

Determinants and Consequences of International Migration

Andrea Ariu

Abstract

This chapter provides a simple overview of the canonical model of international migration, discusses the consequences of migration on both sending and receiving countries and draws some considerations on future research prospects for the international migration literature.

Keywords: International migration, models, empirics

1 Introduction

International migration increased from 75 Millions in 1960 to 211 Millions in 2010. While apparently huge, these numbers represent respectively only 2.5% and 3.1% of the world population (Brücker et al., 2013). This means that most of the people on the planet live in the countries in which they were born and only a tiny minority decides to leave. This is mostly because the process of migration is very costly, thus offsetting its benefits. On the one hand, this is the result of migration restrictions, transport costs and relocation costs (which include finding a new job, possibly learn a new language, etc.). On the other hand, the uncertainty involved makes risk averse people decide to stay rather than leaving. Indeed, if we take into account people that would like to leave their country, the amount of world migrants could get up to 20% (Docquier et al., 2014). South-south migration represents the majority of actual migration stocks (44%). North-North migration accounts for 18% of stocks and is stable over time. South-North migration represents the most dynamic component of migration with an increase from 10% in 1960 to 33% in 2010. Most of migrants are male and college graduate, but female migration is increasing substantially in recent years. The most popular destination is US, with about 20% of immigration stocks (Ozden et al., 2011). Both the size and the dynamics of migration pose serious policy issues on countries and raise questions on the possible liberalization effects of migration.

In this chapter, we first analyze the determinants of the migration choice, by highlighting both the theoretical approach to the problem and the main determinants identified by the literature; second, we discuss the main consequences of migration for both receiving and sending countries. Finally, we draw some considerations on future research prospects for the international migration literature.

2 Why Do People Migrate?

In this paragraph we first outline the theoretical framework to think about migration determinants and then review the main forces underlying the migration decision identified in the literature.

2.1 The Canonical Model

All the models since Sjaastad (1962) and then Borjas (1987) suppose that the choice of migration depends on the comparison between the benefits from remaining in the origin country with those from migrating in a foreign country (net of the migration cost). This approach found a general consensus in the literature and has become the reference to model the migration flows. In particular, the Random Utility Model of migration allows the researcher to start from the choices of individual agents to country-pair migration flows. Using this approach, we compare the utility of an individual i staying in the origin country j (where j denotes one of the countries among the set J) versus the utility of migrating in country k (with $k \in J$ and $k \neq j$). The first can be expressed as:

$$U_{jj}^i = w_{jj} + \varepsilon_{jj}^i$$

where the double script jj indicates respectively the origin and the destination. w_{jj} represents a deterministic component of utility including all the variables that are observed by the econometrician (such as wages, diasporas, etc.) and ε_{jj}^i is an individual-specific stochastic component of utility representing the specific tastes of the perspective migrant with respect to the migration choice. If instead the individual i decides to migrate to k , his utility can be written as:

$$U_{jk}^i = w_{jk} - c_{jk} + \varepsilon_{jk}^i$$

where c_{jk} represents the cost of moving from j to k . If $U_{jk}^i > U_{jj}^i$, the individual decides to migrate. If instead $U_{jk}^i < U_{jj}^i$, the person remains in her origin country j . The stochastic term ε_{jk}^i is a key determinant in the choice of migrating or not and allows different individuals to take different choices. Most of the literature assumes this random component to follow an independent and identically distributed Extreme Value Type-1 distribution. Under this assumption, the probability for the individual i to migrate from j to k can be written as:

$$\Pr (U_{jk}^i > U_{jj}^i) = \frac{e^{w_{jk} - c_{jk}}}{\sum_{h \in J} e^{w_{jh} - c_{jh}}}$$

where h indicates all the possible alternative countries (including the origin) in the set J .¹ By indicating with M_{jk} the number of people deciding to migrate and by dividing it for the number of people deciding to stay, M_{jj} we get:

$$\frac{M_{jk}}{M_{jj}} = \frac{e^{w_{jk} - c_{jk}}}{e^{w_{jj}}}$$

by taking the log, this expression becomes like a gravity equation:

$$\log\left(\frac{M_{jk}}{M_{jj}}\right) = (w_{jk} - w_{jj}) - c_{jk}$$

both origin, destination and bilateral characteristics explain the migration rates from j to k . This means that all the usual forces of the gravity equation can be condensed in this expression. For example, we expect migration flows to increase in the wage of the destination country and decrease in the wage of the origin country. Moreover, bilateral factors such as distance affect the choice. This theoretical framework has several advantages:

- **it explains zeroes:** if no person living in j has that $U_{jk}^i > U_{jj}^i$, then $\frac{M_{jk}}{M_{jj}} = 0$ and we can observe a zero migration flow between j and k . This is a frequent situation in the data: 60% of all corridors are indeed empty (Ozden et al., 2011).
- **it explains migrants selection:** on the one hand, people having different ε can decide different locations or not to migrate, so, not everybody makes the same choice. In this sense the model can explain the selection into migrating or not. On the other hand, the model can be modified to have two types of individuals, for example low and high-skilled. These categories of migrants can react differently to migration costs and the benefits present in the destination country. This allows us to model the so-called "positive selection of migrants", which refers to the fact that migrants tend to be the most skilled among the pool of potential migrants. In other words, this framework allows us to model why emigrants have a higher education than people that decide to remain in the origin country.
- **it embeds migration costs into the migration choice:** both geographical and policy variables can determine the choice of the migrant.
- **it can be tailored to account for the multilateral resistance to migration:** by relaxing the assumption on the irrelevance of irrelevant alternatives (IIA), it is possible to take into account the effect that a third country can have on the migration flow between j and k . The idea is that the choice of a potential migrant

¹ Please refer to McFadden (1984) for more details about the properties of the distribution and for a complete treatment of the derivation of this expression. Just to provide the intuition, this expression says that for individual i the choice of migrating to country k provides him more utility than any other possible destination $h \neq j$ and is also higher than the choice of staying in j . This derivation is possible only under the assumption that the choice of one destination does not depend on the characteristic of the others.

from j when considering to relocate to k can be influenced also from the characteristics of all the other destinations. This means that the choice is not relative just to the two countries j and k but also relative to all the others. This concept was developed in the trade literature by Anderson and van Wincoop (2003), and the intuition is that trade flows between two countries depend also on what other countries are trading with each other. Bertoli and Fernández-Huertas Moraga (2013, 2015) derive the model in this context and develop adequate estimation procedures to deal with this issue in a migration setting.

The most important drawback of using this framework is that it is only a partial equilibrium framework and it does not allow for a proper analysis of the welfare consequences of migration, both for the receiving and sending countries. Therefore, while it explains quite well migration flows across countries along all north and south corridors, other models should be used to capture the general equilibrium effects of migration and make a proper accounting of the welfare effects. Unfortunately, on that side there is no consensus on how to model the welfare consequences and in section 3 we limit ourselves to the analysis of the consequences of migration for both receiving and sending countries without entering into the details of the frameworks used.

2.2 Migration Determinants

Having presented the building block of the model, we discuss now what is usually included into the net benefits of migrating $w_{jk} - w_{jj}$ and the migration costs c_{jk} . This means that we are going to take into account all the determinants of migration flows identified by the literature.

- the most important factor for migration decision is the per-capita income difference between two countries, especially for high-skilled. Grogger and Hanson (2011) show that 58% of the variation in the stock of migrants is explained by differences in per-capita income levels between two countries. Most of the papers use a logarithmic specification to model the relation between migration flows and income (Mayda, 2010; McKenzie et al., 2014; Bertoli and Fernández-Huertas Moraga, 2013; Bertoli and Fernández-Huertas Moraga, 2015; Bertoli et al., 2011; Ortega and Peri, 2012) while Grogger and Hanson (2011) assume that w_{jk} depends linearly on income per capita. In most cases the income per capita is proxied by the GDP per capita, thus implicitly assuming that all migrants earn the same in the destination country. However, more recent papers tried to solve this issue by looking at post-tax earnings (Grogger and Hanson, 2011), by looking at income specific earnings (Belot and Hatton, 2012), or by using wages rather than earnings (Beine et al., 2011) adjusted by the observed productivity of migrants in the destination (Ariu et al., 2016).
- the second most important factor influencing migration flows is represented by the diasporas. At least one third of the variation in migration flows is explained by the existence of migration diasporas in the destination country (Beine et al.,

2014). In particular, gravity models find that on average, a ten percent increase in the bilateral migration stock is associated to a four percent increase in the bilateral migration flow (Beine et al., 2011; Bertoli and Fernández-Huertas Moraga, 2013; Beine and Parsons, 2012). This means that people that migrated already to a country can help perspective migrants by offering information and local help. Therefore, diasporas can lower the cost of migrations.

- Expectations can influence migration flows. People do not only look at current possible earnings in both origin and destination, but they also form expectations about future income growth. For example, Bertoli et al. (2013) have shown that variations in the yields on 10-year government bonds successfully explain migration decisions.
- Migration policies can also alter migration flows. Direct evidence is present in Beerli and Peri (2015), in which they quantify the effect of the implementation of the EU-Swiss free movement of people agreement using quasi-natural experiment. In particular, the relaxation of Swiss restrictions led to a 4% increase in the number of foreign workers in Switzerland. More indirect tests use VISA waivers (Bertoli and Fernández-Huertas Moraga, 2013), VISA policies (Bertoli and Fernández-Huertas Moraga, 2015; Beine and Parsons, 2012), multilateral agreements such as Shengen (Grogger Hanson, 2011; Beine et al., 2013) or immigration reforms (Ortega and Peri, 2012).

3 Consequences for Sending Countries

As highlighted in the introduction, most of the increase in migration of the last 50 years comes from migrants from poor countries relocating to rich countries (Ozden et al., 2011). Moreover, most of these flows are represented by high-skilled. This outflow represents an important loss of human capital and it is usually referred as "Brain Drain". The literature analyzing the Brain Drain is mostly theoretical and it experienced three main waves which concentrated on the economic consequences of brain drain (Docquier and Rapoport, 2012).

The first wave dates back to the 1960s. These theoretical contributions were based on trade frameworks and pointed towards the beneficial effects of free migration for the world economy. In this type of setting, the predictions for the sending countries were uncertain or neutral. The loss associated to the reduction in the human capital stock was counterbalanced by remittances (Grubel and Scott, 1966; Johnson, 1967; Berry and Soligo, 1969). A second wave of literature instead focused more on the negative aspects of the human capital loss. Introducing in their frameworks various types of frictions, such as domestic labor market rigidities, resulted in negative consequences for the poor countries. By letting the high-skill leave, rich countries could become even richer by exploiting the human capital formed in the developing one (Bhagwati and Hamada, 1974; McCulloch and Yellen, 1977). The third wave of papers identified under which circumstances the Brain Drain can have positive consequences for sending countries. These include a possible increase in

productivity of the sending country (Mountfort, 1997), increase the returns to human capital investment and increase the average human capital level (Stark et al., 1997; Stark and Wang, 2002; Vidal, 1998; Beine et al., 2001), decrease the returns to rent-seeking (Mariani, 2007). Finally, an important number of papers analyzed the determinants and the consequences of remittances. In particular, migrants can help their families in the origin countries by sending them part of their income. The effects of such flows on the origin country of the migrant are still debatable due to the difficulty to isolate the effect of remittances from all the other shocks that can influence the economy of a country. Faini (2007) provides a nice review of these results. More in general, the literature focusing on the economic consequences of emigration on origin countries lacks empirical evidence on the consequences and mechanisms behind the brain drain. The main problem is that it is difficult to disentangle the effect of emigration from that of other confounding factors. Therefore, in the absence of a clean natural experiment, the literature remained mostly on the theoretical side.

More recent contributions left a bit aside the pure economic perspective to focus instead on the effect of emigration on institutions. For example, Spilimbergo (2009) shows that migrants educated in democratic countries are able to promote democracy in their home country. Similarly, Docquier et al. (2016) find a positive causal effect of emigrants on the quality of institutions. In particular, they find that over the period 1975-2000 unskilled emigration positively impacted institutional quality in origin countries using different indicators of democracy and economic freedom. Batista and Vicente (2011) constructed an experiment in Cape Verde to understand the influence of migration on the demand for political accountability. They find that migrants and return migrants that have been exposed to more democratic countries have a stronger bias on political accountability. Finally, Barsbai (2017) use a quasi natural experiment to show that emigration towards democratic countries influenced electoral outcomes and political preferences in Moldova. They use the Russian financial crisis in 1998 which led a consistent part of the population to leave the country and they use variation in political ideologies and democratic traditions to analyze destination-specific political spillovers of emigration. They find that communities with a larger emigration towards more democratic countries shifted votes away from the Communist Party while those that had a strong emigration towards Russia increased their support to the Communist Party. These papers show that the exposure to more democratic values thank to migration can: i) change the voting behavior of the migrant and ii) have spillovers over the families and communities in the origin countries. Therefore, besides the loss of human capital, origin countries experience an inflow of new ideas from abroad that can have positive effects also on the economic side.

The lesson from these papers is that besides brain drain represents a loss of human capital and has bad short term economic consequences, in the medium and long run emigration can have also positive outcomes both in terms of growth and development, but also in terms of institutional quality. Still it remains uncertain what is the net effect of both negative and positive mechanisms.

4 Consequences for Destination Countries

The debate over the consequences on the destination countries has been the most lively in the past ten years. On the one hand, Borjas (2003), Borjas (2017) and Monras (2015) show that the impact of immigration on wages is small but negative. On the other hand, there is extensive evidence that the effects of immigrants on wages and employment of natives is negligible or even positive (e.g. Card (1990), Card (2001), Ottaviano and Peri (2012), Beerli and Peri (2015), Foged and Peri (2016)). Still, there is no consensus on the effect of migrants on wages, however, most of the literature argues in favor of negligible or even positive effects of immigration. Very broadly, Borjas (2003), Borjas (2017) argue that following an increase in the supply of migrants which are in the same education-experience group should affect the wages of natives because the labor demand curve is negatively sloped. Other studies instead point at the imperfect substitutability of migrants and natives. For example Peri and Sparber (2009) show that immigrants specialize in different tasks than natives, thus complementing the native labor force. In general, the lack of consensus raises because of different views on the substitutability or complementarity between migrants and natives, which also leads to different estimation strategies and results. The resolution of this puzzle is also tricky due to the endogeneity raising from the non-random location choices of migrants.

Focusing on the first issue, the problem comes from the comparability between immigrants and natives. On the one hand, Borjas et al. (1996) argue that immigrants should be compared with natives of the same experience and education. This approach implicitly assumes perfect substitutability across migrants and natives within the same experience and education. On the other hand, Ottaviano and Peri (2012) and Manacorda et al. (2012) assume that they can be imperfect substitutes within the same experience-education cell. This comes from the observation that even if migrants have the same education level and experience of natives, they tend to be employed in occupations that have a skill content that is lower than that of natives (Mattoo et al., 2008) Therefore, an high-skilled migrant could potentially end up in a low-skilled job. The estimation strategy following these choices leads to opposite results: Borjas et al. (1996) find small but negative effects while Ottaviano and Peri (2012) and Manacorda et al. (2012) find that immigrants do not have any effect on natives and very small negative effects on previous immigrants. This second set of results can be explained by the fact that immigrants tend to specialize in different occupations with respect to natives Peri and Sparber (2009). Therefore, they do not really compete for the same jobs, even if they share the same education and experience.

Focusing on the second issue, most of the studies rely on an instrumental strategy that uses the interaction of historical presence of immigrants across regional labor markets with aggregate flows changes. This method allows to compute reasonably exogenous changes in the supply of migrants, thus solving the endogeneity problem related to the allocation of migrants across space. This approach has been first proposed by Altonji and Card (1991) and it is also called "shift-share instrument" and has been extensively used in many papers (e.g. Card, 2001, Peri and Sparber

(2009) and Dustmann et al., 2013). The underlying assumption is that the repartition of migrants in the past is not correlated with the current demand for immigrants. A more hybrid approach is to use a synthetic control group employed for example in Borjas (2017) and Peri and Yasenov (2015). This technique constructs a comparison group using a weighted average of possible control units; in this way, the technique allows the researcher to compare the treated group to an optimally chosen control. Few other studies have exploited exogenous episodes of supply increases, such as the return of French expatriates from Algeria (Hunt, 1992), the collapse of the Soviet Union (Borjas and Doran, 2015; Friedberg, 2001) or the return of Germans from Romania and Bulgaria (Glitz, 2012). Other approaches rely on the random allocation of refugees across space (Foged and Peri, 2016) or the exploitation of policy changes which have some regional and time variation (e.g. the Swiss-EU agreement in Beerli and Peri (2015) or the Czech-German commuting policy for cross-border workers in Dustmann et al. (2017)).

5 Future Prospects

The main limitation to the development of the international migration literature has been the lack of data. Most of the first contributions were purely theoretical and only with the database developed by Docquier and Marfouk (2006) the literature could test many of the theoretical findings and find new patterns to analyze. The data is based on the Censuses of OECD countries and there is information on the migration stocks of foreign born by origin country for the years 1990 and 2000. This dataset was then refined to disentangle the education and gender dimensions and it has been updated with information for the year 2010.² The availability of these data led the field to find new cross-country evidence on migration, its determinants and consequences. One limitation of the cross-country data is that it is impossible to analyze the heterogeneity of the migration flows and it is hard to find a plausibly exogenous variation to make causal inference. Recently some datasets at the individual level have become available for some regions and countries. This increased the opportunities for clean identification strategies. However, they are usually limited in their geographical coverage. So, it is harder to make cross-country analyses and to test the external validity of the results.

These new data have several advantages. First, they allow a more precise definition the labor markets, thus allowing researcher to focus on cities and districts rather than regions. Second, the many sources of variation allow the researchers to have cleaner identification strategies and to study the mechanisms leading to some results. Third, these data can be linked with information on firms. This employer-employee data can allow researchers to study reallocation of workers both across firms within regions, but also within firms. This opens a totally new perspective since it allows researchers to understand the role of migrants in the production processes of the firm and their contribution to productivity and growth at the micro level. For example, recent papers find that immigrants have positive effects on the

² See Brücker et al. (2013) for more information on the latest version of the data.

productivity of the firm (Ghosh et al., 2014; Ruffner and Siegenthaler, 2016; Mitaritonna et al., 2017). Many other questions can be answered using these micro data. For example it would be possible to study more in depth the substitutability versus the complementarity of migrants with native workers. It would be possible to understand wage dynamics and the reallocation of workers under different shock scenarios, such as trade liberalization and demand shocks. Finally, Ottaviano and Peri (2013) point also at the city as a new frontier for the migration literature to understand the impact of migration on agglomeration economies. This is because migrants are different than the destination population and in this offers new opportunities and threats that are worth exploring. On the one hand, migrants tend to be positively selected (i.e. they tend to be more skilled than the origin population) and they own a set of skills, tasks and values that is different from that of natives. This brings new opportunities for firms and local markets that can expand thanks to the new varieties of knowledge, capabilities and products or services. On the other hand, this poses challenges at the level of spatial congestion and social assimilation. Both positive and negative effects can now be explored in detail and provide contributions that span across different fields of economics, such as urban economics, economic geography and international trade, just to mention some.

6 Conclusion

In conclusion, the literature on international migration has been flourishing in the recent years especially thanks to the increased availability of new and more detailed data. While there is a consensus on the theoretical tools to be used, there are still some debates on the empirical implementation and on the results. This especially applies to the research focusing on the impact of immigrants on wages and employment of natives. These new datasets are allowing researchers to discover new mechanisms behind migration and the literature is evolving towards having cities and firms as the focus of analysis. Therefore, there is a natural shift from a more macro approach to micro which allows researchers to understand better the heterogeneity behind aggregate flows and to account more finely for winners and losers of the migration phenomenon. However, this comes at the expenses of the generality of the results which can rarely be compared across countries and regions due to the limited geographical coverage of these new datasets.

7 References

- Altonji, J. G. and Card, D. (1991). The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives. In *Immigration, Trade, and the Labor Market*, NBER Chapters, pages 201–234. National Bureau of Economic Research, Inc.
- Anderson, J. E. and van Wincoop, E. (2003). Gravity with Gravitas: A Solution to the Border Puzzle. *American Economic Review*, 93(1):170–192.

Ariu, A., Docquier, F., and Squicciarini, M. (2016). Governance Quality and Net Migration Flows. *Regional Science and Urban Economics*, Vol. 60, 238-248.

Barsbai, T., Rapoport, H., Steinmayr, A., and Trebesch, C. (2017). The Effect of Labor Migration on the Diffusion of Democracy: Evidence from a Former Soviet Republic. *American Economic Journal: Applied Economics*, Vol. 9(3): 36-69.

Batista, C. and Vicente, P. C. (2011). Do Migrants Improve Governance at Home? Evidence from a Voting Experiment. *World Bank Economic Review*, 25(1):77–104.

Beerli, A. and Peri, G. (2015). The Labor Market Effects of Opening the Border: New Evidence from Switzerland. NBER Working Papers 21319, National Bureau of Economic Research, Inc.

Beine, M., Bertoli, S., and Moraga, J. F.-H. (2014). A practitioners' guide to gravity models of international migration. Working Papers 2014-03, FEDEA.

Beine, M., Bourgeon, P., and Bricongne, J.-C. (2013). Aggregate Fluctuations and International Migration. CESifo Working Paper Series 4379, CESifo Group Munich.

Beine, M., Docquier, F., and Ozden, C. (2011). Diasporas. *Journal of Development Economics*, 95(1):30–41.

Beine, M., Docquier, F., and Rapoport, H. (2001). Brain Drain and Economic Growth: Theory and Evidence. *Journal of Development Economics*, 64(1):275-289.

Beine, M. and Parsons, C. (2012). Climatic Factors as Determinants of International Migration. CESifo Working Paper Series 3747, CESifo Group Munich.

Belot, M. V. K. and Hatton, T. J. (2012). Immigrant Selection in the OECD. *Scandinavian Journal of Economics*, 114(4):1105–1128.

Berry, A. R. and Soligo, R. (1969). Some Welfare Aspects of International Migration. *Journal of Political Economy*, 77(5):778–794.

Bertoli, S., Brücker, H., and Moraga, J. F.-H. (2013). The European Crisis and Migration to Germany: Expectations and the Diversion of Migration Flows. Working Papers 2013-03, FEDEA.

Bertoli, S. and Fernández-Huertas Moraga, J. (2013). Multilateral Resistance to Migration. *Journal of Development Economics*, 102:79–100.

Bertoli, S. and Fernández -Huertas Moraga, J. (2015). The Size of the Cliff at the Border. *Regional Science and Urban Economics*, 51(C):1–6.

Bertoli, S., Moraga, J. F.-H., and Ortega, F. (2011). Immigration Policies and the Ecuadorian Exodus. *World Bank Economic Review*, 25(1):57–76.

Bhagwati, J. and Hamada, K. (1974). The Brain Drain, International Integration of Markets for Professionals and Unemployment: A Theoretical Analysis. *Journal of Development Economics*, 1(1):19–42.

Borjas, G. (1987). Self-selection and the Earnings of Immigrants. *American Economic Review*, 77(4):531–553.

Borjas, G. J. (2003). The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market. *The Quarterly Journal of Economics*, 118(4):1335–1374.

Borjas, G. J. (2017). The Wage Impact of the Marielitos: A Reappraisal. *Industrial and Labor Relations Review*, forthcoming.

Borjas, G. J. and Doran, K. B. (2015). Cognitive Mobility: Labor Market Responses to Supply Shocks in the Space of Ideas. *Journal of Labor Economics*, 33(S1):S109 – S145.

Borjas, G. J., Freeman, R. B., and Katz, L. (1996). Searching for the Effect of Immigration on the Labor Market. *American Economic Review*, 86(2):246–51.

Brücker, H., Capuano, S., and Marfouk, A. (2013). Education, Gender and International Migration: Insights From a Panel-Dataset 1980-2010. Technical report, Mimeo, Norface Research Programme on Migration.

Card, D. (1990). The Impact of the Mariel Boatlift on the Miami Labor Market. *ILR Review*, 43(2):245–257.

Card, D. (2001). Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration. *Journal of Labor Economics*, 19(1):22–64.

Docquier, F., Lodigiani, E., Rapoport, H., and Schiff, M. (2016). Emigration and democracy. *Journal of Development Economics*, 120(C):209–223.

Docquier, F. and Marfouk, A. (2006). International Migration by Educational Attainment (1990-2000). In Ozden, C. and Schiff, M., editors, *International Migration, Remittances the Brain Drain*, pages 151–199. Palgrave Macmillan.

Docquier, F., Peri, G., and Ruysen, I. (2014). The cross-country determinants of potential and actual migration. *International Migration Review*, 48(1):37–99.

Docquier, F. and Rapoport, H. (2012). Globalization, Brain Drain, and Development. *Journal of Economic Literature*, 50(3):681–730.

Dustmann, C., Frattini, T., and Preston, I. P. (2013). The Effect of Immigration along the Distribution of Wages. *Review of Economic Studies*, 80(1):145–173.

Dustmann, C., Schnberg, U., and Stuhler, J. (2017). Labor Supply Shocks, Native Wages, and the Adjustment of Local Employment. *Quarterly Journal of Economics*, (forthcoming).

Faini, R. (2007). Migration and Remittances. The Effects on the Origin Country. *Revue d'économie du développement*, 15(2):153–182.

Foged, M. and Peri, G. (2016). Immigrants' Effect on Native Workers: New Analysis on Longitudinal Data. *American Economic Journal: Applied Economics*, 8(2):1–34.

Friedberg, R. M. (2001). The Impact of Mass Migration on the Israeli Labor Market. *The Quarterly Journal of Economics*, 116(4):1373–1408.

Ghosh, A., Mayda, A. M., and Ortega, F. (2014). The Impact of Skilled Foreign Workers on Firms: an Investigation of Publicly Traded U.S. Firms. CReAM Discussion Paper Series 1442, Centre for Research and Analysis of Migration (CReAM), Department of Economics, University College London.

Glitz, A. (2012). The Labor Market Impact of Immigration: A Quasi-Experiment Exploiting Immigrant Location Rules in Germany. *Journal of Labor Economics*, 30(1):175 – 213.

Grogger, J. and Hanson, G. H. (2011). Income Maximization and the Selection and Sorting of International Migrants. *Journal of Development Economics*, 95(1):42–57.

Grubel, H. B. and Scott, A. D. (1966). The International Flow of Human Capital. *American Economic Review*, 56(1-2):268–274.

Hunt, J. (1992). The Impact of the 1962 Repatriates from Algeria on the French Labor Market. *ILR Review*, 45(3):556–572.

Johnson, H. (1967). Some Economic Aspects of the Brain Drain. *Pakistan Development Review*, 7(3):379–411.

Manacorda, M., Manning, A., and Wadsworth, J. (2012). The Impact Of Immigration On The Structure Of Wages: Theory And Evidence From Britain. *Journal of the European Economic Association*, 10(1):120–151.

Mariani, F. (2007). Migration as an antidote to rent-seeking. *Journal of Development Economics*, 84:609–630.

Mattoo, A., Neagu, I. C., and Zden, . (2008). Brain waste? Educated immigrants in the US labor market. *Journal of Development Economics*, 87(2):255–269.

Mayda, A. (2010). International Migration: a Panel Data Analysis of the Determinants of Bilateral Flows. *Journal of Population Economics*, 23(4):1249–1274.

McCulloch, R. and Yellen, J. L. (1977). Factor Mobility, Regional Development, and the Distribution of Income. *Journal of Political Economy*, 85(1):79–96.

McFadden, D. (1984). Econometric Analysis of Qualitative Response Models. In Griliches, Z. and Intriligator, M., editors, *Handbook of Econometrics*, volume 2. Elsevier, Amsterdam.

McKenzie, D., Theoharides, C., and Yang, D. (2014). Distortions in the International Migrant Labor Market: Evidence from Filipino Migration and Wage Responses to Destination Country Economic Shocks. *American Economic Journal: Applied Economics*, 6(2):49–75.

Mitaritonna, C., Orefice, G., and Peri, G. (2017). Immigrants and Firms' Productivity: Evidence from France. *European Economic Review*, forthcoming.

Monras, J. (2015). Immigration and Wage Dynamics: Evidence from the Mexican Peso Crisis. IZA Discussion Papers 8924, Institute for the Study of Labor (IZA).

Mountford, A. (1997). Can a Brain Drain Be Good for Growth in the Source Economy? *Journal of Development Economics*, 53(2):287-303.

Ortega, F. and Peri, G. (2012). The Effect of Income and Immigration Policies on International Migrations. *Migration Studies*, 1(1).

Ottaviano, G. and Peri, G. (2013). New Frontiers Of Immigration Research: Cities And Firms. *Journal of Regional Science*, 53(1):1–7.

Ottaviano, G. I. P. and Peri, G. (2012). Rethinking The Effect Of Immigration On Wages. *Journal of the European Economic Association*, 10(1):152–197.

Ozden, C., Parsons, C. R., Schiff, M., and Walmsley, T. L. (2011). Where on Earth is Everybody? The Evolution of Global Bilateral Migration 1960-2000. *World Bank Economic Review*, 25(1):12–56.

Peri, G. and Sparber, C. (2009). Task Specialization, Immigration, and Wages. *American Economic Journal: Applied Economics*, 1(3):135–69.

Peri, G. and Yasenov, V. (2015). The Labor Market Effects of a Refugee Wave: Applying the Synthetic Control Method to the Mariel Boatlift. NBER Working Papers 21801, National Bureau of Economic Research, Inc.

Ruffner, J. and Siegenthaler, M. (2016). From labor to cash flow? The Impacts of Abolishing all Immigration Restrictions for EU Workers on Swiss Firms. Technical report, Mimeo, ETH Zurich.

Sjaastad, L. (1962). The Costs and Returns of Human Migration. *Journal of Political Economy*, 70(5):80–93.

Spilimbergo, A. (2009). Democracy and Foreign Education. *American Economic Review*, 99(1):528–43.

Stark, O., Helmenstein, C., and Prskawetz, A. (1997). A Brain Gain with a Brain Drain. *Economics Letters*, 55(2):22734.

Stark, O. and Wang, Y. (2002). Inducing Human Capital Formation: Migration as a Substitute for Subsidies. *Journal of Public Economics*, 86(1):29–46.

Vidal, J.-P. (1998). The Effect of Emigration on Human Capital Formation. *Journal of Population Economics*, 11(4):589–600.