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Temporary Migration and Economic Assimilation

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ABSTRACT

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In this paper, I study temporary migrations, and its consequences for immigrants' behaviour. I distinguish between temporary migrations where the return time is exogenous, and temporary migrations where the migrant chooses when to return. I then illustrate the consequences both types of temporary migration have for migrants' behaviour (as opposed to a permanent migration). If migrations are non-permanent, then this has also consequences for the way empirical models need to be specified. The problems arising for empirical work are discussed in the second part of the paper. Finally, I summarise some empirical evidence which is consistent with the hypothesis that the behaviour of temporary migrants is different from that of migrants with permanent migration intentions.

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1 Introduction

The economic, social, and cultural assimilation of immigrants to the host country environment is one of the core areas of academic research on migration. Besides the interest it generates in the academic profession, it is also high on the agenda in the public debate.

Much of the work economists have contributed to this field is concerned with analysing the economic assimilation of immigrants to the host country labour markets. This is understood to be important for assessing the overall economic contribution of immigrants to the host country economy, which depends largely on migrants' individual economic success. Precise estimates of the process of economic assimilation are therefore most important for assessing whether migration is beneficial from the host country's perspective.

The vast empirical literature in this area was inseminated by a paper by Barry Chiswick (1978), using the 1970 US census. He finds that migrants not only assimilate, but overtake natives' earnings after about one and a half decades in the labour market. A number of important critical remarks in papers by Borjas (1985, 1987) made us aware of possible problems when estimating assimilation patterns using cross sectional data. Borjas argues that regressions based on cross-sectional data may lead to incorrect estimates of assimilation profiles if the quality of incoming cohorts changes. He claims that, in the case of the US, cross sectional studies may have lead to too a positive evaluation of assimilation patterns. Panel data or repeated cross sections, available for most countries today, allow to deal with these potential sources of estimation bias.

The changing quality of migrant cohorts is not the only source of bias when estimating assimilation profiles. Another problem is selective out-migration. If a part of the migrant population leaves the country, and if leavers are non-randomly drawn from the overall immigrant population, then this generates a bias in the estimated assimilation profiles of immigrants. In a recent paper, Borjas and Bratsberg (1996) model selective out migration within Roy's (1951) framework of comparative advantage. They

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demonstrate that out-migration accentuates the selection characterising the inflow of immigrants. To deal with selective return migration empirically is more difficult than to deal with selective immigration. It requires data which precisely records return patterns of immigrants. Only very recently has such data become available (see Coleman and Wadensjoe (1999) for details on some interesting Danish data sources).

But not only the possibly selective character of return migration leads to empirical problems. The mere fact that some immigrants return induces heterogeneity in their behaviour, which is not captured by standard assimilation regressions, as estimated in much of the literature. This heterogeneity is a consequence of the different economic situations they face after a return to their home countries, and on which their current behaviour is conditioned. Migrations which are temporary may lead to heterogeneity in assimilation patterns between migrants and natives, as well as across immigrants, which are not captured by the standard set of human capital variables.

There are also differences in the nature of temporary migrations, which need to be considered when analysing assimilation profiles. Some migrations are temporary because immigrants have only a limited residence permit, which is often related to a temporary working contract. These types of temporary migrations are, for instance, frequent between South-East Asia and countries of the middle East, and, more recently, between Eastern European countries, and countries of the European Community. Another example is labour migration to Switzerland. Migrants on such a scheme consider the return time as exogenous. Another form of temporary migration are migrations where the migrant leaves by his own choice, and where the return time is a choice variable.

In this paper, I wish to draw attention to the implications of the temporary character of migrations when modeling the behaviour of immigrant workers. I commence by providing some empirical evidence, which shows that temporary migrations are frequent not only in the US, but even more so in Europe. I then discuss, using the example of human capital accumulation, differences in behaviour between permanent migrants,

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and temporary migrants. Here I distinguish between temporary migrations where the return time is exogenous, and temporary migrations where the migrant chooses the return time.

I briefly illustrate the implications of temporary migrations for empirical work. I discuss the various concepts of temporary migrations, and which measures may be relevant for empirical analysis. Finally, I provide some empirical evidence which is compatible with the hypothesis that temporary migrants exhibit a different behaviour than permanent migrants.

2   Migration and Re-Migration - Some Stylised Facts

After the second world war Europe experienced five major migration waves. Movements in the years between 1945 and 1960 were predominantly caused by the aftermath of the war in Europe (see Zimmermann (1995) for details). In these years, the total displacement of people amounted to about 20 Mill, which affected mainly Germans from the former Eastern parts of Germany. Until 1950, 8 Mill Germans moved from Eastern Europe to West Germany (Höhnekopp, 1994). Until the end of the 1950's this number had increased to 12 Mill (Schmidt, 1994). The second migration movement was predominantly economically motivated and started in the early 1950's. Between the mid 1950's and 1973, the strong economic development in Northern Europe and the resulting demand for labour led to a large inflow of migrants mainly from the periphery countries of Europe, but also from Turkey, North Africa, South America and Asia, into central Europe. The main receiving countries were Belgium, France, Germany, the UK, the Netherlands, Switzerland and the Scandinavian countries. This second large movement came to a halt in 1973/74, the turning point of the rapid economic development in Northern Europe, when countries stopped active recruitment or/and put severe restrictions on further labour immigration.

The third wave of migration after 1973 is characterized by family immigration and

reunification of former labour migrants and, as a result of increasing separatist movements and civil wars in many Asian, South American and African countries and rising inequality, by asylum migration. The fourth big movement, the East-West migration, was initiated in the late 1980's by a liberalization of Soviet policy and accelerated by the fall of the Berlin wall in 1989. Finally, the last movement is mainly one of refugee migration. It is a direct consequence of independence and democratisation wars inflicted on many areas within and around Europe, as a result of the end of the cold war, and the associated disintegration of the tight power structures it imposed on many parts of the world.

Many of these migrations have been temporary. Labour migrations (the second migration movement) in particular were considered temporary not only by the host countries, but also by the migrants themselves. Switzerland, for instance, had implemented tight policies, which regulated the immigration process, and the rights of the migrant in the country. Newly issued work- and residence permits were all temporary, and there was a maximum number of permits issued per year. On the other side, no active measures to ensure that immigrants would indeed return were taken by most other European countries (like France and Germany). Although an increasing number of migrants settled permanently in these countries, a large fractions of labour migrants to Europe returned. Böhning (1984, p.147) estimates that "more than two thirds of the foreign workers admitted to the Federal Republic [of Germany], and more than four fifth in the case of Switzerland, have returned". Glytsos (1988) reports that of the 1 million Greeks migrating to West Germany between 1960 and 1984, 85% gradually returned home.

Temporary migration are not only a European phenomenon, but also widespread in the US, and in many Asian and South American countries. For instance, Jasso and Rosenzweig (1982) report that between 1908 and 1957 about 15.7 million persons immigrated to the United States and about 4.8 million aliens emigrated. They found that between 20% and 50% of legal immigrants (depending on the nationality) re-

emigrated from the United States in the 1970's. Warren and Peck (1980) estimate that about one third of legal immigrants to the United States re-emigrated in the 1960's. Pitayanon (1986) reports that migrations of Thai workers to the Middle East are predominantly temporary.

To obtain reliable figures on inflows and outflows is difficult. It is even more difficult to get numbers which are comparable between countries. The reasons are that definitions and registration procedures for migrants differ across countries, and may change within the same countries over time, thus leading to fractions in the data series.

It is nevertheless instructive to look at some numbers on in- and outflows of immigrants to and from European countries. Figures 1 display inflows and outflows of immigrants for some European countries. The figures reveal that a substantial number of foreign born individuals leave the immigration countries. For Germany, Belgium, and Switzerland, for instance, emigration was larger than immigration for a number of years, in particular in the early 1980's. These years were characterised by high unemployment, and initiated a recession period. For Sweden, outflows are larger than inflows for the early 1970's; this is coincidental with the first oil crisis.[1] Overall, the numbers indicate a substantial outflow of immigrants.

3   Temporary and Permanent Migrations

In the early economic literature, the sole economic explanation for the decision to migrate are differences in returns to human capital. The migration decision taken by the individual migrant is based on a comparison between the expected and discounted future flow of earnings in the host country, and the future flow of earnings in the home country, minus the cost of migration (see Sjaastad (1962)). If this present net gain to migration is positive, then individuals emigrate. Hicks (1932) remarked in his "Theory of Wages" that *differences in net economic advantages, chiefly differences in wages, are*

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[1]See Rooth (1999) for an extensive description of Swedish immigration and immigration policies.

Belgium · Inflow Belgium △ Outflow Belgium

Germany · Inflow Germany △ Outflow Germany

(14,3) Switzerland · Inflow Switzerland △ Outflow Switzerland

Sweden · Inflow Sweden △ Outflow Sweden
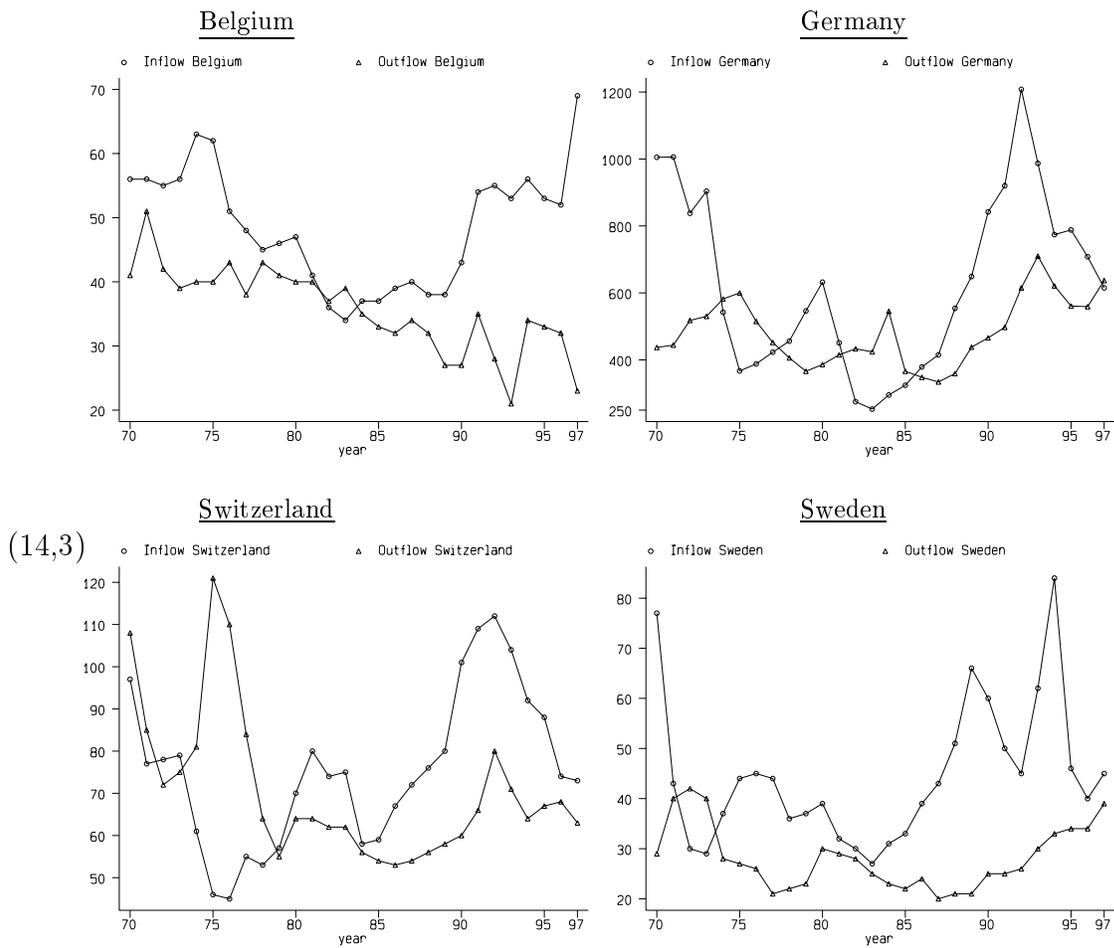
Numbers are in Thousands. Sources: Belgium: SOPEMI, Eurostat (Salt and Singleton, 1994), OECD (1999), OECD (1994), own calculations. Germany: SOPEMI, Eurostat (Salt and Singleton, 1994), OECD (1999), OECD (1994), own calculations. Switzerland: SOPEMI, OECD (1999), OECD (1994), Frey (1986), table 1, own calculations. Sweden: Statistics Sweden, Population Statistics, different volumes.

Figure 1: Inflows and Outflows of Migrants

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the main causes of migration [p.76]. Consequently, the migrant population increases if economic disparity rises. In a more dynamic context, the length of the migration period becomes a further important variable. Migrations may be temporary rather than permanent. Temporary migrations may be enforced by contracts, or they may be the result of the individual's optimising behaviour. As we have shown above, temporary rather than permanent migrations are often the rule rather than the exception.
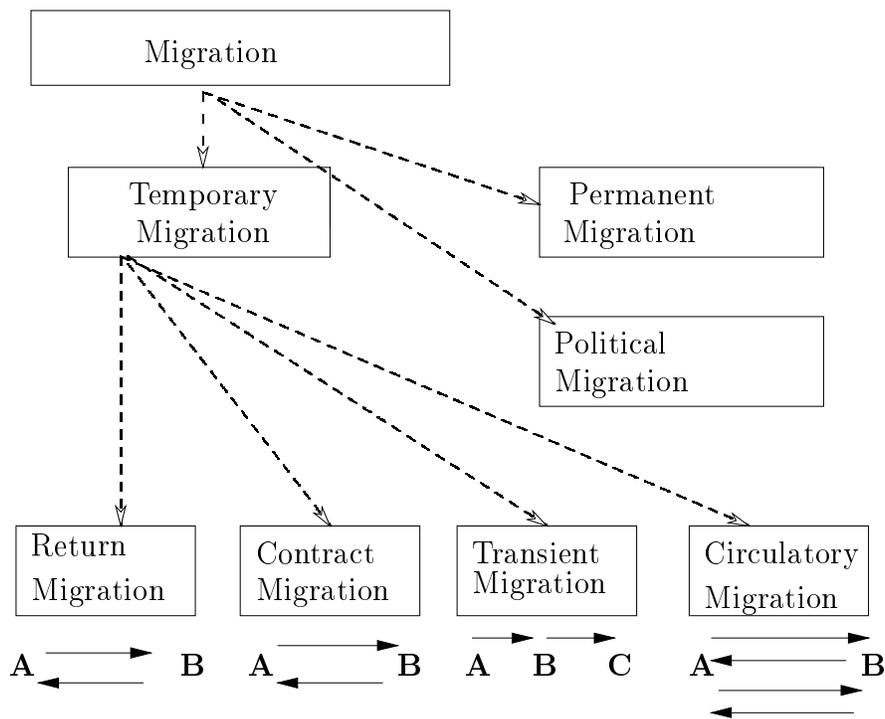
Figure 2: Types of Migration

A rough classification of migrations is provided in figure 2. Three main groups of migrations are categorized: *temporary migrations*, *permanent migrations*, and *political migrations*. Important is that we use the term *temporary* from the perspective of the host country: a migrant is a temporary migrant, even if he leaves the home country permanently, as long as he remains only temporarily in the host country.

While temporary and permanent migrations are primarily of economic nature, political migrants have a dislike to live in their home country. This is often a result of

discrimination, or of political or ethnical persecution. Political migrants are either permanent or temporary migrants. However, different from the other two groups, whose status is determined by their own decision (based on the economic situation in the two countries) or by regulations of the host country, the status of political migrants is determined by non-economic factors in the home country. This may have a number of behavioural implications.

Temporary migration may again be sub-classified. One important type of temporary migration is *circulatory migration*. With circulatory migration, migrant workers move frequently between the host- and the source country. They only stay for a short period in the target country, for example, for the harvest season. Circulatory migration is usually induced by a seasonal excess demand for labour in the immigration country, which can not be supplied by the native work force at adequate prices. Circulatory migration is often illegal (for instance, from Mexico to the Southern States of the US), and sometimes crucial for the competitiveness of the respective industry (frequently the agricultural sector) in the host country. In Europe, an example of circulatory migrations are harvest workers from Eastern Europe to Germany, or from Northern Africa to Southern Italy.

A *transient migration* describes a situation where the migrant moves between different host countries without necessarily returning home. Transient migrations were frequent during the 1960's and 1970's, where migrants from Southern European countries moved between Northern European countries. Very recently, an increasing number of (often illegal) migrants from Africa or Asia enter Europe through Italy, Spain or Portugal and then start to move towards Northern countries like Germany, or even Sweden.

A *contract migration* is a temporary migration where the migrant lives in the host country for a limited number of years, which is regulated by a contract. Labour migrations to Switzerland were predominantly contract migrations. Many circulatory migrations are contract migrations.

Return migration is the type of migration one has usually in mind when referring to migration as being temporary. Return migration describes a situation where migrants return to their country of origin by their own choice, often after a significant period abroad. Many migrations to Europe over the last decades fall in this category. As I shall demonstrate below, a permanent migration can be seen as a special case of a return migration.

In much of the empirical research, which analyses the behaviour of immigrants, migrations are implicitly considered as being permanent. However, this is likely to be the case for only a fraction of migrations. The reminder of the paper focuses on contract migrations and return migrations, and contrasts economic behaviour of these migrants with that of permanent migrants.

4   A Framework for Analysis

In simple static models, economic decisions of individuals are conditioned on present economic variables. For instance, labour supply decisions are based on comparisons between an offer wage, and the individual's reservation wage. In a dynamic setting, expectations about the future may also affect labour market behaviour. For instance, the reservation wage of an individual may be affected by expectations about future wage offers.

In economic models of individuals' behaviour, we usually assume that the future economic (macro)environment is the same for all individuals. Variables which characterise this environment are, for instance, variables like wages, prices, employment prospects, political stability, etc. If individuals have the same expectations about these future indicators, then they do not explain any differences in current economic behaviour. If however the future economic (macro)environment differs across individuals, then this needs to be taken into account when explaining differences in behaviour across individuals. Furthermore, if the economic environment can be chosen by the

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individual (for instance, by migration), then the choice process ought to be modelled in conjunction with the behavioural response of interest.

In figure 3, this is illustrated. Suppose we wish to analyse labour supply, consumption behaviour, or human capital investment of individuals. Econometric models relate the variation in these outcomes to variations in observable individual characteristics (like age and education), and features which characterise the environment of the individual. Consider the first block in the figure (within the dotted circle). If we wish to analyse the economic behaviour of natives, this block contains all necessary information we need to consider. As long as the future (macro)environment in the host country is the same for all individuals (both natives, and permanent migrants), it does not add (over and above individual characteristics) to explaining differences in behaviour across individuals.

Within this block, we can now develop a model which explains human capital investment of immigrants who are remaining permanently abroad. In what follows, I provide a stylised discussion of human capital investment and economic assimilation of immigrants under the various migration schemes (permanent, temporary, and return migration). For the technically interested reader, I have developed a simple formal model in the appendix.

Upon entry to the host country, it is unlikely that migrants are equally productive than native workers with similar educational attainment and age. The reason is that skills are not easily transferable from one economy to another. Consequently, migrants' initial earnings should be lower than those of natives with equal characteristics. After entry, migrants invest in skills which are specific for the host economy, like for instance language skills. The intensity of this investment process determines the pace of economic adjustment. Investments into skills are costly, and the optimal investment intensity will be such that costs and benefits are equalised. Costs may be opportunity costs, or costs for attending training courses. Benefits are enhanced productivity (and therefore wages) over the migrant's future work history in the host country.

One immediate implication of such a simple model is that benefits are lower the shorter the time the individual spends, after undergoing training, in the labour force (which corresponds to the pay-off period for the investment). This observation has implications for earnings growth of permanent migrants. The pay off period for any investment undertaken into host country specific skills is the shorter, the older the migrant is upon immigration. Accordingly, this simple model predicts that skill investment (and therefore the pace of assimilation) is lower for migrants who arrive at a later age. Evidence for this hypothesis is provided by Smith (1992), Friedberg (1993), and Borjas (1995).

The investment intensity depends also on the efficiency with which immigrants accumulate skills. It is likely that skill accumulation is easier for well educated immigrants. Higher education should enhance the learning capacity of the immigrant – for instance, literacy may help when learning a foreign language. But well educated migrants should also expect a higher wage without undertaking any further investment. Therefore, training activity creates higher losses in terms of forgone earnings for migrants who are highly educated. Accordingly, the total effect of the skill level upon migration on the investment intensity (and subsequent wage growth) is ambiguous in general.

Now consider migrations which are temporary, and where the return time is exogenous. Above, I have termed these migrations contract migrations. The second block in figure 3 (within the dashed line) defines the information necessary to model the behaviour of a temporary migrant when the return time is exogenous. The factors which influence the migrant's behaviour include now characteristics of the home country. Variables which measure individual characteristics are not sufficient any more to explain differences in behaviour between temporary migrants, and natives (or temporary migrants, and permanent migrants). The temporary nature of migration links current decisions of the migrant in the host country to the economic situation in the home economy.

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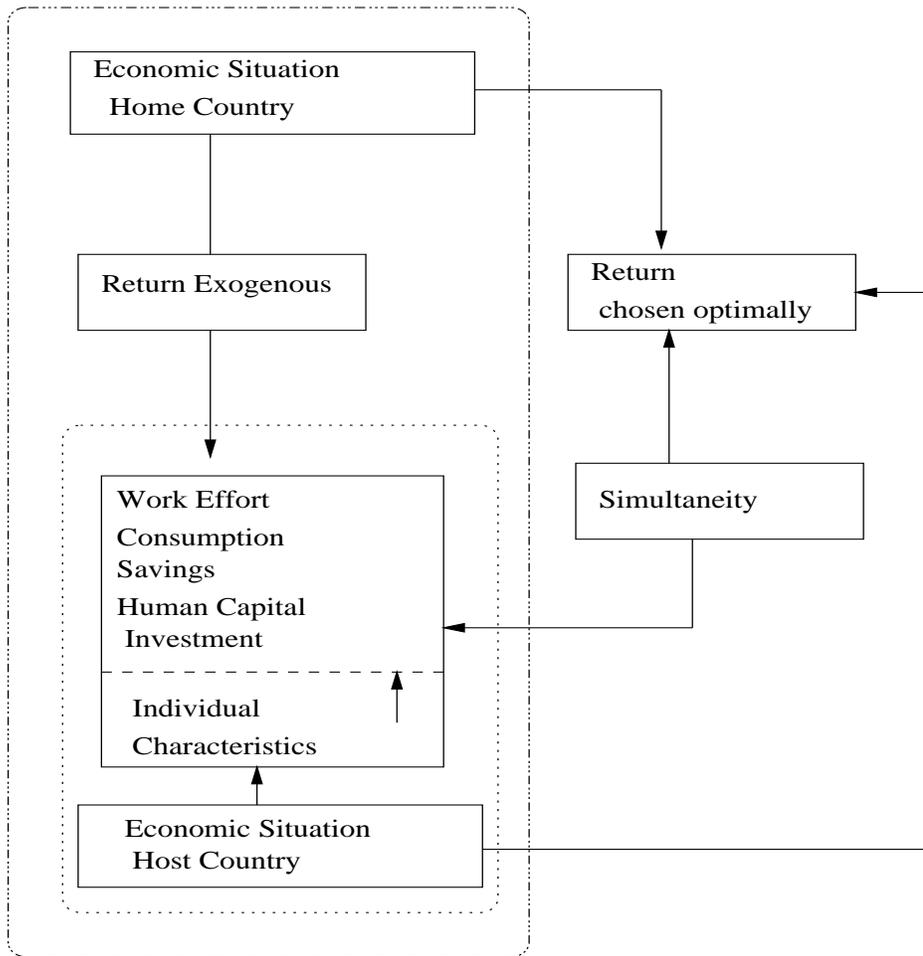
Figure 3: Migration and Labour Market Behaviour

A simple example may illustrate this point. Consider two identical workers in a West European steel manufacturing company. Worker 1 is a native, who intends to spend his entire future life in the residence country. Worker 2 is a migrant from an Eastern European country. Assume that worker 2 has a limited working contract, and that he has to return home after the contract has expired. In his home country, he

obtains exactly the same job, but he receives a lower wage. For this worker, leisure time is relatively more expensive in the host country than in the home country after returning. For worker 1, on the other side, leisure time costs the same in present and future. As a consequence, worker 2 chooses to work harder in the host country, and to work less at home in the future, where time at the work place has a relatively low value. Worker 1 works equally hard in present and future, since for him leisure has the same price now, and in the future. The extent to which the behaviour of the two workers differs depends on the economic disparity of the two countries, the length of the working contract, and the length of time the immigrant intends to be (economically) active in the home country after return.

This simple model explains a number of stylised facts. For instance, seasonal workers from Eastern European to Western European countries are willing to accept job – wage packages which are not acceptable for natives, and they perform often better (and work harder) than natives. A popular example is the asparagus harvest in many Western European countries, which crucially depends on the contribution of migrant harvest workers. The relatively low wage in their home countries, and the temporary nature of their migration reduces their reservation wages, and induces them to work harder while being abroad.

On the other side, contract migrations may sometimes not take place, when a permanent migration would take place. The reason is that each migration induces some fixed costs (by giving up friends, house, and by inducing travel costs etc.). Only if the expected gain by receiving a higher return on skills is larger than these costs, a migration will take place. Clearly, the gain from the migration depends on the length of time the migrant is allowed to work for pay abroad. Accordingly, with a short contract, the costs of migration may simply outweigh the benefits.

Now consider human capital investment of migrant workers under a contract migration scheme. It is argued above that for permanent migrants skill investments into human capital specific for the host country labour market depend, among others, on

the remaining time in the labour force. For contract migrants, investments into human capital which is specific to the host country labour market depend on the contract length. A Polish immigrant to Sweden is unlikely to invest into the Swedish language if he has only a one year working contract, since the investment will not pay off. However, he may change his mind when being offered a 10 years contract.

But the same migrant may be willing to invest into host country specific human capital, even on a short contract, if he obtains some return from that investment after going home. Therefore, the higher the transferability of host country human capital to the home country labour market, the more investment will be undertaken, keeping the contract length constant.

This has some important implications for migration policies. Short-termed temporary working contracts may severely hinder economic assimilation and productivity enhancements of immigrants. In the recent discussion in Germany about issuing temporary working permits for highly qualified computer specialists, this argument has not received sufficient attention. Temporary contracts may severely hinder important skill investments on the side of the migrant, which are most crucial to recover his entire skill potential. For instance, highly trained specialists may within a host country environment not be able to develop their full productivity potential if they lack language skills, which restricts communication with the native work force. A temporary contract scheme creates a disincentive to acquiring important skills which enhance productivity, and favour economic and social assimilation.

The temporary migration considered so far assumes that the length of the migration period is exogenously fixed; the migrant accepts the migration possibility, or he does not accept it. We have seen that the length of the offered contract may influence the migration decision, as well as work effort, and human capital investment. Most migrations to the US and countries of the European Union are not contract migrations, however. They are migrations where the migrant chooses whether or not to return. In case of an envisaged return, the migrant chooses the return time. As with contract

migration, the migration duration influences again important economic decisions (like skill investments). However, other than with contract migration, the time in the host country is now likewise chosen by the immigrant. In other words, the migrant's economic decisions are jointly taken with the decision whether, and when to return. In figure 3, the simultaneity of return decision and economic behaviour is illustrated by adding the two boxes outside the dashed line: individual characteristics, as well as the situation in home- and host country determine simultaneously return decision and economic decisions.

What are the implications of this for our simple model on human capital investment? As shown above, investment decisions of contract migrants are influenced by the length of the working contract. Contract migrants consider the length of migration as an exogenous parameter. Return migrant decide about the migration duration, which influences human capital investment. The migration duration may in turn be influenced by human capital investment decisions. It is obvious that this adds considerable complexity to modeling the behaviour of the individual. Not only is the home country situation an important factor in explaining differences in behaviour, but, in addition, the process which leads to determining the extent to which the migrant will be exposed to the home country has to be modelled as well. Neglect of these interactions when specifying an empirical model of the behaviour of immigrants may lead to misleading conclusions.

5   Why do Migrants Return?

I shall now discuss in more detail the motives which induce immigrants to return home. In the last section, the consequences of return migration for economic behaviour have been illustrated, without discussing the process which leads to a return migration.

Clearly, one obvious reason for a return is that the labour market situation in the home country improves, relatively to the host country, so that the wage differential

reverses. However, this is not a sufficient explanation for many return migrations which we observe (like, for instance, the considerable outflow of migrant workers from many European countries, as illustrated in the figures above). These return migrations occur although wages remain persistently higher in the host economy.

What are the circumstances which lead to a return migration? Suppose the migrant weights in each period the benefits of remaining a further unit of time abroad against the costs of doing so. He will decide to return home when the benefits of staying a further unit of time (say a month, or a year) abroad are lower than the cost. When does this situation occur? The most important reason for emigration are higher wages in the host economy. This creates additional wealth, and allows the migrant to increase lifetime consumption. However, as the first loaf of bread gives more pleasure to a hungry man than the third, the additional benefit of a unit of time in the host country is the lower, the longer the migrant has already stayed abroad (and the more wealth he has accumulated). Accordingly, the benefit of migration is slowly decreasing. This alone does not trigger a return migration, since, whatever the immigrant's wealth, it is always advantageous to earn a higher wage.

Now assume that migrants enjoy consuming in their home country more than consuming in the host country. It may for example give more pleasure to an immigrant to consume a bottle of wine with friends and family at home than alone in a foreign country. Accordingly, staying abroad is costly for the migrant, because it deprives him from the possibility to consume during that time at home. Since life is finite, the remaining (potential) time in the home country becomes more precious the longer the migrant remains abroad, which leads to an increase in the costs of staying abroad.

In the simplest possible model which a creates return migration, wages are higher in the host country. At the same time, migrants have a preference for living in their home country. In such a setting, migrants emigrate, because that increases their lifetime wealth (and, therefore, their lifetime consumption). This creates the benefit of migration. At the same time, consumption abroad creates less pleasure than consump-

tion at home. This creates the costs of migration. Under plausible assumptions, it is straightforward to show within this model that benefits of migration decrease over the migration cycle, while costs are posirive, and may increase. This may lead eventually to a return migration - when costs are equal to benefits. In the appendix, the formal conditions for this are derived within a simple model.

No migration, and permanent migration are special cases of this model. For a migration to take place, benefits must initially be higher than costs. Accordingly, if, despite a large wage differential, preferences for the home country (relative to the host country) are very strong, no migration will take place. Preferences for the home country (relative to the host country) depend on a number of factors. They may be influenced by the migrant's family situation, and personal characteristics, like age and education. A simple framework like the one set out above is able to explain a number of stylised facts, and is compatible with observed heterogeneity in migration durations.

Permanent migration occurs if at the end of the migrant's lifetime, benefits are still higher than costs. Again, this may depend on the preference of the immigrant for the home country. Permanent migrations are therefore a special case of return migrations - they occur when, over an immigrant's lifetime, the benefits of migration (in our simple model induced by higher wages) are always larger than the costs (in our simple model induced by differences in preferences for consumption).

Locational preferences are only one possible motive which triggers a return migration. There are other reasons for why migrants may return, despite a persistently more favourable economic situation in the home country.[2] One reason which induces a re-migration is a higher purchasing power of the host country currency in the home country. Migration is temporary because it allows the migrant to take advantage of high wages abroad, and lower prices at home. This motive may contribute to return

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[2]See Dustmann (1994) for a general framework for investigating return migration and optimal migration durations. In Dustmann (1997), return migration and optimal migration durations are analysed in a stochastic environment.

migration of Eastern Europeans, since the purchasing power of Western currencies is substantially higher in many Eastern European countries.

A further reason for a return relies solely on human capital considerations. If the return on human capital acquired in the host country is higher at home, then this alone may trigger a re-migration. One situation where this return motive is important are student migrations. Another situation is migration from countries which are in the process of industrialization. Basic knowledge about work efficiency, organization at the work place etc., acquired in the industrialized country increases the migrant's productivity only slightly in the host country, but may be important and highly valued in the home country.

6 Implications for Empirical Work

6.1 Estimation of Wage Equations

Most of the empirical analysis of migrants' economic assimilation in the economic literature is based on regression models, where variables like earnings or wages are related to human capital variables, like education, labour market experience, and years since migration. The wage equations are usually extensions of specifications used for natives, where the years of residence, and indicator variables for the country of origin are added. These variables pick up differences in the initial earnings position due to different origins, and allow for earnings (and earnings growth) to depend on the past duration of the migrant in the host country. The coefficient on the variable *years since migration* has been interpreted by some authors as a measure of assimilation (see LaLonde and Topel, 1992). It approximates the growth in wages which is associated with country-specific human capital accumulation, over and above wage growth due to home-country specific labour market experience.

These empirical specifications may be appropriate for migrations which are perma-

nent. Now consider a contract migrations. As shown above, immigrants with different migration durations differ with respect to the intensity with which they invest into host country specific human capital. Furthermore, even if the durations of migrations are equal, investment intensities may differ across immigrants from different origin countries, because the transferability of human capital accumulated abroad may differ across countries. Accordingly, the length of the migration is an important additional variable to be considered when estimating wage equations for contract migrants. Omitting this variable (and possibly interactions with other regressors) may lead to biased parameter estimates of the other model parameters.

In case of a return migration where the migrant chooses the optimal return time, the modeling approach becomes more difficult. Now the migration duration is not an exogenous variable in an earnings regression. The discussion above shows that human capital investments (determining earnings and earnings growth) and the optimal migration duration are chosen simultaneously in the case of a return migration. This means that any changes in the migration duration affect human capital investments; on the other side, any changes in (intended) human capital investments may affect the optimal migration duration. Accordingly, the process which determines wages can not be separated from the process which determines the optimal duration. A stylised model would consist of two equations:

$$\text{Wages} = f\big(\text{Time in Host Country, Other Factors W}\big), \qquad \text{(1-a)}$$

$$\text{Time in Host Country} = g\big(\text{Skill Investment, Other Factors T}\big), \qquad \text{(1-b)}$$

where *Other Factors* j, $j = W, T$ include variables which determine wages ($j = W$) or the time abroad ($j = T$) (like, for instance, age and education). In the case of a return migration, both the time in the host country, and skill investments (and, therefore, wages) are simultaneous decisions, and a more complete model (consisting of

(1-a) and (1-b)) is needed to fully describe the migrant's skill investment when living abroad. In the case of a contract migration, only equation (1-a) needs to be considered. As long as the contract length can not be influenced by the migrant, skill investment has no effect on the time spent abroad.

Accordingly, even if we had a measure for completed migration durations, inclusion of this variable into the wage equation would not be sufficient to estimate wage equations for return migration. An estimate of, for instance, the causal effect of the migration duration on wages can not be obtained by straightforward regression. It requires estimators which take account of the simultaneity of investment- and duration decisions. This requires the availability of variables which affect the re-migration decision directly, but human capital investments only indirectly, and via the re-migration decision. These variables are called *instruments*. Instruments would be variables which are included in *Other Factors T*, but not in *Other Factors W*.

6.2 Intentions and Realisations

Suppose now that we observe complete migration histories, i.e. we not only observe when the migrant enters the host country, but also when, and whether he leaves again. Such data is becoming increasingly available, in particular in the Scandinavian countries. In this case, we observe something which is equivalent to the duration of the migrant abroad. I show above that conditioning on this variable will still result in a classical simultaneity bias when we consider return migrants.

Assume that we also have instruments, i.e. variables which explain variation in the migration duration, but not in wages, except via the migration duration. Does this allow us to obtain an estimate of the effect of the migration duration on wages? Obviously yes, if the decision process is as simple as indicated by the model we set out above. However, it is not clear that the return realisation (which we observe) is really what we wish to measure. In a completely deterministic world, intention and realisation coincide. In a non-deterministic setting, migrants may re-optimise

when obtaining additional information. Migrations initially planned as permanent may become temporary, and vice versa. Therefore, migrations which we observe to be permanent (or temporary) may have been intended to be temporary (or permanent) at earlier stages.

Since earnings (or other measures of human capital) we observe today depend on investment decisions taken in previous periods, even data on complete durations seems insufficient. In fact, the final realisation of a return may not at all reflect earlier intentions, on which human capital investments are based.

A useful definition for return migration for empirical work should be oriented on ex-ante intentions rather than on ex-post realisations. Investments undertaken into human capital (as well as consumption- and labour supply choices) are conditioned on intentions at that point in the migration history, and not on final realisations.

Empirically, this implies that we need information about the entire history of migrant's intentions, which may rarely be ever available. Suppose we only observed completed durations. It is likely that completed migration histories contain some information about previous intentions, and that intentions in previous periods and realisations are positively correlated. If this is the case, and if we are willing to assume that deviations of realisations from intentions are random, we have a classical measurement error problem, which can be taken care of by standard instrumental variable methods. Our instruments would then address the problem of simultaneity and approximation error simultaneously.[3] Clearly, to find such instruments is not a trivial task.

However, to really understand and to model the process of return plans (and its interactions with economic decisions, like human capital investments) requires a dynamic model, where intentions are modelled explicitly. This is attempted in a paper by Adda and Dustmann (2000). In this model, migrants make a decision each period whether to stay in the host country or to return to the country of origin. Each period,

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[3]Instrumental variable estimation solves the measurement problem only if the duration variable enters the outcome equation in a linear manner.

migrants also decide how much investment to allocate to assets specific to the host country, and the country of origin. The decisions taken are based on a comparison of the discounted flow of utility in the two locations and depend on the capital invested in each country, as well as on a series of stochastic shocks, which may lead to revisions of former plans. The data requirements to estimate such a model are not only to measure final realisations of return plans, but a history of intentions. The model is estimated using a panel data set from Germany, following migrants from various origins for 14 years.

6.3 Empirical Evidence

There is some empirical evidence that migrants who are temporary have a different human capital investment behaviour, and exhibit different labour market participation patterns than permanent migrants. In an earlier paper (Dustmann, 1993), I estimate earnings regressions similar to those of Chiswick (1978) for Germany. I find that immigrants have upon arrival lower earnings than natives. There is however no evidence for the earnings gap to decrease with time in the German labour market. Unlike the findings for many other countries, foreign workers in the German labour market receive lower wages than their native counterparts throughout their working history, other things being equal. There is no earnings-crossover between these two groups.[4]

Figure 4 reproduces earnings profiles from Chiswick's (1978) original work for the US (left panel of figure 4), and for Germany from my earlier paper (right panel). The vertical axis carries log earnings, and the horizontal axis carries experience in the US (or German) labour market. Notice that both figures are based on separate estimation for migrants and natives, which impose less restrictions on other model regressors.

The temporary character of migrations to Germany is one possible explanation for these differences. The data used for the analysis include labour migrants who

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[4]See also Pischke (1993) and Schmidt (1992), who come to similar conclusions.

United States
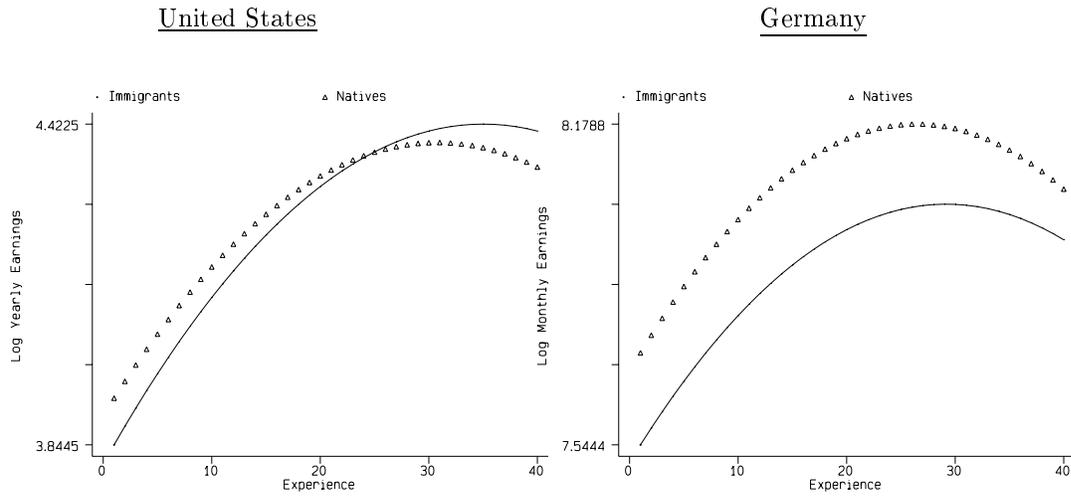
Germany

()   Figure 4: Experience-Earnings Profiles, United States and Germany

came to Germany during the 1950's-1970's. Labour migrations during this period were intended to be temporary both by the migrant, and by the host countries, thus reducing incentives of immigrants to invest into skills (or human capital) specific to the host country labour market.[5]

In another paper (Dustmann, 1999), I explore the effects of return migration on investments into a particular component of host country specific human capital: language capital. Language capital is very important for the host country economy, but usually not transferable to the home country. I use the same data than for the previous study, which contains survey information about migrants' return intentions. As I argue above, immigrants who intend to stay permanently in the host country should have higher incentives to invest into host country specific human capital than immigrants

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[5]There is a second factor which may contributes to the lack of significant assimilation of immigrants to the earnings of natives. At the time of labour migrations into central European countries, emigration countries were characterised by high levels of unemployment, while immigration countries exhibited an excess demand for labour. If unemployment is high in the home country, and there is no unemployment in the host country, and if, furthermore, high ability individuals have a higher probability to finding a job in the home country, then migration may well be negatively selective, which may reinforce the weak position of migrants in the host country labour market.

who intend to return. This prediction is consistent with the data in straightforward probit regressions, with permanent migrants having a 10 percent higher probability to be fluent than migrants who intend to return. Clearly, issues of simultaneity, measurement error and ability bias, as pointed out above, are present. I therefore estimate the return- and the language equation simultaneously (corresponding to the model in (1-a), (1-b)). As instruments, I use whether the parents (both mother and father) are residing in the home country, and whether they are still alive. It is likely that the death of the parents, although not affecting language investments directly, has an impact on the return plans of the migrant. In these simultaneous estimations, migrants with an intention to remain permanently abroad have a 49 percentage points higher probability to be fluent in the host country language, and this effect is significant.

7   Summary and Discussion

An important parameter in the economic research on migration is an estimate of the assimilation of immigrants to the labour markets of the host countries. The previous literature has emphasised a number of sources of bias when estimating this parameter, being related to non-random immigration, and non-random out-migration. In this paper, I argue that a further serious source of bias is that migration may be temporary. If migrations are temporary rather than permanent, migrants condition also on the expected future economic situations in the host countries, which may lead to variations in assimilation profiles between migrants.

But not only the fact that migrants return matters. Also the reason for the return is important when specifying an appropriate econometric model. If the return time is chosen by the migrant, the economic behaviour which is of interest to the analyst needs to be modelled in conjunction with the process which determines the return decision.

I provide some stylised facts, which illustrate that temporary migration is quite common in Europe, and also in the US, and discuss types of temporary migrations.

I then develop a more structural model, where migrants decide about their investments into human capital which is specific to the host country. I distinguish between three types of migration: Permanent, temporary, and return migration. The empirical implications are that straightforward estimation of outcome equations, neglecting the possibly temporary character of migration, may lead to biased estimates. Even if completed durations were observed, the simultaneous character of decision making in the case of return migrations leads to simultaneity bias. Estimations strategies need to take this into account.

Although the model points out some important features of temporary migrations, and its implications for empirical work, it is a simplistic image of the real world. The model assumes complete certainty, and that investment- and return plans are made at the beginning of the migration history, and never revised. This is not necessarily the process which generates the data we use for empirical analysis. It is likely that return plans are revised when new information is obtained. Therefore, even if we observed completed migration histories, the final return time may not reflect plans on which previous decisions were based. Accordingly, completed durations are only an approximate measure for return plans which determine previous investments. This is a further reason for using instrumental variable estimation.

Finally, I present a number of empirical findings which are compatible with the hypothesis that temporary migration intentions have indeed some effect on behaviour.

To conclude, this paper draws attention to the observation that re-migration propensities affect economic behaviour of migrants in the host countries. Much of the empirical work, which is estimating outcome equations for immigrants, tends to neglect this point. New and extensive data sets, as they become available in many of the Scandinavian countries, allow to explore these issues in more detail. Consequences for policy makers are immediate. If for instance migrants are kept uncertain about their permanent status in the host country (which is, and has been the case for many European countries), then this may prevent them from undertaking investments into

human and social capital. This hinders a rapid assimilation, and the development of their full productivity potential. If assimilation is desired, many migration policies in Europe have to be reconsidered under this aspect.

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9 Appendix

A Structural Model

Consider an individual who maximises the following utility function

$$U = t\,\alpha_1 \ln c_1 + (T - t)\alpha_2 \ln c_2 \,, \tag{2}$$

where the indivdiual's total lifetime is given by T, which is assumed equal to the time the individual is active in the labour force. Furthermore, c_1 and c_2 are consumption flows in the first and second period respectively, and α_i are preference parameters. If $\alpha_2 > \alpha_1$, the individual prefers to consume in the first period.

In this model, there are two periods of variable length, t and $T - t$; the first period is the time the individual spends in the host country, and the second period is the time the individual spends in the home country. Suppose that in the beginning of the first period, the migrant has the opportunity to acquire skills by investing s units of time into learning activities. Assume that the period over which skills may be acquired is of unit length. Figure (5) illustrates the timing of the model.

Upon arrival, the migrant has a stock of human capital H, measured in units of productive human capital in the host country. The market wage rate paid for this human capital is r^H, so that earnings per unit of time without human capital investments are equal to $w^H = r^H H$.

In P1, the migrant may invest s units of time into human capital, where $s \in [0, 1]$. While acquiring skills, the migrant can not work in the labour market, so that the first period earnings are given by $(1 - s)w^H$. After the first unit in the first period, time devoted to skill accumulation is translated into productivity, according to the function $f(s, H, A)$, which exhibits the properties $f_s > 0$, $f_{ss} < 0$, $f_A > 0$, $f_H > 0$, $f_{HH} < 0$ and possibly $f_{sA} > 0$. Here A is the individual's ability. The production technology

P1   P2   P3

0   1   t   T

HOST COUNTRY   HOME COUNTRY
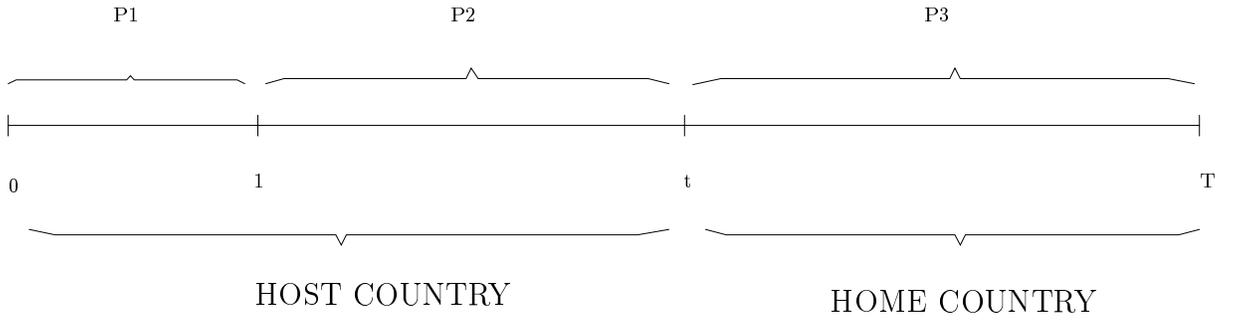
P1: Migrant may invest S units into country-specific human capital

P2: Migrant receives benefits from human capital investment.

P3: Migrant works at home

Figure 5: The timing of the model.

indicates that skills are self-productive: Individuals with a higher stock of skills H on arrival acquire further skills more easily. A function with these properties is given by

$$f(s; H, A) = A \frac{1}{\xi}(sH)^{\xi}.$$

The budget constraint is now given by

$$tc_1 + (T-t)c_2 p = \overbrace{w^H(1-s)}^{P1} + \overbrace{(t-1)[w^H + \rho^H f(s; H, A)]}^{P2} + \underbrace{\overbrace{(T-t)[w^O + \rho^O f(s; H, A)]}^{P3}}_{\text{Total Earnings Home Country}} \ ,$$
$$\underbrace{}_{\text{Total Earnings Host Country}}$$

(3)

where $\rho^O f(s; H, A)$ is the wage (per unit of time) the migrant receives at home on human capital acquired in the host country, and $\rho^H f(s; H, A)$ the wage he receives abroad for human capital acquired in the host country. Accordingly, the parameter ρ^O measures the transferability of human capital acquired in the host country to the

migrant's home country economy. If $\rho^O = 0$, human capital is not transferable at all. The parameter p measures the relative price level in the host country. If $p < 1$, the same bundle of goods is less expensive in the migrant's home country. In the terminology of the trade literature, the purchasing power of the host country economy's currency is higher in the home country.

If the migration is a contract migration (t is exogenous), the migrant chooses c_1, c_2, and the level of investment s so as to maximise (2) subject to (3). If the migration is a return migration, t becomes a further choice variable.

Permanent Migration

First assume that migration is permanent by setting $t = T$ (below I show how permanent migration may be an optimal solution to the above problem). Since the choice of the optimal consumption level and the optimal investment level are separable, the optimal investment s is determined by the following first order condition:

$$\underbrace{w^H}_{\text{Forgone Earnings}} = \underbrace{(T-1)\rho^H f_s(s; A, H)}_{\text{Gain from Investment}} , \qquad (4)$$

where $w^H = r^H H$. This condition says that the migrant chooses s so as to equalise the earnings forgone by human capital investment in the first unit of the first period with the total wage gain, resulting from that investment. The gain is positively related to the remaining time in the labour force T (since it increases the length of the pay-off period for any investment undertaken), the return to skills in the host country ρ^H, and, via f, to the initial skill level, and the ability of the immigrant.

Solving for s, using the function for f assumed above, gives the optimal level of investment:

$$s = \left(\frac{r^H}{(T-1)\rho^H A} \right)^{\frac{1}{\xi - 1}} \frac{1}{H} . \qquad (5)$$

Accordingly, the optimal level of investment in human capital decreases with the rate of return on the migrant's home country human capital, r^H; it increases with the return on human capital investments, and with the migrant's level of ability A.

The effect of the initial skill level on investment is ambiguous for the general case. Higher initial skills increase opportunity costs of further skill investments, but increase also productivity of each unit of time invested into skill production. For the functional forms chosen here, the first effect overcompensates the second effect, so that the total effect of the initial skill level on further investments is negative.

Also, the higher the return to skill investments, ρ^H, the higher first period investment, as well as second period wages. Finally, the larger T, the higher investments. Since T corresponds to the active time of the immigrant in the host country labour market, this implies that immigrants who come at a later age invest less in their human capital, and therefore have a lower wage growth. The age at entry determines the pay-off period for human capital specific to the host country labour market; migrants who are younger at entry should have steeper subsequent wage profiles.

Consider now a migrant and a native worker, and suppose that they differ in the level of human capital H, but are otherwise identical. If the initial skill level of the migrant is lower than that of the native, then the simple model above suggests that migrant's earnings in the host country labour market are initially lower than native's. Earnings growth may be steeper for immigrants than for natives, and it may be steeper for migrants with a larger initial earnings disadvantages. Although this is what usually found in the empirical literature, it is not an unambiguous implication of the above model. More clear-cut is the effect of the ability level A. If migrants are positively selected from the ability distribution of their home country, their wage growth is steeper.

These simple considerations show that it is quite important to distinguish between ability and skills as two different concepts, because the way they affect earnings growth is distinct. Not always is this distinction clear in the empirical literature.

Contract Migration

Now consider a contract migration. In this case, $t < T$, and the migrant spends some of his productive period in the home country. The first order condition is given by

$$\underbrace{w^H}_{\text{Forgone Earnings}} = \underbrace{[(t-1)\rho^H + (T-t)\rho^O]f_s(s; A, H)}_{\text{Gain from Investment}} . \qquad (6)$$

Again, opportunity costs of investment are equal to forgone earnings. The gain includes not only the return to investment in the host country, but also in the home country after re-migration. It is the weighted return to investments in the host- and the home country, where weights are determined by the contract length.

Solving (6) for s yields

$$s = \left(\frac{r^H}{A((t-1)\rho^H + (T-t)\rho^O)}\right)^{\frac{1}{\xi-1}} \frac{1}{H}, \qquad (7)$$

which is equal to equation (5), except that the gain of investments consists now of the weighted return in home- and host country.

The effect of the contract length is ambiguous in general, and it depends on whether returns to skills acquired in the host country are higher at home or not. If $\rho^H > \rho^O$ (the return to skills acquired abroad is higher in the host country than in the home country), then an increase in the contract length t clearly increases skill investments. This is likely to be the normal case. If however $\rho^H < \rho^O$, then the opposite is the case.

Now consider again a native, and an identical immigrant. Even if the skill level of the immigrant is the same than that of the native worker, the immigrant will invest less in human capital, as long as returns to that investment are lower in his home country than in the host country. In this simple model, investments and wage growth between the two individuals vary according to the difference in returns $(\rho^H - \rho^O)$, and the length of the contract.

Return Migration

In the case of a return migration, the migrant chooses not only the optimal investment level s, but, in addition, the optimal migration duration t. This adds a further first order condition to the model:

$$\underbrace{[\alpha_2 \ln c_2 - \alpha_1 \ln c_1]}_{\text{Costs}} = \underbrace{\pi \left[(w^H + \rho^H f - c_1) - (w^0 + \rho^0 f - pc_2) \right]}_{\text{Benefits}}, \qquad (8)$$

where π is the marginal utility of wealth. This condition says that the return time is determined by equalising the benefits of remaining a further unit of time abroad (right hand side) and the costs (left hand side). The benefits are the difference in wealth accumulation when residing at home, or abroad. The costs are the differences in utility obtained from consuming in home- or host country. Notice that the costs are zero if the price level $p = 1$, and if $\alpha_1 = \alpha_2$ – in this case, the migrant is indifferent between consumption at home or abroad.

The migrant's optimal investment s and the optimal duration t are now determined by two optimality conditions, defining the optimal return point as a function of the optimally chosen human capital investment, and the optimally chosen investment as a function of the return point. Consider, for simplicity, the linearised versions of these optimality conditions:[6]

$$\tilde{s} = \gamma_1 \tilde{t} + x\gamma_2 ,$$
$$\tilde{t} = \delta_1 \tilde{s} + x\delta_2 , \qquad (8\text{-a})$$
$$(8\text{-b})$$

where $\tilde{s}$ and $\tilde{t}$ are optimal investment and optimal duration, and x is a (vector of) variables (like ability, initial skill level, etc.) The parameters γ_1 and δ_1 measure the

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[6]These can be obtained by invoking the implicit function theorem. See Dustmann, 1999, for details.

effects of the optimally chosen migration duration on investment, and of the optimal level of investment on the duration of migration. Within the above model, one can show that γ_1 and δ_1 are both positive. Parameters in γ_2 and δ_2 measure the effect of other characteristics x on these two decisions. Notice that both decisions are simultaneously determined; accordingly, changes in any of the variables in x have a direct effect on human capital investment $\tilde{s}$, and an indirect effect, by changing the optimal duration $\tilde{t}$.

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