 population, 2006*		Ratio to top quintile of density, 2006	
	Health and other community services	Physicians (all)	Nurses and midwifes (all)	Physicians (all)	Nurses and midwifes (all)
Mexico	--	18	23	0.49	0.19
Turkey	--	16	29	0.44	0.24
Greece	2.3	50	33	1.36	0.28
Korea	--	16	38	0.44	0.32
Portugal	8.0	34	46	0.93	0.39
Poland	9.3	21	51	0.57	0.43
Hungary	8.2	28	59	0.76	0.50
Slovakia	8.6	31	66	0.84	0.55
Italy	4.7	38	70	1.03	0.59
Austria	9.4	35	72	0.95	0.61
France	9.8	34	74	0.93	0.62
Spain	2.8	38	74	1.03	0.62
Finland	13.9	27	80	0.73	0.67

Table 2.14. **The population density of all physicians and nurses and the percent of foreign-born working in the healthcare industry**
(continued)

Country	Percent of Foreign Workforce	Density per 10 000 population, 2006*		Ratio to top quintile of density, 2006	
	Health and other community services	Physicians (all)	Nurses and midwifes (all)	Physicians (all)	Nurses and midwifes (all)
Czech Republic	6.2	36	81	0.98	0.68
Canada	--	21	87	0.57	0.73
Netherlands	14.6	37	89	1.01	0.75
Japan	--	21	95	0.57	0.80
Australia	--	28	97	0.76	0.82
Germany	9.9	34	97	0.93	0.82
New Zealand	--	21	102	0.57	0.86
United States	8.5	24	104	0.65	0.87
Sweden	19.1	35	107	0.95	0.90
United Kingdom	15.7	24	123	0.65	1.03
Iceland	--	37	140	1.01	1.18
Switzerland	13.2	38	141	1.03	1.18
Belgium	10.4	40	148	1.09	1.24
Denmark	20.2	36	150	0.98	1.26
Ireland	10.8	28	152	0.76	1.28
Luxembourg	7.4	25	159	0.68	1.34
Norway	25.4	37	310	1.01	2.61
Average	10.8	30	97	0.82	0.81
20th percentile	13.7	37	119	1.00	1.00
33rd percentile	8.5	26	73	0.71	0.61
66th percentile	10.7	35	102	0.96	0.86

Source: Workforce, 2000 or nearest, OECD.Stat; Density, 2008, OECD.Stat; WHO data for some density values.

Note: Workforce percent estimated Estimate for the United States from industry data, 2000.

have a physician present at 80% of live births. This is a base line or minimal level of care (and is implicitly estimated to provide baseline expectations for less developed African nations). A demand-based model, on the other hand, is based on the economic demand for physicians that has historically been closely associated with increases in per capita income, *i.e.* as individuals earn more then tend to consume more health services. The projections of supply are extrapolations based on the relationship between the number of physicians and per capita income. The study's results indicate that the *global* supply of physicians in 2015 will be in balance with the demand model and greater than necessary to meet the basic needs requirement. However, while no European country is projected to experience needs-based shortages; ten are projected to have demand-based shortages as are the North American countries.

Immigrants in healthcare

Table 2.14 shows data on the percentage of just the foreign-born workforce found in the healthcare industry, as well as measures of the density per 10 000 populations of physicians and nurses in OECD countries. The percentage of workers employed in the healthcare sector is a loose gauge of whether enough workers exist to meet demand. Based on the above estimates, percentages roughly around 9 to 10% suggest that a country is already employing workers at a level commensurate with the provision of health services to meet longer run demand. The figures shown here are for workers in the healthcare industry as comparable data are unavailable by occupation. These data are worthy of analyses that we will not undertake here and we note only that the healthcare sector is a specialized niche for women migrants which has analytic and policy ramifications.[30] Nursing and long-term healthcare occupations in particular are known to employ women.[31]

Density or the relative number of workers is a preferred measure of capturing minimal (and maximal) levels of service provision in healthcare. The density of physicians and nurses in the OECD countries ranges from 16 to 42 per 10 000 population in Turkey and Belgium respectively. The range of nursing ratios is yet more dramatic running from 9% to 195 per 10 000 population in Mexico and Ireland respectively. There is a low correlation between physician and nursing density ($r = .29$) which suggests that the mix of health services is met differentially by more or less of one type of provider. Canada has a very high nursing density, but a rather low physician density. Greece has a very low nursing density, but a very high physician density. Naturally, this complicates any assessment of how the needs of an aging society will be met. It is the case; however, that nurses are more likely to be the provider of choice in long term care settings. That suggests that shortages of nurses might be somewhat more acute to meeting the combined demands of both general and long term healthcare.

Table 2.14 ranks the OECD countries by their density of nurses relative to the upper quintile of the nursing density distribution for all OECD countries. This is not quite adequate to the task of assessing future shortages, but is squarely addresses the current level of provision relative to a benchmark estimate of future demand (*i.e.* the highest densities seen today). Once again, this ranking is highly correlated with the percent of the immigrant workforce employed in the healthcare sector which, in this context, implies that nations that are employing immigrants in healthcare benefit with improved delivery. Mostly, note that even while Mexico and Turkey have low densities relative to the benchmark, so too do France and Germany. Interestingly, all of the traditional countries of immigration – Canada, Australia and the United States – are found in a middle range of nursing densities. Countries in the upper quintile of nursing densities include the Scandinavia countries of Sweden and Norway, as well as the newer countries of immigration Ireland and the United Kingdom. These latter countries have the highest shares of their immigrant workforces employed in the healthcare sector of the OECD.

A growing literature on this issue addresses the labour rights, regulatory challenges and management imperatives of large immigrant workforces in healthcare (Bach, 2003; Forcier, *et al*., 2004; Stilwell, *et al*., 2004). If not accompanied by increasing domestic output of trained professionals and more efficient use of the existing healthcare workforce, immigration might create a dependency that would slow domestic responses. Targeted immigration policies may work best, *e.g.* those that facilitate the employment of foreign medical personnel in under served areas, select for admission foreign educators to boost domestic training capacity and policies that streamline certification of foreign medical graduates. The development of more advanced forms of nursing certification, could contribute to a "more efficient skill mix" in the health care labour market.

Integration policies

There are factors "other" than those discussed thus far that might impact the immigration pull of OECD countries. Obviously, world altering events, terrorism, or wars might stop international mobility cold. Certainly, the events of 11 September 2001 in the United States led to a short-term decline in tourism and, perhaps, other forms of mobility. Of course, a near simultaneous recession also depressed migration as economic downturns generally do. As we write this paper the global financial crisis is being discussed as potentially as calamitous as the great depression of the 1930s. If that were to occur it is likely that migration would ebb for a lengthier time. But it is very difficult to forecast such events as they are extremely rare (Smil, 2005).

We can assert with some what greater confidence that changes and variation in immigration, as well as the policies affecting integration, are likely to

play a significant role in encouraging or discouraging future migration flows. After all, policies may be more or less successful in attracting immigrants or mediating societal reaction to newcomers. Policies to admit immigrants can determine both the number and the skill composition of immigration flows which, in turn, impact natives. Policies on the integration side impact how well immigrants do and the how they are perceived by the electorate. Nevertheless, we aim to assess likely pressures bearing on policy makers in the future, not to think through policy implications and policy options.

Integration policies and integration

Individual attitudes toward migration are shaped by their experience of immigrants and, ineluctably, by the policies that affect immigrants. Research finds that natives are substantially less welcoming towards immigration if they are in competitive labour markets or perceive foreigners as burdens on the welfare system (Bauer, *et al*., 2000). Increases in immigration can reduce natives' openness to further immigration (Hanson, 2005). These discontents may work themselves out through interest group politics, but that hardly changes the likelihood that policymakers of the future may face pressures that are generated by the policies of today.

Policymakers are aware of the peril of the failure to integrate new immigrants. Riots in France and discovery of terrorist cells within émigré communities in several OECD countries have brought widespread public attention. There has been an increasing concern about the existence of culturally, socially or economically isolated communities of immigrants within recipient countries. If countries are unable to integrate new immigrants into the social and economic fabric of their societies, policymakers in coming years are likely to face popular pressure to limit the numbers of immigrants permitted. Some governments – especially those facing demographic or labour market forces that favor heavy in-migration – might deal with this challenge by crafting policies explicitly aimed at the better social integration of immigrants. Albeit, previous success integrating immigrants and a favorable policy environment does not ensure that future immigration flows will not lead to social or economic instability and political backlash. In countries where migration in-flows are expected to increase significantly in coming years, even the best structural conditions could prove inadequate to facilitate the rapid acceptance of disproportionate new immigrant populations.

Naturally, there is significant interest in integration policies and substantial body of research on the issue. We do not have the space of an adequate review and, regardless, there is substantial debate over the issue. As might be expected, economic integration is generally perceived as the most basic hurdle for successful integration. Immigrants who are able to find employment and earn wages commensurate with their skills are almost always better integrated

along linguistic, educational, social, political and cultural dimensions. That is, of course, somewhat of a chicken and egg observation because better educated persons are better able to achieve economic integration. But it is readily acknowledged that barriers to integration hinder economic success and this fundamentally undermines fuller integration on other important dimensions – including the achievement of successful multicultural outcomes.

Furthermore, we know of no serious efforts to project the success of immigrants of tomorrow to integrate into receiving societies. Instead, we review here two indexes that attempt to dynamically evaluate current progress toward integration. The one approach is to consider economic integration into labour markets, the other approach is to construct an index with subscales that cover a range of integrative outcomes.

First, the OECD regularly reviews the labour market outcomes of immigrants in its member countries and each yearly report of its *International Migration Outlook* generates more information and more sophisticated measures. On a yearly basis, most reports present as much data as possible on the occupational and industrial composition of immigrant populations, as well as their relative rates of unemployment and underemployment. The 2003 report presents first-ever data on comparative native-immigrant wage outcomes, as well as a "scoreboard" of progress in immigrant employment outcomes over a five-year period by gender and compared with the native-born population. It is based on the labour market indicators of the employment rate, the participation rate and the unemployment rate. In Table 2.15 below we show only the ranking assigned based on an assessment of the immigrant employment rate in 2006, the employment rate corrected for education differences with natives; changes in the immigrant employment rate over the last five years; and changes in the gap between the immigrant and native employment rates over the last five years.

By this ranking some countries have experienced worsening conditions over the past five years (2001-2006). In France, the immigrant employment rate fell by 1.4 percentage points and by 3.4 points in the Netherlands. In Belgium only one immigrant in two was employed in Belgium, although it made progress with respect to women. In Austria, on the other hand, conditions have been deteriorating in both absolute and relative terms. Switzerland has the highest immigrant employment rate in Europe. The countries of Southern Europe also do relatively well, perhaps because their immigration is fairly and more driven by admissions for the labour market. The non-European members of the OECD, in particular the traditional countries of immigration such as the United States and Australia, tend to have the best labour market integration. Another effort to create an integration index has been undertaken by the British Council. Its Migration Integration Policy Index (MIPEX) builds on over 100 indicators and builds subscales for labour market access, family

Table 2.15. **Indicators of immigrant integration**

Country	Unemployment Rate			Employment Improvement Index		Integration Policy Index		
	Natives	Foreign Born	Ratio Foreign to Native	2006 rank	Education Control	Overall	Labor Market	Labor with Imputed
Sweden	6.2	13.4	2.2	12	12	88	100	100
Portugal	8.0	9.8	1.2	2	4	79	90	90
Spain	8.1	11.2	1.4	5	5	61	90	90
Italy	6.7	8.5	1.3	9	11	65	85	85
Australia	4.1	4.7	1.1	6	7	--	--	80
Canada	6.4	7.0	1.1	--	--	67	80	80
New Zealand	4.8	6.0	1.3	--	--	--	--	80
United States	5.3	4.4	0.8	4	2	--	--	80
Belgium	7.0	17.3	2.5	20	20	69	75	75
Switzerland	2.8	8.0	2.9	1	1	50	75	75
Finland	8.7	18.1	2.1	15	15	67	70	70
Iceland	--	--	--	--	--	--	--	70
Netherlands	3.8	10.7	2.9	16	16	68	70	70
Norway	3.0	8.3	2.7	8	3	64	70	70
United Kingdom	5.1	7.6	1.5	8	9	63	60	60
Slovakia	--	--	--	19	18	40	55	55
Czech Republic	7.1	11.5	1.6	14	9	48	50	50
France	9.0	16.2	1.8	18	19	55	50	50
Germany	10.4	17.0	1.6	17	14	53	50	50
Ireland	4.2	6.0	1.4	3	7	53	50	50
Austria	3.8	9.8	2.5	11	10	39	45	45

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Table 2.15. **Indicators of immigrant integration**
(continued)

Country	Unemployment Rate			Employment Improvement Index		Integration Policy Index		
	Natives	Foreign Born	Ratio Foreign to Native	2006 rank	Education Control	Overall	Labor Market	Labor with Imputed
Luxembourg	3.3	6.5	2.0	6	6	55	45	45
Denmark	3.7	7.5	2.0	10	13	44	40	40
Greece	9.0	9.4	1.1	7	8	40	40	40
Hungary	7.5	7.0	0.9	13	17	48	40	40
Japan	--	--	--	--	--	--	--	40
Korea	--	--	--	--	--	--	--	40
Mexico	--	--	--	--	--	--	--	25
Poland	--	--	--	21	21	44	25	25
Turkey	--	--	--	--	--	--	--	25
Average	6.0	9.8	1.7	11	11	57	62	60
33rd percentile	4.3	7.6	1.3	7	7	50	50	48
66th percentile	7.1	10.2	2.0	14	14	64	70	71

Sources: Migrant Integration Policy Index, http://www.integrationindex.eu/; OECD, 2008, http://dx.doi.org/10.1787/427612120345; OECD, 2008, http://dx.doi.org/10.1787/427620785702

Note: Imputed values are assigned to be comparative with similar countries and most likely tranche, *e.g.* for Australia, New Zealand, Canada, Iceland, Japan, Korea, Mexico and Turkey.

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reunion, long-term residence, political participation, access to nationality and anti-discrimination. The findings show that the EU-25's integration is only "halfway to best practice," *e.g.* that there is substantial room for improved integration. Just Sweden was assigned a "best practice" on every single indicator, but just for labour market access. Nine countries out of 28 in the index had policies that are considered to be partly favorable – the Nordic countries, the Western Mediterranean, the Benelux countries, Canada and the United Kingdom. At the same time, five countries fall in the middle with mostly unfavorable integration, *i.e.* Latvia, Cyprus, Greece, Slovakia and Austria. The ten lowest ranked countries on the index are found in the Baltic Republics, the countries of the Eastern Mediterranean, Central Europe and Denmark.

Table 2.15 shows the OECD's "scoreboard" of employment and the MIPEX's total and labour market indexes. The countries are ranked by the MIPEX's labour market score because it is highly correlated with the MIPEX's overall score ($r = 0.84$) and because we can impute country scores (in bold) based on the "scoreboard" and by inference from the characteristics of immigrants in the missing countries. The imputation is a somewhat hazardous exercise sure to excite some, but it seems unlikely that we have grossly misallocated countries not otherwise included in the MIPEX in terms of the tranches of high, medium and low integration. Of course, the rankings are the same as those just discussed above with most of the traditional countries of immigration, along with Scandinavia performing best (not including Denmark). At the other end of spectrum, Poland ranks lowest and we include here Turkey and Mexico primarily because their relative number of immigrants is so very small.

A note on admission policies

How many and what types of immigrants enter a country is, in no small part, a consequence of admission and selection policies. While it is widely thought that more skilled or educated immigrants will be the most successful at integration, there is relatively little research on the range of policy elements that might affect the best overall composition of the immigrant stream.

Immigrants are typically admitted for one of three reasons: family reunification, employment or skills and for humanitarian purposes. Obviously, different criteria apply to each and, furthermore, nations use different mechanisms to regulate the number of kind of immigrant admitted in each of the three classes. One study of admission classes makes the following point:

Natives in countries that receive predominantly refugee migrants are relatively more concerned with immigrations impact on social issues such as crime than on the employment effects. Natives in countries with mostly economic migrants are relatively more concerned about losing jobs to immigrants. However, the results also suggest that natives may view immigration more

favorably if immigrants are selected according to the needs of the labour markets (Bauer, *et al*., 2000).

These observations neatly summarize parallel shifts in policies in many OECD countries. European countries have more comprehensive welfare than the United States and some have limited asylum seekers and migrant access to the labour market; in part, one result has been difficulties in labour market integration and social tensions. They have taken steps to shift policies to limit asylum seekers. At the same time, immigrant admissions that favor more employment-based or economic migrants can generate fears of job competition, but if employment policies are well designed, they can allay those fears. Indeed, there is now a commonplace belief that employment-based migration is more readily manageable and preferable.[32]

A transformation of admission policies towards emphasizing the selection of highly educated and highly skilled immigrants is already underway in many OECD states. The extent to which a country selects for and attempts to attract, highly skilled immigrants is a particularly significant aspect of migration policy. In coming years, these "selection policies" could alleviate some of the expected labour market shortage effects of the demographic shift in developed countries (Koslowski, 2008). In addition to their potential economic contributions, highly educated and skilled immigrants are preferred to lower skill groups for reasons of social cohesion. Highly skilled immigrants tend top readily integrate socially and economically. In fact, some state policies suggest a competitive posture, trying to out-compete other states in attracting high skilled immigrants – the immigrants being viewed as a scarce resource in the global system.

Migrant admission policies impact integration and social acceptance. There are broadly two issues of importance: *(1)* admissions mechanisms that regulate the number of migrants and protect domestic labour; and *(2)* migrant rights in the labour force, as well as rights to permanent residency (and ultimately citizenship) (Lowell, 2005). Numbers that do not vary with the economy are likely to adversely impact domestic workers during downturns, while leaving employers frustrated in upturns. That, in turn, has the potential for exacerbating social pressures and policy flip flops. Migrant rights are important because they condition the path toward integration. In this regard, the trend toward "temporary" admission programs for skilled workers can create a probationary period that, ultimately, makes integration lengthier and more difficult over all (Ruhs, 2006).

There may be more competitive admission policies in the future precisely because some policymakers have become enchanted with the idea that they are necessary in a competitive, global economy. If they are poorly managed, however, they could create imbalances in the labour market and native resentment which could lead to a second round of more restrictive policies.

Table 2.16. **Pull factors affecting the number of migrants: H = high pull, M = medium pull, L = low pull; and ranked by giving economic pull half weight**

	Net migration	Ratio per capita GDP	Depend-ency ratio	Change working ages	Net-works	Female labor	Years post-retire	Integra-tion		Mode	Demo-graphic pull (50%)	Eco-nomic pull (50%)
Australia	H	H	H	L	H	M	H	H		H	2.4	2.8
Finland	M	H	H	H	M	L	H	M		H	2.4	2.6
Netherlands	M	H	H	H	L	L	H	M		H	2.4	2.6
Austria	L	H	H	H	M	M	H	L		H	2.3	2.6
Japan	M	H	H	H	M	H	L	L		H	2.3	2.6
Luxembourg	L	H	L	L	H	H	H	L		L	1.7	2.4
Ireland	L	H	L	L	H	H	L	M		L	1.6	2.4
Denmark	L	H	M	H	L	L	M	L		L	1.8	2.3
United States	L	H	L	L	M	M	L	H		L	1.6	2.3
Belgium	H	M	M	H	L	M	H	H		H	2.5	2.2
Italy	M	M	M	H	L	H	H	H		H	2.5	2.2
Korea	H	M	H	H	--	H	L	L		H	2.3	2.2
Iceland	L	H	L	M	--	L	L	M		L	1.5	2.2
Switzerland	L	M	H	H	M	M	M	H		M	2.3	2.1
Spain	L	M	M	M	M	H	H	H		M	2.2	2.1
Germany	M	M	H	H	--	L	M	M		M	2.1	2.1
Canada	L	M	H	M	L	L	H	H		L	2.1	2.0
New Zealand	H	M	L	L	H	M	L	H		H	1.7	2.0
France	M	M	M	M	L	L	H	M		M	1.9	1.9
Sweden	M	M	M	M	L	L	M	H		M	1.9	1.9

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Table 2.16. **Pull factors affecting the number of migrants: H = high pull, M = medium pull, L = low pull; and ranked by giving economic pull half weight**
(continued)

	Net migration	Ratio per capita GDP	Depend-ency ratio	Change working ages	Net-works	Female labor	Years post-retire	Integra-tion		Mode	Demo-graphic pull (50%)	Eco-nomic pull (50%)
Portugal	M	M	L	H	L	L	L	H		L	1.8	1.9
United Kingdom	M	M	L	M	L	M	M	M		M	1.8	1.9
Norway	L	M	L	M	M	L	M	M		M	1.5	1.8
Czech Republic	H	L	M	H	M	H	M	M		M	2.2	1.7
Poland	H	L	M	H	H	M	M	L		H	2.0	1.6
Slovakia	H	L	L	H	H	M	M	M		H	1.9	1.6
Hungary	H	L	L	H	H	M	L	L		L	1.7	1.5
Mexico	H	L	L	L	H	H	L	L		L	1.5	1.4
Turkey	H	L	L	L	H	H	L	L		L	1.5	1.4
Greece	L	L	L	H	L	H	M	L		L	1.7	1.4
Mode	1	2	1	3	1	3	2	1		1	2	3
Average	2.0	2.1	1.9	2.3	2.0	2.0	2.0	2.0		2.0	2.0	2.1
33rd percentile	1.0	2.0	1.0	2.0	1.0	1.6	1.6	1.6		1.0	1.9	1.9
66th percentile	2.1	2.1	2.0	3.0	2.2	2.1	2.1	2.1		3.0	2.3	2.2

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Flip flops in policymaking might be avoided if admission and integration policies are thought of as a package with due consideration for dynamically varying the number of migrants and providing optimal rights for success in the labour market.

Future migration levels and composition

The pull factors discussed in this report can be divided between those that most directly impact on the numbers or level of migration and those that are more likely to impact the composition of the migration flow. Economic differentials, for example, are more likely to impact the degree of attractiveness and pull on future migrants of any skill level. Even demographic change is likely to create demand for generous levels of migration at all skill levels to supply shortages in low-skilled healthcare services or agriculture, shortages of high-skilled nurses, or demand for productivity boosting scientists and engineers. But the domestic supply of highly educated workers is likely to moderate future demand for skilled immigrants, as is domestic availability of healthcare workers. Similarly, countries that today admit most of their workers from the more developed countries are likely to need to draw their immigrants of tomorrow from less developed countries. There may be fewer migrants available from more developed nations as population growth attenuates, wage differences further decline and increasing domestic demand influences retention.[33]

Table 2.16 summarizes the pull factors and the triptile into which each country was ranked. The factors here are economic differentials (GDP per capita relative to baseline less developed nations), demographic factors of aging and labour force growth, migrant networks, labour force factors of likely future participation of women and the elderly; and integration which conditions social receptivity to increases in migration. Each triptile is assigned a score according to whether the degree of pull on migrants is high (H = 3), medium (M = 2), or low (L = 1). Next, the modal score is calculated, as well as two scores which assign either half of the weight of all scores to either the economic or the demographic factors. We do this because the economic factor is acknowledged to be the primary determinant of the rate of immigration in almost all empirical models. At the same time, most policymakers believe that there will be substantial pull for immigration generated by demographic aging and laggard growth of the working-age population; and these are the fundamental drivers of future productivity and labour shortages. We then sort the nations by the predominantly economic pull ranking (50% of the weight given to relative per capita GDP).

Nine countries are ranked as exerting a substantial "high" pull on future migration. The leading countries rank high on *both* the predominance of

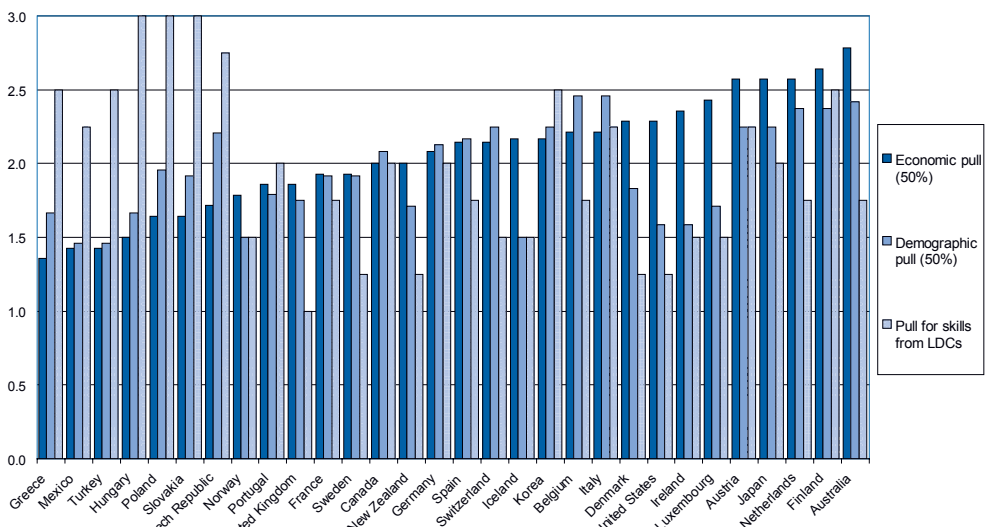
Table 2.17. **Pull factors affecting the source and skill composition of migration: H = high pull, M = medium pull, L = low pull; and ranked by giving economic pull half weight.**

	Foreign from MDCs	Share of global skilled	Domestic college educated	Nursing density	Mode	Average
Hungary	H	H	H	H	H	3.0
Poland	H	H	H	H	H	3.0
Slovakia	H	H	H	H	H	3.0
Czech Republic	H	H	H	M	H	2.8
Finland	M	H	H	M	M	2.5
Greece	M	M	H	H	M	2.5
Korea	L	H	H	H	H	2.5
Turkey	H	H	L	H	H	2.5
Austria	H	M	M	M	M	2.3
Italy	L	H	M	H	H	2.3
Mexico	M	H	L	H	H	2.3
Canada	M	L	H	M	M	2.0
Germany	M	M	M	M	M	2.0
Japan	L	H	M	M	M	2.0
Portugal	L	M	M	H	M	2.0
Australia	M	L	M	M	M	1.8
Belgium	M	M	M	L	M	1.8
France	L	M	M	M	M	1.8
Netherlands	L	M	M	M	M	1.8
Spain	L	M	M	M	M	1.8
Iceland	H	L	L	L	L	1.5
Ireland	H	L	L	L	L	1.5
Luxembourg	H	L	L	L	L	1.5
Norway	M	L	M	L	M	1.5
Switzerland	H	L	L	L	L	1.5
Denmark	L	M	L	L	L	1.3
New Zealand	L	M	L	L	L	1.3
Sweden	M	L	L	L	L	1.3
USA	L	L	M	L	L	1.3
UK	L	L	L	L	L	1.0
Mode	1	2	2	1	2	2
Avgerage	2.0	2.0	1.9	1.9	2.0	2.0
33rd percentile	1.0	1.6	1.6	1.0	2.0	1.6
66th percentile	2.1	2.1	2.0	2.0	2.0	2.3

economic and demographic pull, *i.e.* the top five Australia, Finland, Austria, Japan and the Netherlands. Perhaps, countries where the economic and demographic factors are combined will exert the greatest pull on future migration. However, other lead nations are ranked low on a predominant demographic pull, *i.e.* Luxembourg, Ireland, Denmark and the United States; which also already have relatively robust immigration or are recent entrants into that competition.[34] It is debatable as to whether or not all of these 13 lead countries will see increases of migration.[35]

The middle ranked nine nations on future predominantly economic pull are Belgium, Italy, Korea, Iceland, Switzerland, Spain, Germany, Canada and New Zealand. Only Switzerland also ranks high on a predominance of economic pull, while the rest rank about medium on both predominantly economic and demographic pull. This is an interesting confluence, namely that the predominance of both economic and demographic factors suggest moderate pull. For the most part, these countries are ranked with moderate economic pull, as well as with offsetting demographic, labour force and integration factors that reinforce a mixed-bag of reasons for their overall ranking. At the same time, the United Kingdom is included in this group of doubly moderate-pull nations; yet, it has been one of those most aggressively and successfully pursuing increased migration.

Figure 2.1. **Future migration and compositional pull factors ranked by assigning economic differentials half weight**



Twelve nations rank low on a predominance of economic pull namely France, Sweden, Portugal, United Kingdom, Norway, Czech Republic, Poland, Slovakia, Hungary, Mexico, Turkey and Greece. All but three of these also rank low on predominantly demographic forces namely the East European nations of the Czech Republic, Poland and Slovakia which are ranked moderately on the weighted demographic factor, mostly because they are projected to have slowly changing dependency ratios. Most of these countries are also among those with low rates of immigration today, as well as relatively poor integration. In short, there are reinforcing reasons to anticipate future low levels of pull and associated increases in immigration. The exception here appears to be Norway which has substantial migration, particularly of highly skilled workers, but otherwise has low-to-moderate rankings on almost all pull factors.

A consideration of the impact of pull factors on the future composition of immigration is next. Table 2.17 shows a ranking of countries that averages across the factors of the proportion of the current foreign-born population from MDCs, the host country's relative share of the global pool of college educated labour, the future growth of the domestic college-educated population and the starting density of nurses relative to a benchmark population-determined demand. Eleven countries rank high on the future pull for highly skilled migrants from LDCs, namely Poland, Slovakia, the Czech Republic, Hungary, Finland, Austria, Turkey, Greece, Korea, Italy and Mexico. All of these countries tend to have few MDC migrants, few college-educated domestic or foreign persons and low nursing densities. Another ten countries rank with moderate pull for skilled LDC migrants – overall and for most individual dimensions – namely Japan, Germany, Portugal, Norway, Australia, Luxembourg, Belgium, Spain, Canada and France. The balance of countries ranking low on future pull for LDC skilled migrants are already hosting substantial numbers of these foreign workers, *i.e.* the Netherlands, Ireland, the USA, Iceland, Switzerland, Denmark, New Zealand, Sweden and the UK.

Finally, Figure 2.1 shows the countries ranked by the predominantly economic factor along with their rankings on the predominantly demographic factor and the future pull for skilled LDC migrants. It shows the just described division among the leading nations of those ranked high and those ranked low on the predominantly demographic factor; and the tendency for middle-pull countries to be ranked for moderate pull on both factors. But there is no consistent relationship between moderate-to-high pull ranked nations to exhibit a pull for skilled LDC immigrants, where some like Austria clearly do while Luxembourg does not. These differences are mostly due to how well they are poised to capitalize on increasing numbers of domestically educated workers. At the same time, the seven lowest ranked countries on future pull tend to exhibit an exceptionally strong future pull for skilled LDC workers. Indeed, there is a low correlation ($r = 0.27$) between the rankings for the level and

the composition of future pull suggesting that future policies may reasonably differ on the degree to which compositional changes are sought.

This chapter has focused on migration pull factors in the OECD up through 2030. Our approach has been decidedly schematic, that is we discuss the likely future evolution of different pull factors without assigning any precise number of immigrants as a result of their individual or combined impact. There are, after all, a number of studies that attempt to do just that, so the attempt here was simply to evaluate a range of possible pull effects. By ranking the pull factors into triptiles, we hopefully minimize errors in precision that all projections have, while remaining true to the goal of evaluating the relative strength of changes in pull factors. By contrasting heavily weighted economic and demographic indexes, we have focused on the projected factors of greatest theoretical importance. At any rate, this exercise is similar to most detailed projections of immigration into host countries in that it implicitly assumes a rather elastic supply of foreign migrants.

Other migration scenarios

As a final set of observations, I introduce Table 2.18 which explores personal ruminations on some more general scenarios that might apply to all countries. The scenarios are set out by the strength of five factors that impact on the level and composition of migration: economic, demographic, networks (migrant), domestic skill supply and the social receptivity of the host country. Four scenarios are assumed as outcomes of possible combinations of these five conditioning factors and, in turn, on the subsequent level and composition of migration flows. A plus sign (+) indicates a strong pull of one of the

Table 2.18. **Other migration scenarios**

	Strength of factors					Migration outcome	
#	Economic	Demographic	Networks	Domestic skill supply	Social receptivity	Level of migration	Composition
1	++	++	+++	++	++	++	permanent, mixed skills
3	+	++	+	+	+	+	permanent & active recruitment
2	++	++	++	+	–	+	temporary, skilled
4	–	++	++	+	–	–	restricted to family

factors, while a negative sign (-) indicates the opposite. In all of the scenarios demographic factors, the aging and decline of working-age populations, are assumed to continue to exert a moderately strong pull (++) on future migration, while other factors vary in intensity.

Scenario one assumes ongoing moderately strong pulls from economic differentials, demographic factors and a very strong pull (+++) from migrant networks. It combines a strong pull exerted on skilled migration associated with an assumed weak supply of skilled domestic workers and a climate of favorable social receptivity. Taken together, such a combination of factors favors strong pull with some greater impact on skilled migrants, albeit social receptivity would welcome permanent migrants of both high and low skills. This should lead to moderate to possibly very strong growth in migration. And this is what the foregoing analysis would suggest will be the likely future of migration over the next couple of decades. That assumption is fraught with other possibilities, especially given the recent and sudden change in economic conditions there are other moderate or extreme possibilities (Martin and Lowell, 2009).

For example, scenario two differs primarily in that economic differentials and migrant networks are assumed to exert less pull, while domestic skill supplies and social receptivity are also less favorable than in scenario one. As a result, it would seem likely that the level of migration would be less strong and, to the extent that domestic shortages nevertheless occur, host countries may need to increase recruitment activities in source countries to target immigrants. This is an important modification of scenario one but it presumes an imminent, if somewhat less than ideal, rebound in today's global economy. It also takes the liberty of assuming that permanent migration will remain dominant, but most recent trends suggest that temporary flows have been increasing so that balance could be more mixed.

Scenario three is also similar to scenario one on most factors, except here it is assumed that future social receptivity is adverse to further immigration. That may result as either a failure of a host nation to successfully integrate immigrants which would affect immigrants' decision to move. Adverse social receptivity may cause and/or could grow in the wake of poor integration, or due to increased levels of ongoing migration, or due to a lingering shock of economic recession on the national psyche. Regardless, adverse public opinion might result in the creation of restrictive policies that respond to public perceptions. As a consequence the level of migration would remain fairly high, after all the fundamental pull factors remain in force, but an adverse social or policy climate might change the composition of migration – from permanent immigration toward policies that increase the relative share of temporary migration.

The last scenario, number four, assumes a decline in social receptivity coincident with a collapse of economic pull factors. This, of course, is the one extreme scenario that many observers are wondering about as today's global recession takes hold with ambiguity about its future depth and length (Papademetriou, *et al*., 2008). Poor economic growth and high unemployment lessens the pull of host economies, as well as it reduces the ability of prospective migrants to afford to move. Social receptivity too is often thought to worsen in times of economic downturns because an external supply of migrants creates competition for scare jobs, or at least natives perceive that to be the case. If a recession stays in place long enough and social receptivity worsens, it is likely that migration will slow. It is even possible that net migration would turn negative (emigration exceeds immigration) as it did from the United States during the decade of the 1930s Great Depression.

Conclusion

Will migrants come as long as the door remains open? On the one hand, we have discussed here a strong form of network theory that postulates that other pull factors and policies are almost beside the point; that migrants will come as long as they are not actively barred from doing so. That can, of course, only be the case as long as the potential pool of migrants continues to increase and/or is substantially larger than today's pool of migrants. That is the case and will be the case for the next century, so that even constant rates of emigration should lead to increasing numbers of migrants and, in turn, increasing rates of in-migration (*op. cit*., Lowell 2007). Ultimately, we subscribe to this point of view, *e.g.* that the number of migrants in the foreseeable future is likely to remain large relatively and absolutely (Martin, 2008).

There are other points of view, namely that migration from the less developed nations will decline in the near future as the rate of population growth in the less developed countries has already begun to slow (Schieber, 2005). That trend might be reinforced if immigrants are being admitted primarily to reduce the retirement burden of the more developed nations and, in turn, pay higher payroll taxes. Competition between nations for a slow-growing pool of potential migrants might also reduce the numbers that any one or set of countries might be able to attract. This might lead to a heightened competition especially for the most educated migrants, even as source countries increase their own college enrollment rates. At the same time, the growing per capita income of source countries and increased retention of their own economies might contribute to a declining pool of potential migrants. Given more options of where they might go, which nations will attract the best and the brightest?

The example of migration from Mexico to the USA typifies these contrary ways of thinking. The number of migrants more than doubled during the 1990s and remained very high through the so-called jobless recession until the housing bubble burst in 2006. Will the numbers continue to grow as most of the pull and push factors, particularly robust social networks, remain in place? Already in the mid-1990s a group of scholars suggested that migration from Mexico would begin to decline around the middle of the current decade (Latapí and Martin, 2006). Is it coincidence that the numbers, if somewhat delayed, are now trending down? (Passel and D'Vera Cohn, 2008) The argument for decline begins as Mexico enters into its "demographic dividend" or a period of slower but yet strong growth of working-aged persons without growing dependency ratios. Now its growing economy can begin to generate enough formal sector jobs to employ potential migrants. Many have been skeptical of a scenario of a downturn and a few years do not a trend make – and it would be difficult to say whether or not the migration slow down has been triggered primarily by a loss of economic-pull (housing-bust and job loss [Immigration Policy Center, 2008]) or stepped up local enforcement (less welcoming climate [Pew Hispanic Center, 2007]). Regardless of the trigger, the conjunction of economic and demographic factors in Mexico may be reinforcing the slow down of migration. It only remains to be seen if growth rebounds when or if the economies of both nations pick up; or if migration continues to decline or remains flat. Both of latter these scenarios would support the thinking that econo-demographic factors will coincide to reduce the attractiveness, *e.g.* the "pull," of the United States. It is hard to subscribe to that ultimately optimistic point of view, but the possibility is there.

Immigration in the modern world is often compared with the waves of mass migration that rolled through and just beyond the 19th century; and there must be lessons that we can learn. However the economic and demographic dynamics are significantly different and it is unlikely that the migration phenomenon will play out the same today. Already immigration has evolved through several stages with most all OECD countries experiencing two large migration surges first from the mid-to-late 1960s and then again from the mid-1990s. The nature of the migration and the debate surrounding it has changed markedly during each of these waves, particularly as some countries have switched roles as countries of out-migration to countries of in-migration between waves. It may be that we are entering the final phase of that build up of international migration and that, by 2030, we will enter a more mature and stable migration frontier. Certainly, some time in that distant decade economic differentials will substantially lessen and today's rapid changes in demography will begin to stabilize into a new equilibrium. Until then, migration "pull" factors are likely to remain strong and it remains to be seen whether or not current efforts to rationally manage the phenomenon works with or askew of the flow of international migrants.

Notes

1. At the same time, there have been declining numbers of refugees and asylum seekers. And while it is thought that there may be increasing numbers of illegally-resident migrants, it is not possible to verify that reliably except with data from the United States.

2. The so-called free circulation migration from within the EU is included in long-term or permanent migration.

3. On a global basis most estimates are that 30% to 40% of international mobility is "south-south", whereas a recent World Bank estimates suggests that those "south-south" flows may already be about half of the global flow. See Lowell, 2007; Ocampo, 2006; and Ratha and Shaw, 2007.

4. *Op. cit*., Williamson, 2003, argues rapid population growth in Africa may be one of the greatest potential drivers of future migration.

5. See for example, Office of Travel and Tourism Industries to International Trade Administration, Department of Commerce, 2005.

6. The comparison is not fully apt as EU structural adjustment funds assisted in improving Spain's economic position prior to its inclusion in the Shengan. That is why, for example, some observers call for substantial investment in trade agreements in the lesser developed countries to offset migration pull, *e.g.* from Mexico to the United States. However, the lesson for migration pull is substantially the same, namely that reductions in the income gap reduce the incentive to migrate.

7. The index classifies France, Italy and Spain as "high vulnerability", Canada, Sweden, Japan, Germany, Netherlands and Belgium as "medium vulnerability" and Australia, the United Kingdom and the United States as "low vulnerability". In general, continental Europe faces worse "aging vulnerability" than the Anglophone countries. In Asia, Japan also faces significant vulnerability. See Jackson, Richard and Neil Howe, 2003.

8. For the United States, with near replacement fertility, immigration at current levels is already a significant contribution to labour force growth and meaningful contributions to the problems of aging.

9. This may be the case for the Eastern European EU accession countries into the EU-15 or for Mexico-to-US migration under the North American Free Trade Agreement. At the same time, the Eastern and Mexican cases of trade liberalization may contrast with the earlier EU expansion where the emphasis on economic assistance prior to full accession helped minimize the "migration hump" that followed.

10. An intervening factor may be the number of potential migrants that an immigrant attracts or the "migrant multiplier", *i.e.* the modal number of family and friends who follow them. This is sometimes explicitly incorporated in projections of migration (Lowell, 2006).

11. One econometric model of migration to Europe found no effect of the stock of immigrants in the receiving country on immigration rates. See Hooghe, *et al*., 2008.

12. Of course, future migration is arguably a function of both the population on the receiving side and that in the source country. See Cohen, *et al*., 2008.

13. Immigti = ∑Remigtj * poptj, where the immigrant population in country i at time t is determined by the sum of each source country j's current rate of emigration multiplied by its population at time t.

14. It is worth noting that there is not a strong correlation between official retirement ages and the actual ages at which individuals typically retire. In some countries average retirement age lags as much as five years behind the official age (Luxembourg) and in other cases, average workers retire almost nine or ten years after the official standard (Korea and Mexico respectively).

15. North America has tended largely to be a recipient of foreign students more than a source with a growing but yet small number of Americans studying abroad.

16. The four Anglophone countries – the USA, UK, Australia and Canada – attract more than half of all foreign students (54%).

17. France and Germany provide instruction in English and have redesigned their curriculum to fit in with the more universal bachelors and masters' degree format.

18. IIE's Atlas of Student Mobility, Promotional Activities and Policies (http://opendoors.iienetwork.org/).

19. International Centre for Migration Policy Development, 2006. For example, France and Germany seek to facilitate retention. Australia amended its point system for admitting immigrants to allot extra points to students graduating from an Australian on-shore university. Canada awards points to students who stay to work in Provinces with skill shortages.

20. For example, the elasticities of student flows to the United States for India's domestic per-capita income and enrollments are 0.61 and 0.29, while the corresponding figures are 0.13 and -0.38 for the United Kingdom. This indicates that the more students graduated in India, the more who go abroad (to the USA). From the UK, an increase in the number of students it graduates is associated with an increased retention power (measured by Rosenzweig with measures of capacity).

21. There are different substantive types of tertiary education, as well as colloquial understandings of the concept. "College educated" is a general term including different levels of tertiary completion and, in the United States for example, is colloquially thought to imply at least four-years of post-secondary education. In some contexts, the broadest use of the term tertiary includes at least one year of post-secondary education. For the most part the discussion in this section refers to 3-4 years or more of education in upper level tertiary institutions, *e.g.* ISCED-97 all levels 5 and 6. See OECD, 2004.

22. At the same time, there is a high correlation between the share of the native and foreign-born populations that are tertiary educated ($r = 0.68$).

23. This is a classic stock and flow phenomenon: the percentage of the total adult population with a tertiary education will be a result of the inflow of tertiary-educated youth and the stock of existing adults. During the 1970s the population share of the tertiary educated was substantially improved by the mortality of older adults (who had completed far less than tertiary education on average).

24. The remaining seven OECD countries are: Canada, United States, Japan, Australia, New Zealand, Mexico and South Korea.

25. Ancillary goals of the Bologna process are to reform the educational system to create greater compatibility between the US and European educational systems. Reforms are to facilitate student movement between countries to pursue both study and employment. It is hoped to increase the attractiveness of the European education system to non-Europeans and, in-so-doing, attract foreign students and high-skilled workers. These goals are compatible with the enhancing Europe's potential as an advanced academic research community. If the domestic supply of competitive students decreases or the capacity of the educational system increases, each of these is likely to increase the space potentially available for foreign students within the tertiary education system. The former could result either from inadequate preparation in earlier domestic education, or a declining population of college-age youth. The latter could result from policy changes emphasizing expansion of the education system or from natural growth in existing institutions to match an increasing supply of qualified applicants.

26. We would prefer ages 18 to 24, but did not have those projections available.

27. UN Forestry Division, Forecasting Economic Growth, 2002. Based on UN projections and OECD demographic data, regression analysis was used to predict equivalent baseline projection values for countries left out of UN projection studies (starred in the table).

28. As the overall numbers of young adults will decline in some countries in coming years, it is possible that there will be increased competition across sectors to recruit the best students from each graduating class. This could reduce the overall numbers going into medical professions and it certainly is likely to diminish the proportional production of medical professionals relative to overall population in those countries hit hardest by population aging.

29. The United States experienced a slow down in training in the early 1990s, in part because the accepted wisdom at the time was that there would be surpluses of medical workers created by the spread of more efficient Health Maintenance Organizations.

30. More than 17% of immigrant women in European OECD member countries work in the health sector, albeit that percentage is similar to that for native-born women. However, foreign-born women are highly concentrated in Scandinavia with 32% in Norway, 29% in Sweden, 27% in Denmark and 24% in Finland being employed in that sector (23% in the United Kingdom). See p. 65 in OECD, 2006. International Migration Outlook (SOPEMI).

31. Note that there is a close correspondence between the percentage of the total (male and female) immigrant labour force and the density of nurses in OECD countries ($r = 0.58$), but none with the density of physicians ($r = -0.06$).

32. Family immigration in contrast tends to downplay labour market skills and, partly in consequence, family migrants are less well qualified and often integrate less readily.

33. A significant caveat to this would be if the Lisbon Strategy to increase intra-EU mobility succeeds. Consider that cross-EU (in the former EU15 prior to enlargement), only about 0.1% of the working age population changes its country of residence in a given year. In comparison, about 3% of the working age population in the United States moves to a different state every year. Nevertheless, the US remains a net importer of immigrants and, clearly, increased intra-European mobility would only partly offset declines in the European working-age population. See Ester, Peter and Krieger, Hubert, 2008.

34. The top ranked of these 13 countries have *low* rates of net immigration today and are ranked high (H) on this factor. Hence, they are ranked as candidates for *increased* pull when other factors work in that direction.

35. The index on integration might proxy for sociopolitical willingness to increase migration, but it is a very imperfect gauge as both Luxembourg (high immigration) and Japan (low immigration) are assigned low integration scores.

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