Brain Drain and Brain Gain: Evidence from an African Success Story[1]

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Abstract

Does emigration really drain human capital accumulation? We study the case of Cape Verde in answering this question. This was the third fastest growing country in sub-Saharan Africa from 1980 to 2003, while having experienced strong international emigration – indeed this is currently the country with the largest brain drain and also with largest international remittances (as a fraction of GDP) in Africa, according to the World Bank. We explore the causal link between international emigration and human capital accumulation using a household survey designed and conducted for this specific purpose. We ask the counterfactual question: How much would human capital have grown if there had been no emigration? We combine our micro data set with information from censuses of the destination countries to account for the characteristics of the labour force that is lost permanently due to emigration. Moreover, the empirical part that estimates the causal effect of emigration on those left behind uses a rich set of instruments provided by our tailored survey both at the household and at the regional level. Our results are supportive of "brain gain" arguments according to which the possibility of emigration positively contributes to human capital accumulation. We cannot, however, find much support for remittances or return migration as important direct contributors to improved educational levels.

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Table of Contents

1. Introduction

The World Bank (2006a, 2006b) recently highlighted the serious problem of "brain drain" for the growth performance of developing countries. In particular, it presented Cape Verde as the African country with the largest fraction of educated population living abroad. This country was, however, the third fastest growing country in sub-Saharan Africa from 1980 to 2003,[5] despite having no significant natural resources - unlike the two fastest growing countries, Equatorial Guinea and Botswana. These facts demand an examination of the empirical importance of the negative "brain drain" phenomenon.

According to our growth accounting results, [6] human capital accumulation is the aggregate input most strongly related to the excellent growth performance of the Cape Verdean economy in the last 15 years. We therefore ask the question: has emigration of the brightest Cape Verdeans really been draining out human capital accumulation?

This paper aims exactly at empirically evaluating the causal link between skilled emigration and human capital accumulation. For this specific purpose, we designed and conducted a household survey, for which 1066 households living in Cape Verde were interviewed face-to-face during January and February of 2006. This tailored survey provided us with a rich set of instruments at the household and at the regional level, which allow us to explore the empirical questions at stake.

Traditionally, international emigration of the most educated fraction of the population has been associated with multiple potential problems. These have generally been labelled "brain drain": the loss of the brightest national citizens, implying the disappearance of a critical mass in production, research, public services (notably health and education) and political institutions.[7] This effect may be even larger than its direct impact due to the externalities brought about by interaction of the most educated, or due to complementarities with factors of production such as capital equipment or total factor productivity (TFP), which are likely to magnify the productive contribution of skilled workers.[8] Moreover, massive emigration of the most educated is likely to imply significant fiscal losses due to foregone tax revenue (which is likely to be a counterpart to investment in the education of the emigrated workers).

[5] This ranking is based on PWT 6.2.
[6] Our growth accounting approach and results are presented in Appendix.
[7] The traditional brain drain literature was notably developed by Gruber and Scott (1966) and Bhagwati and Hamada (1974).
[8] The external effect of human capital on production was first modelled by Lucas (1988), and further discussed by Borjas et al. (1992) and Acemoglu (1996). Complementarities in aggregate production are discussed and empirically evaluated by Stokey (1996) and Krusell et al. (2000), respectively, among others.

Our work starts by paying attention to the fact that the magnitude of the "brain drain" is not easy to measure. Indeed, a fraction of the educated emigrants is observed after having upgraded their schooling achievement abroad. In order to compute the real "brain drain" we would need to know the level of schooling that the migrant population would have had if they have not migrated. We define and propose a realistic measure of the brain drain in Cape Verde, using information on the educational achievement of individuals before emigrating.

In recent years, the economic literature has focused on the potential gains of emigration. Countering the traditional brain drain literature, the arguments for "brain gain" propose that an increase in expected returns of education stemming from the possibility of emigration may prompt a net increase in the rate of human capital accumulation[9]. This would imply that an increase in the own probability of migration may increase the accumulation of human capital, as long as destination countries have a higher return to education than origin countries, or education lowers the cost of migration, making easier the option of entering another country with higher real salaries.

Moreover, emigration might have an indirect positive effect on education via remittances. The importance of international remittances has been emphasized by Ratha (2003) among others, basically on the grounds that these reduce financial constraints in receiving countries that may increase the probability of getting a degree.[10]

Finally, not all migrants are a loss of resources from the point of view of the origin country. Return migrants may be beneficial to their home country's development as they bring with them not only financial savings, but also a set of newly acquired productive skills that positively contribute to a country's stock of human capital.[11]

We empirically explore each of these channels to achieve a counterfactual distribution of schooling without emigration.

Our work is most closely related to those of Mishra (2006) and Faini (2006). These papers both investigate the simultaneous macroeconomic effects of remittances and brain drain (for a set of Caribbean countries and for a large panel of developing countries, respectively, both using the work of Docquier and Marfouk, 2005). They reach the same conclusion that the brain drain phenomenon is likely to have stronger, negative consequences on the origin economy than the positive effects implied by remittances. However, they use macro remittance data, which suffers

[9] Miyagiwa (1991), Mountford (1997) and Stark et al. (1997, 1998) were the main proponents of the brain gain hypothesis. Beine et al. (2001, 2003) present supporting empirical evidence.
[10] Evidence of the positive effects of remittances on education and investment is provided, among others, by Edwards and Ureta (2003) for El Salvador, Yang (2006) for the Philippines and Mishra (2006) for 13 Caribbean countries.
[11] See Dustmann and Kirchkamp (2003) and Mesnard and Ravallion (2006) on this topic.

from a downward measurement bias, as official data do not record informal channels, both illegal and legal, such as remittance of goods via friends or other family members. We make use of our household survey to obtain better measures of remittances at the household level, and combine this with other household and regional characteristics in attempting to explain the consequences of emigration for human capital accumulation.

To undertake our objectives, we begin by presenting a brief overview of the main characteristics of our country of interest. We then proceed by presenting the household surveys we use in our empirical work, including their main descriptive statistics. In section 4, we define and propose a realistic measure of the brain drain in Cape Verde. In the following sections, we empirically establish the reverse brain gain forces: section 5 establishes the role of emigration on improved educational achievement of non-migrants, whereas section 6 presents evidence on the contribution of return migration to human capital accumulation. Section 7 summarizes and presents policy implications.

2. Cape Verde: A Short Introduction to the Country

Cape Verde is a nine-island country with 441,000 inhabitants, according to the latest 2000 Census. In terms of institutional history, the country was a Portuguese colony until 1975, when it became independent and a socialist regime was put I place, a common trend in Lusophone Africa. The first free elections only occurred in 1991, but a stable democracy has been in place thereafter. In addition, the country was awarded in 2005 the Best Control of Corruption in Sub-Saharan Africa, after Botswana, by the World Bank.

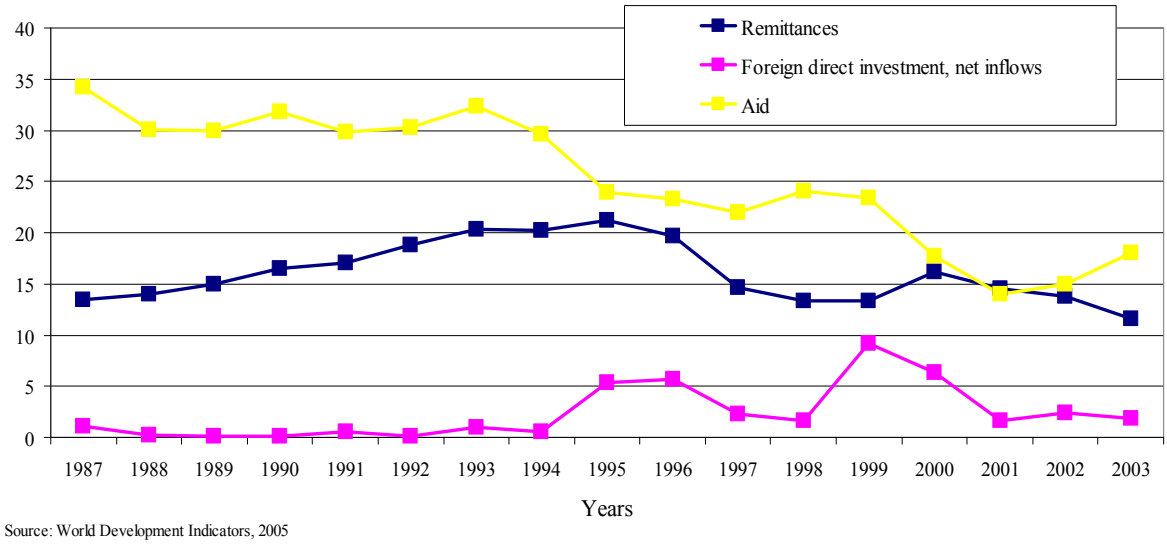
In terms of economic performance, it clearly exceeded the Sub-Saharan African Average GDP per capita growth 1980-2004 (PWT 6.2.) of 0.6%. Indeed, it was the third fastest country in terms of per capita growth out of the 45 sub-Saharan countries in PWT 6.2., after Equatorial Guinea (11% average annual growth arte) and Botswana (5%), both countries rich in natural resources and with exports accounting for a large fraction of their GDP (47% and 55%, respectively). Unlike these countries, Cape Verde stands out growing at an average annual rate of 4.4% (4.1% over 1981-1990, 5.8% over 1991-2000) but with exports accounting for only 20% of its GDP and no natural resource abundance - rather the opposite, as droughts and famines were a recurrent characteristics of the country's history.

Indeed, droughts and famines prompted the massive emigration phenomenon that characterizes this country for many decades. According to our estimates (based on census data for the stock of immigrants in most destination countries, adjusted for a conservative 10% probability of

underreporting of illegal immigrants), there are around 84,467 Cape Verdean current emigrants, or about 18% of the population.

International emigration is Cape Verde's most striking feature. According to the World Bank (2006), 67.5% of the educated labor force of Cape Verde lives abroad, which is the largest such number in the African continent. Moreover, the magnitude of international remittances received in Cape Verde is impressive: these flows account for 16% of GDP on average over 1987-2003 (WDI), according to official numbers, likely underestimated as they do not include informal channels (legal or illegal). These numbers are the largest in Africa and translate the especially important role of remittances for the country, particularly given the relative magnitude when compared to aid and foreign direct investment inflows.

Remittances, FDI, and Aid in Cape Verde (% GDP)



Source: World Development Indicators, 2005

3. Data Sources: Tailored Household Survey Design, Some Descriptive Statistics, and Other Sources

i. Household Survey Design and Conduction

Our empirical work is based upon a Household Survey on Migration and Quality of Public Services purposely designed to answer our questions and conducted in Cape Verde, from January to March 2006.

The tailored data collection consisted of survey (face-to-face) interviews conducted by teams of local interviewers and one of the authors. He recruited and trained the local teams making sure that each interviewer had at least a total of 18 hours of training in groups of 2-3 individuals.

Training included lectures on the content/objectives of the survey; answering the questionnaire; and piloting (at least once per interviewer).

The survey questionnaire was submitted to 1066 households (997 complete interviews) in 30 (or 5%) of the 561 census areas of CV. It was composed of two modules: one on perceived quality/corruption of public services; and the other on migration characteristics of the household.

The sampling process was such that sampled census areas were chosen randomly weighting by the number of households, and households within a census area were chosen randomly using standard techniques (10^{th} house, with second visits tried in the same day). The requirement condition for a household to be interviewed was family residence in the country anytime in 1985-2006. The requirement condition for a respondent within a household to be interviewed was to be aged 30 or more years old.

There are two imperfections to the random sampling of households in the survey. One is differences in attempted interviews in the different census areas, and the other is non-responses. We use weighted data to account for these problems, although differences to unweighted data are negligible, for which data collected from non-respondents are exploited (gender, approximate age, approximate schooling, and approximate income).

ii. Descriptive Statistics

In this section we briefly characterize the information obtained by our household survey emphasizing the comparability of our data with those of other sources.

In terms of basic demographics, our survey seems to reflect well the structure of the population of CV in terms of gender, age and education. We compare the big picture with the last census from INE (2000) and other information used by the World Bank (WDI, 2005). Tables 1 and 2 show that the main difference is that our survey tends to capture fewer children of less than 9 years, perhaps because our respondents had to be at least 30 years of age. In terms of education it tends to capture more educated individuals although it reproduces pretty well the educational structure coming from the last census.

In terms of labor situation there are some differences. Table 3 points to participation rates (active population relative to population aged 15 to 64) being fairly similar to those coming from INE (2000) and WDI (2005) when a strict definition of activity is used. On the other hand, unemployment rates are higher compared to both the INE (2000)'s (even when a broad definition of unemployment is used). It is likely the case that some people who report to be unemployed are in fact working in the informal sector, which accounts for a significant fraction of the country's economic activity.

An interesting comparison, rather informative about the sectoral structure of Cape Verde's economy and respective productivity, is given in Table 4. Indeed, the distribution of the main occupation of those who are employed reflects pretty well the sectoral decomposition of GDP provided by the IMF (2005). Still, assuming the representativeness of our survey, it seems to indicate that the dominant tertiary sector is most productive in the economy.

As can be seen from Table 5, the figures for migration flows reflect fairly well the percentages that are found in the INE (2000) census for the period 1995-2000. However, the stock of migrants abroad that comes out of the survey is smaller, according to our estimates.12 This mismatch reflects the fact that many whole and reunited families are abroad and they cannot, by design, be accounted in the surveyed sample.

To characterize those migrants that we miss to capture in our survey, we compare the information in the survey with the information coming from the censuses of three important destinations: Portugal, USA and Spain. Since in the survey there are very few immigrants who report to go to Spain we only use the Spanish census to characterize the total characteristics of migrants who go abroad but we are not going to use it as a direct comparison by country of destination. The results are presented in Table 6.

iii. Additional Data Sources

In summary, our survey seems to accurately depict migration reality in Cape Verde. However, it misses some emigrants (mostly those who did not leave family behind (the most educated and better off). In order to correct for the (observable) selection bias induced by this absence, we use census data from the destination countries on Cape Verdean immigrants. This information allows us not only to estimate the stock of emigrants abroad, but also to control for the observable characteristics of emigrants, such as age and education, as presented in the previous section.

An additional weakness of our survey is that it has a relatively small sample size for some of our analysis purposes. In order to mitigate this problem, we complement our survey with the use of a household budget survey to estimate crucial parameters and variables of interest, such as household expenditure and the rate of return to education. This Income and Expenditure Household Survey was designed and conducted by the National Statistics Office (INE) in 2002-2003, under the sponsorship of the World Bank.

At different stages of our project, we also make use of various sources of data, namely the 1990 and 2000 Census of Cape Verde, as well as additional National Accounts, Demographic and Labor Market Data from INE.

[12] These are based on data from international census from ILO (2005), to which a conservative 10% margin for illegal underreporting was added.

4. Magnitude of the Brain Drain

Table 7 shows the educational attainment of residents in Cape Verde (non migrants and returning migrants) and migrants who are living abroad. Relative to census data, our survey seems to oversample males aged between 21 and 50 and who have university studies relatively to the population resident in Cape Verde. It is therefore likely that if we use the results in our survey we will conclude that the brain-drain is important in Cape Verde.

However, as displayed in Table 7, those who are missing in our survey are less educated than those who appear in both data sets. This is the case because family reunification allows the selection of migrants to be less important respect to the original selection. According to that information the positive self-selection observed when using the survey turns out to be much more intermediate selection since the groups that are clearly over-sampled relatively to the non-migrant population are those who finished either basic or higher secondary schooling.

One possible measure of "brain drain" would be the probability of migration for a specific group of people who have a certain degree.

$$P(mig \mid university) = \frac{P(university \mid mig)P(mig)}{P(university \mid mig)P(mig) + P(university \mid no\_mig)\left(1 - P(mig)\right)}$$

According to this formula, both the probability of migration and the different skill distribution of migrants and non-migrants matter. In that sense, the results in our survey should overweight the loss of skilled individuals because the distribution of skills of the migrant population is biased toward the brightest. On the other hand, if we consider the numbers in Table 5, the magnitude of migration is much lower than the magnitude using the censuses.

In Table 8 we compute the "brain drain" according to two educational levels: completed higher secondary (12 years of schooling) and university degree. It is observed that the probability of migrating given a certain degree is fairly similar using either dataset for the secondary level, but there are large differences with respect to tertiary education. The probability of migration given that the individual has a university degree is higher when using the survey, approaching 40%. This number, although it is far from the 60% presented by the World Bank, is certainly high. However, when we take into consideration the population that is counted in the censuses of the destination countries, we lower the magnitude of the brain drain a lot. Actually, the probability of migration for those holding a university degree is around 23%.

There are additional reasons to believe that the usage of census data at destination is the proper way of computing the brain-drain. This is the case because people could upgrade their schooling level while abroad and actually there is a fraction of migrants who departed with the main intention of studying. When in our survey, the migrant population was asked about the motivation of the departure, 16% answered that the main motivation was to study abroad, as can be seen from Table 11.

To complement this information, we can use the censuses of the destination countries and gather information about whether migrants from Cape Verde are attending school while abroad or not. As Tables 12 and 13 show, gathering information from Portugal, US and Spain, around 20% of all emigrants are attending school while abroad. Even if we restrict the sample to those who are 16 years old and over (to drop those who are still children and have the obligation to attend school) this percentage is still around 10%.

Of course we do not know what would have been the schooling level of those individuals if they had not migrated, but at least part of the education of those individuals is not financed by the government of Cape Verde, which reduces the cost of the computed brain-drain.

In the following section we empirically link the educational attainment and the decision to migrate in order to shed some light on this issue.

5. Improved Educational Attainment: The Role of Migration on Human Capital Investment

We depart from the observation that in Cape Verde children from households that present a migration of a member present a higher likelihood of being educated. The two columns in Table 14 follow whether the household ever sent an international emigrant or not. We could see that the schooling distribution of children between 12 and 20 years according to the migration status of any member in their household differs. In those households where there was a migration, children are more schooled.

This difference is kept even if we control for characteristics of those children (age and gender), characteristics of the household and the region where they lived. In order to see that, we construct a binary variable taking the value 1 if the child is enrolled in an educational level higher than primary schooling and run a regression considering several characteristics and the migration status in the household.

In Table 15 we observe that even controlling for those characteristics of the children and the household there is a 6% difference in the probability of enrolling for a secondary degree if someone in the household migrated.

There are some reasons that could be causing this particular result. The factor that most notably has been argued in previous empirical work is the impact of remittances on educational attainment. The positive effect arises because this source of income might alleviate credit constraints. However, it is not clear that remittances are spent on the education of the children and there are some papers that find that an important fraction of the remittances are spent on consumption. Actually, remittances might have a negative effect if they are only used as a safety net for those recipients. Therefore, the relationship of schooling and remittances should be evaluated empirically.

On the other hand, having a member of the family abroad is an indirect way of increasing the probability of migration. If this is the case, and assuming that the probability of emigration increases the incentive to invest in human capital, we would find a positive relationship between the two variables. In this section we are going to disentangle the relationship between education and the probability of migration.

Let's use the following model in order to identify the mechanisms by which the probability of emigration might affect the decision of education. Let's assume that children in a first stage must decide whether to study or not. In a second stage they will decide whether to migrate or not. If children study at home and decide to finally migrate they will earn $w^{F}{}_{s_1}$, if they stay at home they will earn $w^{CV}{}_{s_1} + \varepsilon$ were ε is a random variable. If they do not study and migrate $w^{F}{}_{s0}$, otherwise $w^{CV}{}_{s0} + \varepsilon$. Therefore, the decision of migration given a schooling level is to migrate if $\varepsilon < \varepsilon^*(s) = w^F(s) - w^{CV}(s) - c(X)$ where c is the cost of migration. In that case the probability of migration is:

$$P(mig \mid X, s) = F\left(\varepsilon^*(s, X)\right) = F\left(w^F(s) - w^{CV}(s) - c(X, S)\right) = F\left(\alpha_0 + \alpha_1 X + \alpha_2 s\right) \quad (1)$$

Given a random cost for education u, the decision of getting schooling is to go to school if (I delete the conditionality on X but it is always there):

$$u < u^*(X) = \left(w^F(s=1) - w^{CV}(s=1) - c(X, s=1)\right)P(mig \mid s=1, X)$$
$$-\left(w^F(s=0) - w^{CV}(s=0) - c(X, s=0)\right)P(mig \mid s=0, X) + \left(w^{CV}(s=1) - w^{CV}(s=0)\right)$$

In that case

$$P(s \mid P(mig \mid s, X)) = F(u^*) =$$

$$= F\left\{\begin{array}{c}\left[\left(w^F(s=1)-w^F(s=0)\right)-\left(w^{CV}(s=1)-w^{CV}(s=0)\right)-\left(c(X,s=1)-c(X,s=0)\right)\right]P(mig \mid s=1,X) \\ +\left[w^F(s=0)-w^{CV}(s=0)-c(X,s=0)\right]\left[P(mig \mid s=1,X)-P(mig \mid s=0,X)\right] \\ +\left[w^F(s=0)-w^{CV}(s=0)\right]\end{array}\right\} =$$

$$= F\left(\beta_0 + \beta_1 P\left(mig \mid s=1,X\right) + \beta_2\left(P\left(mig \mid s=1,X\right) - P\left(mig \mid s=0,X\right)\right)\right) \quad (2)$$

Having a positive probability of migration would increase educational attainment respect to not having that option if:

a) There are higher returns to education abroad compared to Cape Verde net of differential cost of migration by skill.

b) Even if there are no higher returns to education abroad compared to Cape Verde provided that there is a wage differential and it is easier to leave the country if someone is skilled.

In order to test how the probability of migration affects the educational attainment we must run a regression like (2):

$$P\left(s \mid P\left(mig \mid s, X\right), X\right) = F\left(\beta_0 + \beta_1 P\left(mig \mid s=1,X\right) + \beta_2 P\left(mig \mid s=0,X\right)\right)$$

As it was suggested by the model, there is endogeneity of the probability of migration and educational attainment. In that case, if we want to properly identify those coefficients we want to move exogenously the probability of migration if I finally decide to get educated and the probability of migration if I finally decide to stay without education.

There are some variables that we could use to move both probabilities at the household and at the regional level exogenously. At the household level we are going to use the previous migration of a relative, the optimism of the head of the household, and the answer to a question of whether the person was confident on Oxford University. At the regional level we are going to use whether the region was located in the south and the proportion of migrants in the region.

On the other hand, there are some variables that we could move at the household and the regional level to change differently the probabilities of migration given a level of education. The educational attainment of the relative who migrated will be very relevant since the information that he is going to transmit is going to be biased to the type of education he has, otherwise is not going to be useful. Moreover, Cape Verde is interesting as an origin country because their migrants might decide to go to different destinations: we have identified Portugal, US and Spain

as important destinations, but there are also other important destinations as France or Netherlands. Since returns to schooling are different across those countries of destination, the fact that the relative who migrated went to one country or another is going to affect the relevance of the information he could transmit in order to affect each probability. On the other hand, we exploit at the regional level the percentage of educated individuals who migrate, and their destination.

Therefore, our first stage will be two regressions for educated and not-educated of the probability of migration given those characteristics. We are going to run the two regressions for children being between 18 and 30 years old who are not head of the household.

$$P(mig \mid X, s) = F\left(\varepsilon^*(s, X)\right) = F\left(w^F(s) - w^{CV}(s) - c(X, S)\right) = F\left(\alpha_0 + \alpha_1 X + \alpha_2 s\right)$$

Afterwards we are going to estimate the two probabilities for everybody (probability of migration if the person was educated and if the person was not educated regardless his actual decision). Finally we run the schooling regression for children between 12 and 18 years[13] old on several regressors (including remittances of the household) and those two probabilities. We are going to instrument those two probabilities with those previous variables. In a sense we want to make sure that we are only capturing the effect of variables that were known prior to my education decision on the probability of migration.

Table 16 shows the second stage of the empirical strategy. The regression is a linear probability model instrumenting the probability of migration when schooled and no schooled by the variables commented before. The regression has clustered by region. The signs of all the coefficients are as expected. Females have a lower likelihood of getting a degree, the older someone is, the higher the probability of getting the degree (remember that the regression is done only for children between 12 and 18). The smaller the household, the higher the likelihood of getting a degree. Moreover, if the head is more educated, has a better perception of the quality of the system and is married there is a higher likelihood to educate the child.

About the coefficients of interest we could see that, the probability of migration if schooled has a positive effect on the probability of getting a degree and on the other hand the probability of migration if not schooled has a negative effect. However, this coefficient is smaller in absolute value to the first one (Actually is not significant). This would mean that regardless whether the individual get schooling or not, there is (in average) a gain to migrate. However, the gain net of costs of migration is higher when the person gets a schooling degree. Results from the following section go in favour that returns to schooling in Cape Verde are around 8%. These returns are pretty high compared to returns computed in other countries such as United States, Portugal or

[13] We obtain the same results using children of other ages.

Spain (and especially if we consider that in those countries, the degree of an emigrant could be difficult to evaluate). This result would suggest that differential costs by skill are underlying the observed sorting. In that case, the mechanism by which migration plays a role in the schooling decision is the simple wage differential between the two countries. Individuals know that by migrating they will end up having a higher income in the future, therefore, they are willing to increase their schooling since this action will improve their options to migrate.

In economic terms, an increase in the probability of migration of 10% (in both situations schooled and not-schooled) would increase the proportion of individuals enrolled in secondary schooling around 7.7%.

On the other hand, the coefficient for remittances is positive but not significant. This would mean that remittances have no effect on the schooling distribution of Cape Verde apart from the indirect effect of increasing the probability of migration by relieving households' financial constraints. Note that this estimate abstracts from the indirect macro impact of remittances on migration, namely through channels such as real exchange rate appreciation, or deepening the financial sector, which should contribute to mitigate the gains of emigration.

The first stage of this empirical analysis presented in Table 17 clearly shows differentiated effects in the two estimated regressions. When predicting the two migration probabilities for the whole population it is clear that the probability of migration for individuals enrolled in secondary schooling is higher than the probability of migration with a lower degree. This would confirm that either returns to schooling abroad are higher or that costs to migration for non-schooled are.

6. Return Migration

Table 7 shows that return migration is a very important factor in Cape Verde. From our survey it appears that 25% of all those who migrate, decide to come back after some time. Our survey allows us to identify their educational attainment. Table 18 shows that selection for returning migrants (in terms of education) is not as strong as selection for non-migrants, returning migrants being much more similar to non-migrants. It appears that those who are returning are much more similar to those who never migrated than those who will never come back, something already found for other migrant experiences such as the Mexican (Lacuesta, 2006).

In any case, even if returning migrants present a much more similar schooling distribution respect to non-migrants than those non-returning migrants, their experience abroad might increase their skills an abilities incrementing the origin country human capital.

One way of testing for this issue is to look for the existence of a wage differential of returning migrants respect to non-migrants. In our survey we do not have very precise information for

wages of resident is Cape Verde that is the reason why we use the Income and Expenditure Household Survey designed and conducted by the National Statistics Office (INE) in 2002-2003, under the sponsorship of the World Bank. In this data set we have information on the labour income of the head of the household and his characteristics apart from the information regarding previous migrant experiences abroad. Our dependent variable will be weekly gross earning and the regressors will be the usual ones plus the return migration status.

From Table 19, we can see that neither for males nor for females does migration significantly affect wages – notice, however, the small sample for females. This would mean that there are no significant differences between returning migrants and non-migrants in terms of wages. Of course, we cannot interpret the coefficient in front of the migration status as the effect of the migration per se, because it is also capturing the self-selection in terms of unobserved ability prior to the migration decision. However, in order to be a positive effect of the migration per se we would require a negative selection of returning migrants which does not appear to be very likely given the selection observed in other characteristics such as schooling.

Ideally we would require information of wages before and after the migration to separate out the two components. In our survey, although we do not have good information on wages, we have interesting information on the occupational status of returning migrants before and after the migration that might help to complement the previous result. In Table 20, it is possible to see that returning migrants work in agriculture before migration with a higher likelihood than non-migrants. If there were human capital gains, they would have had more switches from the agricultural sector to industry or services that traditionally pay higher wages. The only sensible change is the decrease in the percentage of workers in construction and an increase in the probability of working in retail or self-employment. This is likely to be a wealth effect of the migration via savings.

7. Summing Up: What are the counterfactual effects of emigration on human capital accumulation?

"Brain drain" may not be a problem as serious as traditionally thought. Indeed, this paper finds that massive emigration in Cape Verde has encouraged the accumulation of human capital. The main channel through which this mechanism works is neither via remittances nor return migration, but via the human capital gains associated with the departure of educated individuals. Cape Verdeans seem to know that studying likely decreases their costs of migration, increasing their probability of entering a foreign country with higher real wages.

Our estimates suggest that an increase in the probability of own migration by 10% increases the probability of enrolling in secondary education by 7.7%. On the other hand, we do not find that the presence of remittances significantly affects this latter probability. Our results, however, do show that remittances contribute to increased individual probabilities of emigration by relieving households' financial constraints. Note that this estimate abstracts from the indirect macro impact of remittances on migration, namely through channels such as real exchange rate appreciation, or deepening of the financial sector, which should contribute to mitigate the gains of emigrating.

The evidence obtained in this study should lead policymakers in both developing and developed countries not to devote their efforts to restricting migration flows of educated individuals. Not only are destination countries likely to benefit from the inflow of these immigrants, as is relatively consensual in the literature, but this may also be beneficial for origin countries as Cape Verde. Similar studies on other source countries of educated emigration could help corroborating this view.

8. References

Acemoglu, Daron (1996). "A Microfoundation for Social Increasing Returns in Human Capital Accumulation", *Quarterly Journal of Economics*, 111 (3): 779-804.

Adams, Richard (2006). "Remittances, Poverty, and Investment in Guatemala", in World Bank (2006a).

Beine, M., F. Docquier, and H. Rapoport (2001). "Brain drain and economic growth: theory and evidence", *Journal of Development Economics*, 64: 275-289.

Beine, M., F. Docquier, and H. Rapoport (2003). "Brain drain and LDCs' growth: winners and losers", *IZA Discussion Paper* 819.

Bhagwati, J., and K. Hamada (1974). "The brain drain, international integration of markets for professionals and unemployment: a theoretical analysis", *Journal of Development Economics*, 1: 19-42.

Borjas, George (1995). "The Economic Benefits of Immigration", *Journal of Economic Perspectives*, 9(2): 3–22.

Borjas, George,, Stephen Bronars, and Stephen Trejo (1992). "Self-Selection and Internal Migration in the United States", *NBER Working Paper Series* 4002.

Catrinescu, N., M. Leon-Ledesma, M. Piracha, and B. Quilin (2006). "Remittances, Institutions and Growth", *IZA Discussion Paper* 2139.

Chami, R., C. Fullenkamp, and S. Jahjah's (2003). "Are Immigrant Remittance Flows a Source of Capital for Development?", *IMF Working Paper* 03/189.

Chiquiar, D., and G. Hanson (2005). "International Migration, Self-Selection, and the Distribution of Wages: Evidence from Mexico and the United States", *Journal of Political Economy*, 113(2): 239–281.

Chiswick, Barry (2005). "High Skilled Immigration in the International Arena", *IZA Discussion Paper* 1782.

Collier, Paul, Anke Hoeffler, and Catherine Pattillo (2004). "African Exodus, Brain Drain and Capital Flight", *Journal of African Economies*, 13 (AERC Supp.2): ii15-ii54.

Commander, S., M. Kangasniemi, and L. Winters (2003). "Brain Drain: Curse or Boon?", *IZA Discussion Paper* 809.

Dustmann, Christian, and Oliver Kirchkamp (2003). "Migration Duration and Activity Choice After Re-Migration", *Journal of Development Economics*, 67: 351-372.

Edwards, A. and M. Ureta (2003). "International migration, remittances, and schooling: evidence from El Salvador", *Journal of Development Economics*, 72: 429-461.

Faini, Riccardo (2006). "Remittances and the Brain Drain", *IZA Discussion Paper* 2155.

Gruber, Herbert, and Anthony Scott (1966). "The International Flow of Human Capital", *American Economic Review,* 56: 268-274.

Lacuesta, Aitor (2006). "Emigration and Human Capital: Who Leaves, Who Comes Back and What Difference Does it Make?", *Working Paper Bank of Spain* 0620.

Lucas, Robert E. Jr. (1988). "On the Mechanics of Economic Development", *Journal of Monetary Economics*.

Lucas R.E.B. and O. Stark (1985). "Motivations to remit: evidence from Botswana", *Journal of Political Economy*, 93: 901-918.

McKenzie, David J. (2006). "Beyond Remittances: The Effects of Migration on Mexican Households", in World Bank (2006a).

Mishra, Prachi (2006). "Emigration and Brain Drain: Evidence From the Caribbean", *IMF Working Paper* 06/25.

Mountford A. (1997). "Can a brain drain be good for growth in the source economy?", *Journal of Development Economics*, 53: 287-303.

Ratha, D. (2003). "Workers' Remittances: An Important and Stable Source of External Development Finance", *Global Development Finance*, Chapter 7.

Rauch, J., and V. Trinidad (2002) "Ethnic Chinese Networks in International Trade", *Review of Economics and Statistics*, 84: 116–130.

Rivera-Batiz, F.L. (1989) "The Impact of International Migration on Real Wages: Another Look." *Journal of Development Economics*, 31(1): 185–92.

Schiff, Maurice (2006). "Brain Gain: Claims about Its Size and Impact on Welfare and Growth Are Greatly Exaggerated", in World Bank (2006a).

Solow, Robert (1957). "Technical Change and the Aggregate Production Function", *Review of Economics and Statistics*, 39: 312-320.

Stark O, C. Helmenstein, and A Prskawetz (1997). "A brain gain with a brain drain", *Economic Letters*, 55: 227-234.

Stark O., C. Helmenstein, and A Prskawetz (1998). "Human capital formation, human capital depletion, and migration: a blessing or a "curse"", *Economic Letters*, 60: 363-367.

World Bank (2006a). *International Migration, Remittances and the Brain Drain*. World Bank: Washington, DC.

World Bank (2006b), *Global Economic Prospects. Economic Implications of Remittances and Migration.* World Bank: Washington, DC.

Yang, Dean and Claudia A. Martinez (2006). "Remittances and Poverty in Migrants' Home Areas: Evidence from the Philippines", in World Bank (2006a).

Tables

Table 1: Basic demographics from the sample and WDI (2005)

	Residents in survey	WDI (2005)
Gender		
Male population	47.63%	48%
Age		
Population between 15-64 years	64.17%	56.17%

Source: WDI and own survey

Table 2: Basic demographics from the sample and INE

	Residents in survey	INE (2000)
Gender		
Male population	47.63%	48.42%
Age		
0-9 years	15.05%	27.45%
10-19 years	25.72%	26.06%
20-29 years	16.96%	15.18%
30-39 years	16.67%	12.40%
40-49 years	12.66%	7.34%
50-59 years	4.92%	2.99%
60-69 years	3.57%	4.41%
70-79 years	3.15%	2.67%
>79 years	1.30%	1.51%
Education 15-64		
No Education	8.42%	13.9%
Pre-school	1.19%	0.2%
Alphabetized	11.80%	4.3%
Primary	55.77%	52.6%
Basic Secondary	18.48%	26.4%
Higher Secondary	0.84%	0.8%
Tertiary	3.49%	1.89%

Source: INE and own survey

Table 3: Labor situation of residents over 15 years

	Residents in survey	INE (2000) (*)	WDI (2005) Total Pop.	Observatory Unemployment (2005) Total Pop.
Activity rate	59.15%	62.84%	60.26%	
Unemployment rate	31%	17.23%		21%

Source: INE, WDI, Observatory unemployment and own survey
(*) The definition of activity rate is strict (working and actively looking for a job), whereas that of unemployment rate is broad.

Table 4: Sectoral decomposition in the sample and IMF

	Workers in survey	GDP decomposition IMF(2005)
Primary Sector	**12.98%**	**9.20%**
Agriculture	11.63%	8.10%
Fishing	1.35%	1.10%
Secondary Sector	**20.09%**	**17.00%**
Industry	3.99%	7.70%
Construction	16.10%	9.30%
Tertiary Sector	**66.93%**	**73.80%**
Retail and Self-employment	12.83%	
Transportation	5.48%	19%
Public Service	11.395	12%
Education	6.20%	
Health Care	1.97%	
Other	29.07%	

Source: IMF (2005) and own survey

Table 5: Importance of migration in the sample and INE

	Survey	INE (2000)
Flow of migrants/Residents in CV		
Between 2000-2005	3.33%	
Between 1995 and 2000		2.80%
Flow of return migrants/current migrants		
Between 2000-2005	22%	
Between 1995 and 2000		25%
Stock of migrants abroad/Residents in CV	8.77%	18% (*)

Source: INE and own survey

(*) Own calculations with international censuses

Table 6: Characteristics of migrants who are abroad

	CENSUSES				SURVEY		
	Portugal (2001)	United States (2000)	Spain (2001)	Total	Destination Portugal	Destination US	Total
Total	33145	27059	1960	62164	267	94	583
Percentage among this 3 destinations	53.32%	43.53%			72.36%	26.56%	
Gender							
Male population	51.27%	51.31%	42.86%	51.02%	55.06%	55.32%	52.14%
Age							
0-10 years	7.85%	3.21%	10.20%	5.91%	0.38%	1.04%	0.52%
11-20 years	14.17%	16.58%	19.39%	15.38%	9.85%	21.88%	11.28%
21-30 years	20.06%	16.44%	26.53%	18.69%	38.64%	32.29%	33.85%
31-40 years	24.66%	21.14%	27.55%	23.22%	25.00%	21.88%	25.00%
41-50 years	20.33%	19.25%	14.29%	19.67%	16.67%	17.71%	20.31%
51-60 years	5.82%	8.96%	0.00%	7.00%	8.33%	4.17%	7.99%
61-70 years	4.73%	8.03%	0.00%	6.02%	1.14%	1.04%	0.87%
71-80 years	1.74%	3.80%	1.02%	2.61%	0.00%	0.00%	0.17%
81-90 years	0.58%	2.04%	1.02%	1.23%	0.00%	0.00%	0.00%
>90	0.07%	0.54%	0%	0.27%	0.00%	0.00%	0.00%
Educational degree							
At most 4 years	55.70%	15.77%	24.49%	37.34%	44.84%	21.28%	39.56%
Completed Basic Secondary (9 years)	35.70%	43.21%	62.24%	39.81%	23.02%	40.43%	31.76%
Completed Higher Secondary (12 years)	7.34%	35.63%	11.22%	19.78%	9.92%	31.91%	12.52%
University or more	1.25%	5.39%	2.04%	3.08%	22.22%	6.38%	16.15%
Educational degree (*)							
At most 4 years	63.66%	16.63%	23.08%	41.91%	55.08%	25.42%	48.18%
Completed Basic Secondary (9 years)	28.61%	39.06%	61.54%	34.19%	26.74%	47.46%	34.55%
Completed Higher Secondary (12 years)	6.06%	37.78%	12.31%	20.06%	9.63%	23.73%	9.73%
University or more	1.68%	6.54%	3.08%	3.84%	8.56%	3.39%	7.54%

Source: Portuguese census 2000, IPUMS 5%, Spanish census 5% and own survey.

(*) Individuals older than 25

Table 7: Educational attainment of residents in CV and non-returning migrants

	Survey		Censuses
	Residents in CV	Non-returning migrants	Residents abroad
At most 4 years	56,18	39,56	37,34
Finished basic secondary (9 years)	28,47	31,76	39,81
Finished higher secondary (12 years)	13,06	12,52	19,78
University or more	2,3	16,15	3,08

Source: Own survey and censuses of the destination countries

Table 8: Alternative measures of the "brain drain"

	Survey	Censuses
Higher secondary (12 years)	15,58%	14,89%
Tertiary	40,98%	22,70%

Source: Own survey and censuses of the destination countries

Table 11: Motivations to migrate

Work	59,24
Study	16,58
Family reunification	11,96
Other	12,22

Source: Own survey

Table 12: School attendance abroad

	Portugal	US	Spain
Not in school	80,65	76,91	75,51
Attending school	19,35	23,09	24,49

Source: Destination censuses in 2001 for Portugal and Spain and 2000 in the US

Table 13: School attendance abroad of those over 16

	Portugal	US	Spain
Not in school	89,41	83,4	90,00
Attending school	10,59	16,6	10,00

Source: Destination censuses in 2001 for Portugal and Spain and 2000 in the US

Table 14: Educational attainment of children 12-20

	Non migrants in HH	Migrants in HH
None	0,62	0,96
Pre-primary	0,52	0,96
Primary incomplete	10,63	3,82
Primary complete	11,25	9,18
To 6th year	11,15	11,85
Basic Secondary (9 years)	42,62	39,2
Higher Secondary (12 years)	22,08	28,87
Tertiary	1,13	5,16

Table 15: Secondary degree of children between 12-20

	1	2
Female	-0.0592	-0.0848
	(0.0230)*	(0.0246)**
Age	0.5726	0.5541
	(0.0639)**	(0.0678)**
Age^2	-0.0170	-0.0164
	(0.0020)**	(0.0021)**
International Migration	**0.0633**	**0.0603**
	(0.0242)**	**(0.0285)***
Children in the household		-0.0216
		(0.0044)**
Child is the oldest one		0.0318
		(0.0360)
Expenditure by quintiles		0.0473
		(0.0101)**
Age of the head of the household		0.0021
		(0.0011)
Age^2 of the head of the household		-0.0000
		(0.0000)
Education of the head		0.0134
		(0.0039)**
Marital status of the head		0.0615
		(0.0265)*
Urban status		-0.0013
		(0.0274)
Island dummies	Yes	Yes
Constant	-3.9978	-4.0451
	(0.5041)**	(0.5384)**
Observations	1504	1220
R-squared	0.08	0.17

Standard errors in parentheses
* significant at 5%; ** significant at 1%

Table 16: Educational enrollment regression for children 12-18

	Secondary
Pr(migration| schooled)	0.9194
	(0.3473)*
Pr(migration|no_schooled)	-0.1439
	(0.3682)
Female	-0.0785
	(0.0310)*
Age	0.7856
	(0.1337)**
Age^2	-0.0244
	(0.0045)**
Size of the household	-0.0171
	(0.0059)**
Education of the head	0.0156
	(0.0041)**
Marital status of the head	0.0722
	(0.0401)
Perception of the quality of education	-0.0119
	(0.0161)
Remittances	0.0052
	(0.0514)
Quintiles of remittances	0.0126
	(0.0184)
Urban	0.0400
	(0.0593)
Island dummies	Yes
Constant	-5.4693
	(0.9723)**
Observations	905
R-squared	0.15
Robust standard errors in parentheses	
* significant at 5%; ** significant at 1%	

Source: Own survey

Table 17: Factors underlying the probability of migration given skill

	(1)	(2)
	Less than secondary	Secondary or more
Female	0.0940	-0.3396
	(0.3645)	(0.2398)
Age	0.4773	0.5717
	(0.8285)	(0.3715)
Age^2	-0.0081	-0.0105
	(0.0167)	(0.0079)
Size of the household	-0.0440	-0.0528
	(0.0592)	(0.0441)
Age of the head	-0.0327	-0.0134
	(0.0198)	(0.0084)
Marital status of the head	0.0032	0.4812
	(0.4867)	(0.1964)*
Migration status of the head	0.3580	0.5078
	(0.5498)	(0.2986)
Migration portugal of the head	-1.0887	0.9354
	(0.4474)*	(0.4562)*
Migration US of the head	2.0034	2.1446
	(0.7601)**	(0.3325)**
Migration Europe of the head	3.4956	1.4381
	(0.5703)**	(0.4889)**
Migration Africa of the head	1.4261	1.0242
	(0.6565)*	(1.0551)
Migration Asia of the head		1.4794
		(0.6561)*
Length of the trip of the head	0.1465	0.1094
	(0.0950)	(0.0713)
Optimism of the head	0.0284	-0.0294
	(0.1195)	(0.0610)
Confidence in Oxford University	0.2659	0.0328
	(0.1502)	(0.0975)
South	0.4892	0.0191
	(0.4452)	(0.2618)
Proportion of migrants in the region	3.2260	0.3114
	(1.3649)*	(1.7130)
Island dummies	Yes	Yes
Constant	-11.0975	-9.8995
	(10.1127)	(4.5376)*
Observations	591	974

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Source: Own survey

Table 18: Characteristics of individuals from CV depending on migrant status

	Non-migrant	Non-returning	Returning
Education Males 15-64			
No Education	3.72%	3.6%	5.2%
Pre-school	1.54%	0.7%	0.0%
Alphabetized	11.35%	8.2%	14.3%
Primary	59.69%	62.4%	50.7%
Basic Secondary	18.79%	9.9%	19.5%
Higher Secondary	1.12%	0.4%	3.9%
Tertiary	3.78%	14.9%	6.5%

Source: Own survey

Table 19: Mincer regressions

	(1)	(2)	(3)
	Total	Males	Females
Female	-0.3716		
	(0.0429)**		
Age	0.0302	0.0410	0.0159
	(0.0104)**	(0.0109)**	(0.0218)
Age^2	-0.0002	-0.0004	-0.0000
	(0.0001)	(0.0001)**	(0.0003)
Marital Status	0.1256	0.1365	0.0668
	(0.0360)**	(0.0404)**	(0.0629)
Years of schooling	0.0923	0.0859	0.1137
	(0.0033)**	(0.0038)**	(0.0056)**
Part time	-0.0693	-0.0474	-0.0745
	(0.0535)	(0.0753)	(0.0791)
Returning migration	0.0290	0.0150	0.1118
	(0.0542)	(0.0680)	(0.0698)
Rural	-0.3475	-0.3618	-0.3325
	(0.0382)**	(0.0489)**	(0.0733)**
Island dummies	Yes	Yes	Yes
Constant	7.4395	7.2465	7.2657
	(0.2323)**	(0.2537)**	(0.5147)**
Observations	1714	1237	477
R-squared	0.54	0.50	0.52

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Source: Income and Expenditure Household Survey (INE)

Table 20: Occupations of non-migrants, and before vs. after return migration

	Non-migrants	Returning before migration	Returning after migration (those who worked before)
Primary Sector	**14.74%**	**40.58%**	**40.00%**
Agriculture	12.51%	38.89%	35.56%
Fishing	2.23%	1.69%	4.44%
Secondary Sector	**29.11%**	**22.03%**	**15.55%**
Industry	4.57%	3.39%	4.44%
Construction	24.54%	18.64%	11.11%
Tertiary Sector	**56.15%**	**37.28%**	**44.45%**
Retail and Self-employment	5.53%	3.39%	17.78%
Transportation	9.89%	6.78%	8.89%
Public Service	13.29%	8.47%	6.67%
Education	4.46%	3.39%	4.44%
Health Care	0.87%	0.00	0.00
Other	22.11%	15.25%	6.67%

Source: Own survey

(*) Males over 15

Appendix: Growth Accounting

In order to have an idea of the relative magnitude of the proximate sources of economic growth (physical and human capital accumulation, raw labor and total factor productivity (TFP) growth) in Cape Verde over the period 1990-2005, we conduct a growth accounting exercise in the spirit of Solow (1957)'s classical work.

We follow Hall and Jones (1999), in assuming the aggregate per worker production function:

$$Y_t / L_t = A_t . (K_t / Y_t)^{\alpha / 1-\alpha} . exp (r . S_t) \quad \text{(A1)}$$

where Y denotes aggregate output, A is total factor productivity (TFP), K the capital stock, L the number of workers (or raw labor), S the average worker's years of schooling, r the average return on year of schooling, α the labor share of national income and t the time period.[14]

Per worker production (A1) is nested within aggregate per capita output in order to consider the effects on this latter variable:

$$Y_t / N_t = (Y_t / L_t) * (1 - u) * (N_t^A / N_t^{15-64}) * (N_t^{15-64} / N_t) \quad \text{(A2)}$$

where N denotes total resident population, u stands for the unemployment rate, N^A for active population (broadly defined as those residents aged 15 to 64 that are available to work), and N^{15-64} for the resident population aged between 15 and 64.

In order to perform this growth accounting exercise, we used population and labor census data from Cape Verde's National Statistics Office (INE) to obtain N, N^{15-64}, N^A and u in 1990 and 2000. We also used INE's information on national income to compute α, the average labor share of national income between 1990 and 2000.[15] Employment and investment data used to compute the capital stock (following the perpetual inventory method with a depreciation rate of 10%) comes from the World Development Indicators, WDI (2006). Years of education were estimated based

[14] This per worker version of aggregate production can be derived from the aggregate production function: $Y_t = (K_t)^{\alpha} . (A_t.H_t)^{1-\alpha}$, where human capital H_t takes the form $H_t = exp (r . S_t).L_t$.

[15] The average labor share of national income between 1990 and 2000 was 45%. It is sensible that it is lower than the usual 2/3 applying to industrial countries: in Cape Verde, even though the tertiary structure of the economy is not very different from that of more developed countries, self-employment, temporary employment or unemployment are the norm and this is not taken into account included in the formal labor share. In the final robustness check section, we show that taking into account labor income of self-employed does not make much difference.

on information from the 1990 and 2000 census, kindly provided by the INE as well. The return to years of schooling comes from Psacharopoulos and Patrinos (2004).

Our results show human capital accumulation as the driving force of Cape Verde's economic growth per worker in the recent decades, much more so than physical capital accumulation or TFP growth. This is better understood if one looks at 5-year subperiod included in our period of analysis, 1990-2005. Indeed, the first sub-period immediately follows democratization and the associated high investment inflows and turmoil period, plausibly responsible for the observed fall in TFP. The following periods witness the decline of investment rates to lower levels, whereas TFP gains materialize. Throughout the whole period, important human capital gains are materialized.

Growth Decomposition	lnH	lnA	lnK-lnY
1990-2005	88.4%	17.7%	-6.1%
1990-1995	103.4%	-21.1%	17.7%
1995-2000	86.9%	41.4%	-28.3%
2000-2005	81.7%	19.9%	-1.6%

Average Annual Growth Rates	Y	E	K	Y/E	K/Y	A	H
1990-2005	**6.3%**	**2.2%**	**5.6%**	**4.0%**	**-0.7%**	**0.7%**	**3.5%**
1990-1995	**5.2%**	**2.4%**	**6.6%**	**2.7%**	**1.3%**	**-0.6%**	**2.8%**
1995-2000	**8.4%**	**4.2%**	**5.0%**	**4.0%**	**-3.1%**	**1.6%**	**3.5%**
2000-2005	**5.2%**	**0.0%**	**5.0%**	**5.2%**	**-0.2%**	**1.0%**	**4.2%**