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Foreign education, culture and corruption

Determinants and consequences of global student flows

between 1970 and 2015

by

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Foreign education has been growing constantly for the past decades while research on it has remained scarce. Although research found that migration choices are determined in parts by cultural differences, no study investigated this relationship for foreign education. Therefore, this thesis studies how cultural differences influence bilateral student flows by using a gravity model. Similarly, the consequences of foreign education are scarcely identified, giving rise to the question if foreign education has an impact on the institutional setting of the origin country. To answer this question, this thesis further studies the effect of foreign education on corruption. Using a panel dataset of 206 origin and 157 destination countries over the period 1970-2015, it appears that cultural differences influence student flows positively, although the impact is declining over time. Further, foreign education has the potential to reduce corruption in the country of origin, depending on the corruption level of the destination countries. Similarly, the cultural values prevailing in the host countries are related with corruption in the origin country, supporting the hypothesis of this thesis that norms and values are adopted and transferred home.

Keywords: Foreign education, Corruption, Culture, Hofstede

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I. Introduction

In the past three decades, the number of students studying abroad increased considerably, so that in 2015 more than four million people went to another country than their own for tertiary education (Figure 1). Although the increase appears minor relative to the global population, when comparing it to the age group of potential students (15 to 24 years), foreign education is of growing importance. This is further fostered by institutional support in developed countries, such as scholarships or the Bologna Reform that facilitates inter-European transfer of students and faculty staff. Due to the rising numbers, but also to assess and evaluate the institutional support, it becomes increasingly important to understand the driving factors behind the bilateral student flows as well as the consequences this might have on the societies in the origin countries.

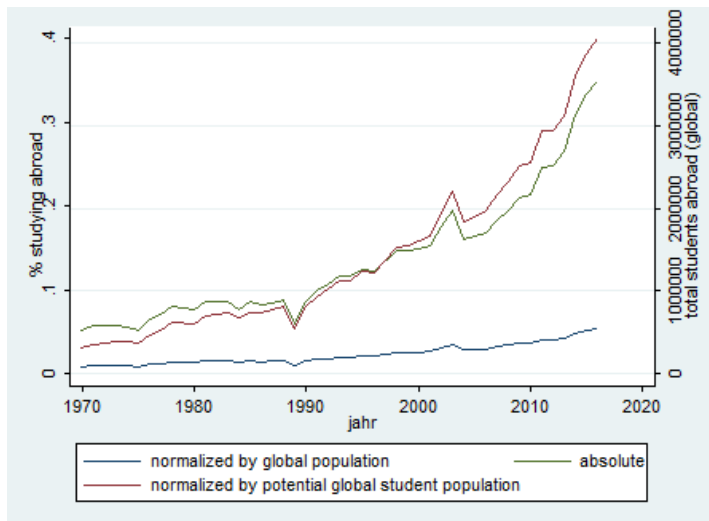


Figure 1 Global student flows (based on data from UNESCO (2019))

Previous research identified the determinants of bilateral student flows. However, considering that foreign education started more than half a century ago, the determinants changed over time. In the periods until the 1990s, the type of political system was a driving force in bilateral student flows, inter alia due to governments that tried to spread their political systems (Spilimbergo, 2009). Afterwards, and together with the rise of globalization, an increase in numbers of students abroad can be observed. This coincides with the rise of information and communication technology and better transportation possibilities which might induce students to go further away, because it is easier to

stay in contact over larger distances and transportation is less costly. In addition, globalization improved access to goods from home and simultaneously made cultures more similar, hence one can expect cultural differences to become less of a hindrance over time.

However, the impact of cultural differences on bilateral student flows has so far not been investigated, even though the literature on general migration found significant results. For example, Wang et al. (2016) estimate that cultural differences affect migrants' destination choice three times stronger than geographical factors. Similarly, Belot and Ederveen (2012) claim that cultural values explain migration flows better than the usual variables employed, such as distance or income. Therefore, the first question this thesis sets out to answer is:

(1) What are the determinants of bilateral student flows, and how are they influenced by cultural differences?

Research on the consequences of foreign education is even scarcer, although many universities and countries foster internationalization of their incoming students. While individually small in absolute numbers, foreign education can be expected to be a powerful driver of institutional change in the origin countries: especially in developing countries, returning foreign educated people are the future business or political elite, thereby having a big impact on the prevailing practices. For instance, Spilimbergo (2009) argues that “foreign-educated technocrats are such a scarce resource in many countries that they can impose their own preferences” and that many of the political leaders in 1990 were educated abroad. Similarly, many Chinese returnees from overseas education, labeled *haiguipai* and denoting a new rising elite, are now provincial leaders in China (Li, 2003). Although, over time and increasing numbers of foreign educated students, they become less scarce, hence their chances of becoming the elite are changing. On the other hand, with rising numbers of students abroad, their cumulative impact might still be substantial.

Further, it has been found that migration affects the sending countries through *social remittances*, a term coined by Levitt (1998) and defined as “the ideas, behaviors, identities, and social capital that flow from receiving- to sending-country communities”. Depending on the extent of interaction between migrants and natives, routines and perspectives can be challenged and changed (Figure 2). In a case study on migrants from the Dominican Republic in the US, Levitt identified several levels of adaptations of new norms and values and subsequently of social remittances. In case of mere observation by the migrant, no change can be observed. In case of full interaction between

migrants and natives, however, norms were altered, or new ones added as to better adapt to the new environment (Levitt, 1998). Inter alia, a study by Docquier et al. (2010) finds that migration improves home countries' institutions and this effect depends on the number of migrants. However, the effect of skilled migrants is ambiguous.

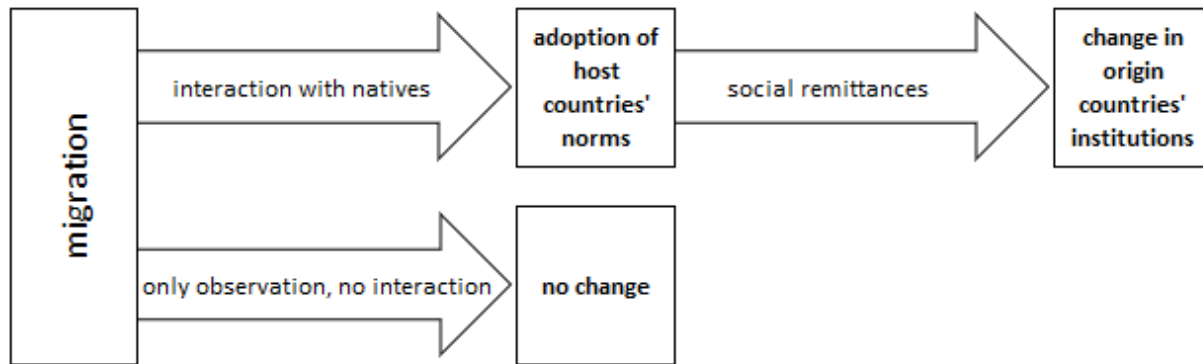


Figure 2 Framework of social remittances (based on Levitt (1998))

Therefore, considering that the concept of social remittances relies on interaction with the native population, it can be argued that foreign students have a large and constant interaction with the native population and/or other international students. Although some students may prefer to remain in a social circle with people that have similar language and cultural backgrounds and values, they will remain exposed to the host countries norms and values in the class room and in their daily life. In line with this argument, a previous study on international students concludes that “most international students managed to change, adapt, develop and achieve” an improved intercultural understanding and competence (Gu et al., 2010). Additionally, in times of social media and low-cost communication means the interaction with relatives at home is facilitated, implying a greater transfer of information and possibly, norms.

Based on previous studies by Spilimbergo (2009) and Ferreras (2013) that study the impact of foreign education on democracy and corruption, it can be expected that foreign education, and more importantly the prevailing institutions in the hosting countries influence institutions in the sending countries. However, similar to the determinants of bilateral student flows, culture has been left out in this research, although it has been found before that culture influences norms and values, in particular corruption. For instance, countries that are more hierarchical, collectivistic and

uncertainty avoiding¹ have been found to be more prone to corruption (Yeganeh, 2014; Park, 2003). At the same time, educational improvements can lead to less corruption and this effect is stronger in countries that have a smaller power distance and are more individualistic (Jahić & Činjarević, 2017).

Corruption, as part of the institutional setting, is interesting to study in this context, as it is highly persistent and has many adverse consequences on the economic development of a country. Lambsdorff (2005) reviews extensively the previous literature on causes and consequences of corruption and concludes that corruption is highly related with low GDP, income inequality, inflation, crime prevalence, policy distortions and lack of competition. Mauro (2004) argues that the corruption is particularly persistent because once it is widespread, people lose any incentives to fight petty corruption because the benefits from legal activities decrease while the ones from illegal activities increase. Therefore, foreign education can be an innovative way to break this persistency by allowing young people to adopt new norms and values while receiving higher education.

To the best of my knowledge, this link between foreign education, institutional change and the importance of cultural values has not been researched before. Therefore, this thesis sets out to fill this research gap concerning the consequences of foreign education on corruption, as an example of an institution, by investigating following two additional research questions:

(2) Can foreign education through social remittances lead to a change in the level of corruption in the students' country of origin?

(3) Does this effect depend on the prevailing cultural values in the country of origin and the destination country?

The remaining paper is structured as follows. First, the existing literature on foreign education and corruption, as well as the literature on the impact of (foreign) education on corruption and migration on institutions is reviewed. The following part discusses research question one, namely the determinants of bilateral student flows, and in particular the role of cultural values. The basis for this is a dataset of bilateral student flows for the period 1970-2015 which is constructed using data provided by the UNESCO Institute for Statistics (2019).² These bilateral student flows are augmented

¹ as defined by Hofstede (1983)

² Data from 1950-1998 were provided by Antonio Spilimbergo (2009) who digitalized the data from UNESCO

with country-level data and Hofstede's cultural dimensions. Afterwards, the development of global foreign education is described. Then, the empirical results using a gravity model are discussed.

The second part relates to research questions two and three concerning the relationship between foreign education and corruption. Again, first the methodology and data are described, before the empirical results are analyzed and discussed. To further analyze this relationship, the sample is split by regions and groups, as well as by the year 2000. In the end, a concluding part combines the previous findings.

II. Literature review and conceptual framework

In order to understand foreign education and its impact on corruption through social remittances (Figure 2), the following part first reviews the literature concerning determinants of foreign education and corruption. Afterwards, the literature on how education, as well as migration can influence the institutional setting, as exemplified by the level of corruption, in the home country is assessed.

Foreign education

According to Beine et al. (2014), the decision to migrate for higher education is an investment decision, as predicted by the Human Capital model. Either the home country does not provide enough or qualitatively good educational opportunities or the student expects higher returns from foreign education. Latter can be the case when after returning to the home country a better job can be attained or the time in a foreign university is used as a mean to enter a more developed country for long-term. Nonetheless, the determinants influencing the choice of the destination country are diverse.

Macro-level determinants of international migration of students are often studied using a gravity model. For instance in a study on international students in Germany, Bessey (2012) finds that if a

country is governed by a repressive regime, fewer students study abroad. Moreover, distance seems to be an important factor because it increases not only migration costs but also cultural differences. Finally, in contrast to regular migration, she identifies no impact of income per capita in the origin country, showing that credit constraints might be lifted by international scholarships or the like. Nonetheless, Abbott and Silles (2016) argue that the determinants depend on the income status of the origin countries. For instance, GDP per capita in the host country, distance or a similar language are more significant pull factors for students from developing countries, though they are less important for students from developed countries.

Also, these factors can change over time. According to Varghese (2008), the importance of colonial ties or similar political considerations decreased while the cost of education, the advantages that come with learning the host-country's language as well as the prestige of the institutions or the technological advancements of the host country play a more important role today. Moreover, students have been found to be attracted by institutional support, like the easiness of obtaining student-visas or permits to work in order to finance the studies, as well as subsidized housing (Beine et al., 2014).

Less research has been undertaken on the determinants at the micro-level and the existing ones are based on specific countries. Still, a study with information on migrants from Ghana and the Senegal shows that migration to obtain tertiary education is more likely if someone is a first-born male, with a higher educated father and from an ethnic minority (Kabbanji et al., 2013). In a study of Asian students in Australia, Mazzarol and Soutar (2002) identify several reasons for studying abroad. Many students stated that courses abroad had a better quality, but they would also want to increase their understanding of the host country. Besides, studying in a safe environment, e.g. little racial discrimination, and the existence of a migration network are pull-factors.

Corruption

Corruption is the “abuse of power for private gain” (Transparency International, 2018). Three types of corruption can be identified: (i) *petty* corruption mainly occurs when ordinary citizens are asked to pay bribes in order to be granted access to basic goods and services, or to avoid penalties; (ii)

grand corruption distorts policy making and implementation at high levels within the government while it enables the officials to gain; (iii) *political corruption* refers to situations where political decision makers abuse their power to improve their own status while manipulating policies, institutions and rules of procedures when allocating resources (Transparency International, 2018).

Since the 1990s, the literature on causes of consequences of corruption grew immensely. Problematic in this research is, as warns Lambsdorff (2005), that many causes are consequences at the same time. Aside from that, corruption tends to be highly persistent. The correlation between levels of corruption from the 1980s and the 1990s has been found to be 0.73 and mainly countries with high levels experienced increases in corruption (Ali & Isse, 2002). Mauro (2004) argues that corruption is particularly persistent because once it is widespread, people lose any incentives to fight petty corruption because the benefits from legal activities decrease while the ones from illegal activities increase. Grand corruption among politicians also persists due to strategic interactions among them to get reelected.

Generally, the literature classifies the causes into (i) economic, (ii) political and bureaucratic/regulatory, and (iii) socio-cultural and geographical determinants. Factors in group one comprise inter alia GDP per capita, inequality, government expenditure and a black-market premium, as well as foreign aid or natural resource dependency. Political determinants encompass political system, civil rights and gender equality. Besides, the quality of bureaucracy or the wage for government officials have been found to be of importance. The third group contains variables such as religious affiliation, ethnic fractionalization or the legal origin. More extensive overviews of the different causes can be found in Lambsdorff (2005) or Seldadyo and De Haan (2005).

For this study, more important than these causes, are the influences of cultural aspects. Several studies observe that power distance, masculinity and uncertainty avoidance³ are positively related with higher levels of corruption (Huber, 2001; Yeganeh, 2014; Cheung & Chan, 2008; Park, 2003). Arguably, greater power distance creates opportunities for the elites to adopt laws and regulations that allow for more nepotism and/or abuse of power while misconduct is less probably prosecuted (Yeganeh, 2014; Cheung & Chan, 2008). Likewise, a masculine culture emphasizes individual achievements, regardless of the how, thereby fostering a culture of corruption (Cheung & Chan,

³ as defined by Hofstede (1983)

2008). In contrast, a more individualistic society is negatively related with levels of corruption (Huber, 2001; Yeganeh, 2014), possibly because “interpersonal relations are less important, the ethical compliance is sought through formal structures, and regulations are often respected”, granting less chances for nepotism (Yeganeh, 2014).

Further, prevalence of corruption can be lowered, depending on the prevailing culture. Generally, as countries with lower levels of economic development and human capital show higher levels of corruption, educational improvements can lead to less corruption. However, the effect is stronger in countries that have a smaller power distance and are more individualistic³ (Jahić & Činjurević, 2017).

Foreign education and institutional change

Foreign education might influence institutional change and reduce levels of corruption through two channels: higher levels of education, including the adoption of new practices, as well as social remittances. Therefore, this paper is further related to two strands of research: (i) the impact of (foreign) education on institutions in the home country and (ii) the impact of (temporary) migration on the institutional settings, and more specifically on the level of corruption.

1. The impact of (foreign) education on institutions

Since the institutions came into the focus of researchers, studies not only identified the impact of institutions on economic growth, but also the determinants of good institutions. Generally, human capital is positively related with institutional development (Li & McHale, 2009). More specifically, a strong and positive relationship was identified between levels of education and democracy (Barro, 1999). Similarly, Spilimbergo (2009) estimates the impact of foreign education on democratic development. He finds that although the share of the population that studies abroad is not influencing the democracy of the sending country, the level of democracy in the hosting country has a positive impact on democracy in the sending country.

As mentioned above, a higher level of human capital has a corruption reducing impact. More specifically, Beets (2005) finds that different proxies for quantity and quality of education, namely high school enrollment and literacy rates as well as a low student-teacher ratio, have a positive

impact.⁴ Likewise, and based on the study by Spilimbergo (2009), foreign education has been found to have a positive impact on corruption in the origin country, although the share of students plays a role in this case (Ferrerias, 2013).

2. The impact of (temporary) migration on institutions

Docquier et al. (2010) show that emigration to OECD countries positively affects institutions, as measured by democratic and economic freedom indices, in the home countries. This is always true for unskilled emigration; however, skilled migration only shows positive impacts in the long run. In contrast, Beine and Sekkat (2013) find that the quality of most of the institutions in the country of origin improves due to emigration and that this effect is stronger for skilled migration. Besides, this effect depends on the quality of the host country's institutions. Comparing the impact of emigration on political and economic institutions, Li and McHale (2009) find that only political institutions are positively influenced while economic ones suffer from emigration. In line with these results, Pérez-Armendáriz and Crow (2010) show that Mexican migrants living in the US and Canada affect democratic attitudes home in different ways: (i) return migrants are more tolerant generally, yet more critical of the government's actions, (ii) relatives of migrants participate more actively in politics while being less satisfied with democratic institutions in Mexico, and (iii) communities that experienced large-scale emigration are more involved in civic associations. In an experimental study, Batista and Vicente (2011) show that demand for political accountability increases with international emigration to countries with better governance. Further, this effect is stronger for return migrants than for current migrants who can only influence institutions through social remittances.

More specifically, in relation to how migration alters perceptions and attitudes towards corruption, Ivlevs and King (2017) study how emigration affects the bribery experience and attitudes towards corruption among the migrants' relatives that remained in the sending country. In line with the theory on social remittances, having a family member abroad reduces the likelihood of bribing public officials and makes bribing less acceptable. Similarly, investigating how parental migration affects petty corruption in education, Höckel et al. (2017) find a reduction of payments to teachers after migration. In contrast, a study on Greek migrants in other EU-countries only observes a

⁴ In the following, a "positive impact on corruption" is identical to a corruption reducing impact

change in behavior of the migrants themselves, as manifested in a lower tolerance towards petty corruption and a greater demand for efficient public services in Greece, but no evidence for social remittances. Possible identified mechanisms are (i) relatives did not directly experience the different social environment, hence they could not compare perceptions, (ii) relatives lack individual agency due to passiveness, pessimism and compromise, (iii) migrants see home and destination countries distinctively, hence, corruption in their home country is seen as less bad as in the destination country, and (iv) the recent economic crisis supported pessimism concerning corruption, making society losing hope (Papangelopoulos & Merkle, 2019).

III. Determinants of bilateral student flows

After having reviewed the related literature, this part investigates the determinants of bilateral student flows, with special focus on the impact of cultural differences. After the discussion of the employed methodology, the data are described, followed by a descriptive and empirical analysis.

Methodology

Foreign education is becoming increasingly important, therefore, to identify the determinants of bilateral student flows also becomes more important. Here, they are identified through the following gravity model using both a pooled OLS and a Poisson pseudo-maximum likelihood (PPML) approach⁵, with observations over a time period from 1970-2015:

$$\text{bilateral student flows}_{odt} = \alpha + \alpha_1(\text{difference in cultural values}_{odt}) + \alpha_2\chi_{ot} + \alpha_3\chi_{dt} + \alpha_4\chi_{odt} + \varepsilon_{odt} \quad (1)$$

⁵ In the OLS model, the bilateral student flows are put on a logarithmic scale. In the PPML, the absolute values are used since this method looks at the counts of students and zero-values are included.

Where o refers to origin country, d denominates the destination country and t is the year. The dependent variable is the bilateral student flow.

The most important independent variables are the differences in cultural values between origin and destination. Moreover, since Equation (1) is a regular gravity model which is often used to identify the determinants of bilateral trade or FDI flows, the most common control variables are included. Therefore, a vector χ with origin, destination and common characteristics, respectively, are added to the model. To address the size of the origin and destination country, the model controls for the population of both countries. Following standard gravity models, distance and common border are included, as well as common language (official and de facto) and colonial ties. Further, the model accounts for institutional differences and the openness of a host country as proxied by $[\equiv \ln(\sum_{o \neq i} [Students_{odt}])]$. This is the sum of students in destination d , excluding the students from origin o , and is supposed to capture that some countries might attract more foreign students due to institutional openness, such as scholarships or the European Erasmus program.

Equation (1) is estimated using pooled OLS and PPML. OLS is not efficient if there are many zero values which is the case for country-pairs with no student exchange. Then PPML is preferable (Silva & Tenreyro, 2006; Silva & Tenreyro, 2011). Also, since these methods cannot capture time-effects, the same regressions are re-run using the average values for smaller time-periods, namely 1985-1994, 1995-2004, and 2005-2015. This allows to see how the determinants change over time, one of the major advantages of this large dataset which includes the time when the world was still divided into an East- and West-Block, the rise of the internet and social media, as well as the most recent global financial crisis. In contrast to regressions for values in one certain year, averaging over a longer time period avoids that the coefficients are biased by a shock in that specific year, e.g. only looking at the year 2008 would give largely biased effects due to the financial crisis (Beine et al., 2014).

Data

1. Foreign students

The database on foreign students constructed by the UNESCO Institute for Statistics (2019) is based on host countries' statistics from universities and/or immigration databases. It includes bilateral student flows since 1954 for developed countries, but since 1960 for most countries. The UNESCO online database provides information on student mobility as of 1998, data for years before are recorded in book form and have been provided in digitalized form by Antonio Spilimbergo (2009). Together, these two sources provide the information on international student flows with 206 origin and 157 destination countries. For the descriptives and the determinants of the bilateral student flows, data since 1970 are employed.

2. Cultural Dimensions

A common way of measuring culture are Hofstede's six cultural dimensions. Each dimension is measured on a scale from 0 to 100, e.g. if a country scores above 50 it can be classified as masculine while a score below 50 indicates a more feminine culture (Hofstede et al., 2010). Following definitions and descriptions are taken from Hofstede (2011).

1. *Power Distance*

Power Distance measures "the extent to which the less powerful members of institutions and organizations [...] expect and accept that power is distributed unequally", reflecting the extent to which hierarchy is accepted.

2. *Uncertainty Avoidance*

This dimension shows the extent of "a society's tolerance for ambiguity", however, it is not the same as risk avoidance. To avoid uncertainty, a society relies on strict laws and regulations, safety and security measures as well as on religion and philosophy. On the other extreme, societies that accept uncertainty exhibit cultures that are more phlegmatic and show fewer emotions.

3. *Individualism vs. Collectivism*

This dimension focuses on the "degree to which individuals are integrated into groups". In individualistic societies, people must take care of themselves and the close family, whereas a collectivistic society implies strong relationships and loyalty within larger groups.

4. *Masculinity vs. Femininity*

While women have been found to hold similar values in all societies, men differ from being very assertive and ambitious to more caring and modest. Former is denoted a masculine society in contrast to the latter which is named feminine society. Other differences include gender equality and a work-life balance for feminine societies, in contrast to emotional and social role differences between genders and work being more important than family in masculine ones.

5. *Long-term orientation vs. Short-term orientation*

Values associated with long-term orientation include thrift and perseverance, ordering relationships by status and a sense of shame, while short-term oriented societies value traditions, social obligations and the ‘protection of one’s face’. Long-term orientation is based on and highly related to Confucian values, therefore, East Asian countries score on this dimension, while the US, Australia, Latin America and Muslim countries score low.

6. *Indulgence vs. Restraint*

The last dimension reflects how much a society “allows relatively free gratification of basic and natural human desires related to enjoying life and having fun”. Societies that score high, perceive their personal life to be under their own control as well as leisure and freedom of speech as important.

3. Other Control Variables

In order to control for other confounding effects, some of the most important variables that have been found to impact bilateral student flows are employed.⁶ Population data are taken from the World Development Indicators while data on GDP per capita in 2011 PPP come from the Penn World Tables.

Information about regional belonging, political stability and religion are provided by the Quality of Government dataset from the University of Gothenburg which in turn compiled data from other

⁶ An overview of the variables, their underlying sources, as well as measurement information are specified in Appendix 1 (p.52)

researchers. The GeoDist Database by CEPII contributes bilateral country information on common borders, distance between the most populated cities or the capitals, colonial ties, as well as common language spoken.

Global student flows

As mentioned before, global education increased in recent decades, both in absolute numbers and as the share of people in the relevant age group. Further, this share is positively related to gross enrollment in tertiary education with a coefficient of 0.4 which is also reflected in Figure 3. Great outliers (and therefore excluded from Figure 3) are China and India which have both a gross enrollment rate below 50%, yet up to 0.08% of the potential age group studying abroad.

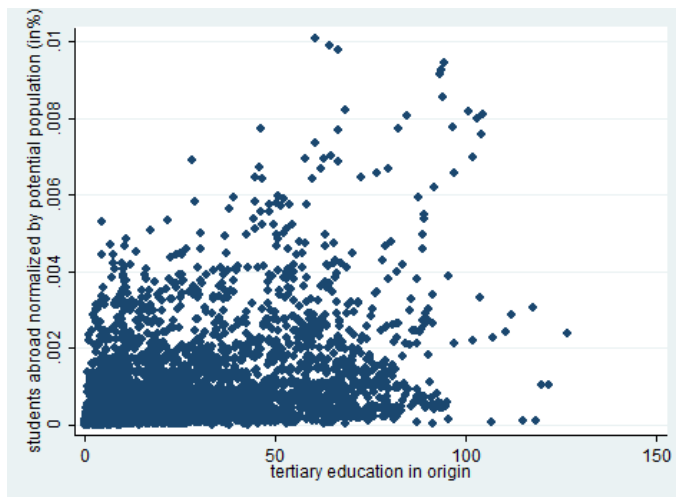


Figure 3 Enrollment in tertiary education vs. students abroad (without China and India)

Only looking at global student mobility gives an incomplete picture and comparing the student flows per region is important. While most of the regions experienced a similar great increase in global student mobility, the relative increase was especially pronounced in the Caribbean, the Pacific and Eastern Europe (Figure 4). In particular, during the 2000s up to 2% of these populations in the age of studying left the country to study abroad. Similarly, the West⁷, South and East Asia

⁷ In the following, the 'West' denotes countries in Western Europe, North America (US & Canada), as well as Australia and New Zealand

experienced a stark increase in students going abroad. Sub-Sahara has the lowest share of global educated students. Although this cannot be observed from Figure 4, the region experienced an increase in the number of students going abroad: while in 1970 the share was 0.001% it grew to 0.003% by the beginning of the 1980s. In 2000, this number fell again greatly before it rose to the level of the 1980s. Considering Sub-Sahara’s population growth which implies a large young population, the absolute numbers of students abroad are still substantial with almost 300,000 students abroad in 2017. Similarly, due to Asia’s young population, the 0.5% of East Asia’s potential students abroad amount to almost one million people.

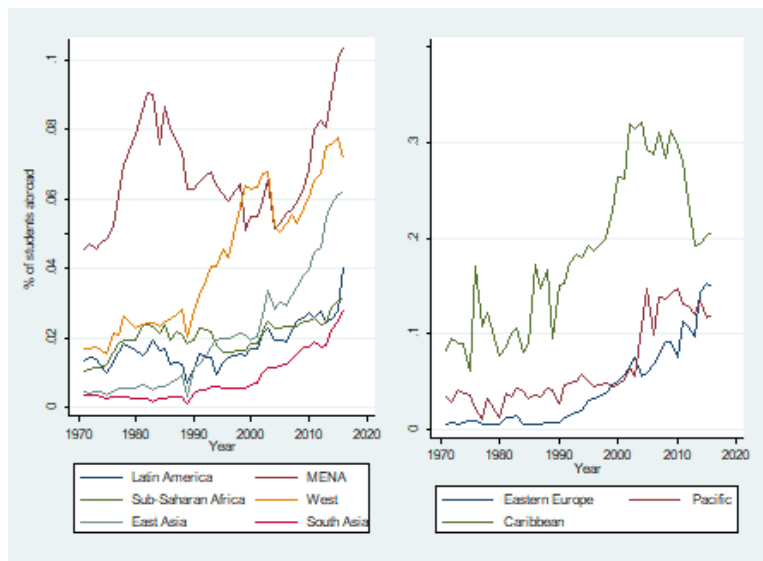


Figure 4 Regional distribution of students, normalized by the regional population in the age 15-24 years

As important as the students’ origins is their destination. Unsurprisingly, the West received the greatest number of students (Figure 5). Within the European Union, the so-called Bologna Reforms aims at comparable university education through ECTS, Diploma Supplements and national qualifications frameworks, thereby facilitating the transfer of students and staff. Programs like Erasmus+ further support the international mobility of students by offering financial support and an ease transfer of educational credits (European Commission & EACEA/Eurydice, 2018). Some countries offer scholarships, like the Fulbright scholarship or the ones provided by the German Academic Exchange Service (DAAD), while others, like Germany or Sweden (for EU-nationals) have no tuition fees and thereby, the cost of studying abroad are substantially decreased. But, as can be seen in Figure 6, other regions, in particular Eastern Europe and South Asia, became more attractive for students that want to study abroad.

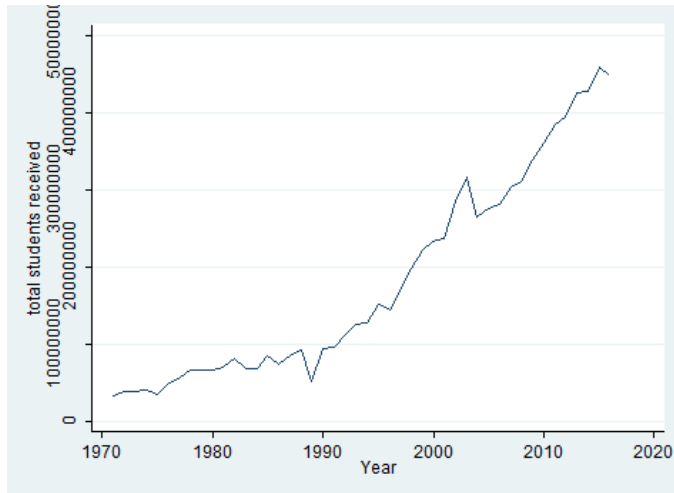


Figure 5 Number of students going to Western countries

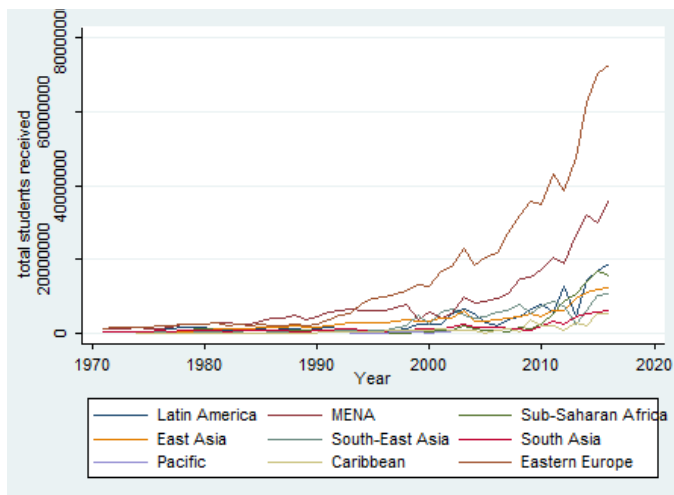


Figure 6 Regional distribution of destination, Western countries excluded

Still, these absolute numbers of incoming students must be seen carefully since some regions contain more countries or have a larger student population that might prefer to study in a neighboring country, thereby inflating the student flows into a certain region. For instance, while on average 90% of students from Western countries decided to study in another Western country in 1990, only 8% of Sub-Saharan international students went to another Sub-Saharan country for tertiary education. In South Asia, the Pacific and the Caribbean these shares even drop to 3-4%. Reason for this large variation might be that the West has more highly acknowledged universities or more intra-regional study programs such as Erasmus that support students in going to another European country. Thereby, the West attract students from inside the region, as well as from outside.

As stated before, the literature identified several determinants of bilateral student flows, such as distance, a common border or a common language as well as historical and/or political links among countries, for instance colonial ties or a similar political regime. These are descriptively analyzed here.

On average, students move approximately 5,000km away.⁸ Students from South-East and East Asia go to countries that are furthest away (around 10,000km) followed by Sub-Saharan Africa and Latin America. This is in line with the above described fact that few students remain in the same region, but most go further away, for instance to universities in the West. Further, students from Eastern Europe and the West remain closest to their home country (approximately 2,000 - 4000km), although the West includes a large territory with Western Europe, North America as well as Australia and New Zealand.

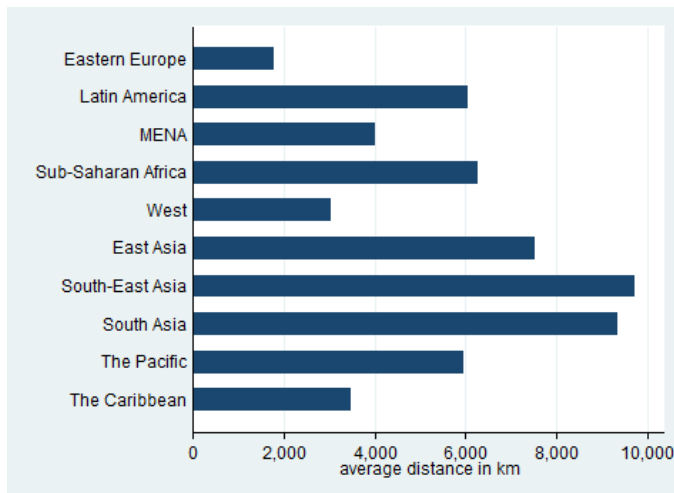


Figure 7 Average distance per region

Considering the number of possible destinations and that many of the most popular destination countries are outside the own region, e.g. US, Canada, it is not surprising that most students go to a country that has no common border (96%).

More of interest is the fact that common language, either officially or unofficially,⁹ does not seem to play a major role anymore. Since 1970, on average only one third of the students go to a country where the same official language is prevalent, while unofficial common language seems to be

⁸ Underlying is the simple distance between the two major cities of a country pair.

⁹ Defined as >9% of the populations in the country pair speak this language

slightly more important, hence approximately 40% of the annual student flows are between country pairs with this characteristic. Over time, common language seems to become even less of importance. During the 1970s, the share of bilateral student flows between countries with common official language was higher with an average of 40%. For unofficial language, this share is another five percentage points greater. This compares to an analysis by Tremblay (2002) who finds that among OECD countries, most non-native English speaking students go to English-speaking countries, whereas native English students do not favor destinations with another language, except if they come from the UK. He claims this might be due to trade relationships which require students to learn foreign languages.

Figure 8 shows that generally the colonial linkages are of varying importance across regions. Around 80% of students coming from a former Australian colony, e.g. Papua New Guinea, go to Australia for tertiary education which might also be due to proximity. For former Spanish or Italian colonies, this share only amounts to approximately 10% on average, while the share was increasing for Spanish colonies and largely decreasing for Italian ones. Similarly, the importance of colonial links seems to have diminished for Belgian and US colonies while more students from Dutch colonies go to the Netherlands for studying. Only for France and Britain the share remained even over time.

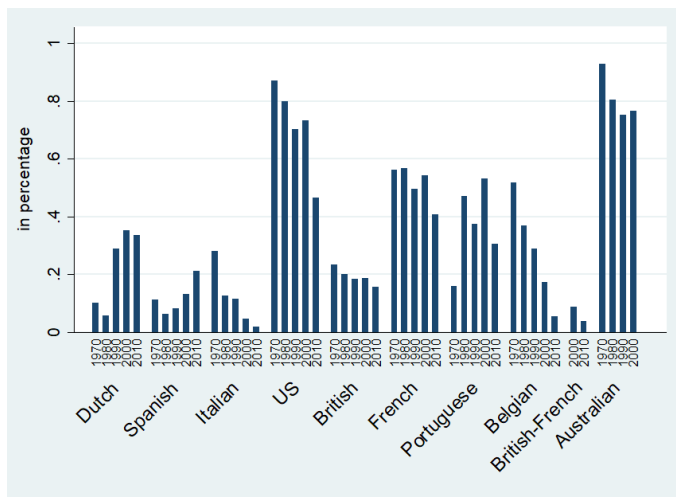


Figure 8 Average share of students from former colonies going to their respective former colonial power

Another determining factor for the destination might be the cultural similarity between origin and destination country. Possibly, students prefer to stay in a country that is culturally similar in order to feel more easily at home. On the other hand, and this might be more often the case for older

students or for short-term stays, such as a one-semester exchange, students might want to experience an entirely different culture, hence one would observe a larger difference in cultural values.

Figure 9 shows these by student shares weighted cultural differences, as measured by Hofstede (1983), between the country-pairs. For instance, a positive difference in power distance implies that students go to a country with a lower power distance than at home. This is the case for students from all regions, except the West, the region with the lowest values for power distance. Similarly, students from the West and the MENA region are going to countries that are most similar with regards to individualism. Especially large is the difference for Asian students who are mainly coming from collectivist countries, hence the host countries are largely more individualistic.

While masculinity differences are small in most cases, East Asia is an outlier again, suggesting that East Asian countries are more masculine than their students' destination countries. East Asia is another outlier in case of long-term orientation: the students go often to more normative countries and a less pragmatic approach to changes. Having a positive value for the difference in uncertainty avoidance implies that students go to cultures where the culture requires less legal norms and rules to structure social coexistence. For most of the students it is the case that they go to countries where the culture requires less legal norms and rules to structure social coexistence. The exception are students from South-East Asia and the Pacific. Lastly, a negative difference in indulgence values suggests that students go more often to countries where impulses and desires are more habitually given in for. Only students from Latin American and the Caribbean experience this, implying that the regions themselves score highly on this value.

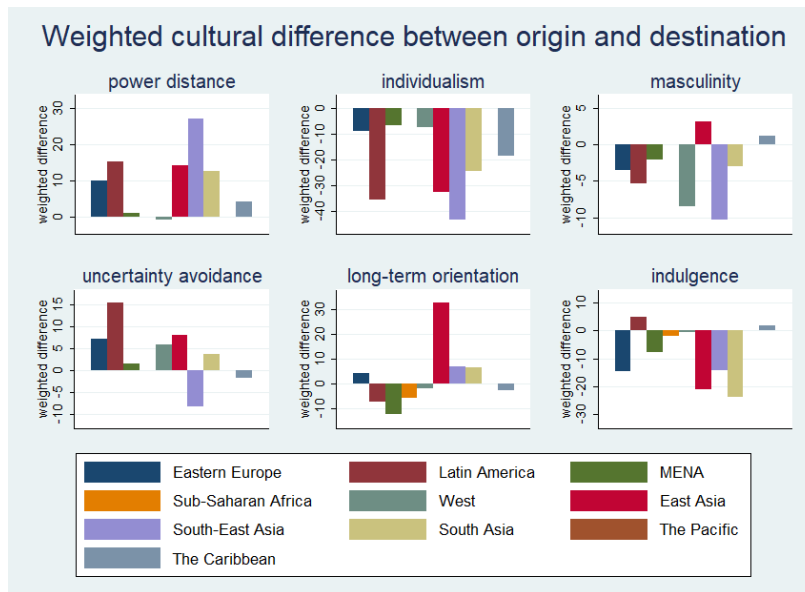


Figure 9 Weighted difference in cultural values, as defined by Hofstede (1983), between origin and destination country

Empirical Analysis

After having discussed possible determinants of student flows descriptively, this part presents an empirical analysis, with special focus on the importance of cultural differences. Again, it might be possible that students prefer to stay in a foreign country that is close to their own culture to feel more at home. It is also possible that students seek an adventure and therefore prefer to go to a country that is culturally more different.

Table 1 gives the results of bilateral student flows using pooled OLS (model 1 and 2) and PPML estimation (model 3 and 4). These two estimation methods allow for the inclusion of time-invariant variables, such as dummies for common languages, and PPML accounts for the great number of missing observations in case a country-pair has no students. The results show that most of the included control variables are highly significant and have the expected sign under both methods. However, the size of the estimators can vary greatly. As expected, greater populations in origin and destination countries increase the bilateral student flow. Besides, higher income in the origin country has a positive effect on the number of students going abroad which is in disagreement with the findings of Bessey (2012) who claims that scholarships and the like decrease the importance of

income in the origin country. But one can argue that this is only true up to a certain extent since scholarships only fund a small number of students, therefore credit-constraints remain.

Further, distance and bilateral student flows are negatively related, whereas having a common border exhibits a positive relationship. Similarly, common language (official and de facto) as well as a colonial relationship are positively related. Unexpectedly, the coefficient for level of democracy in the sending country is negative, implying a lower number of students going abroad if a country is more democratic. In contrast, being a democratic destination is positively related. Finally, the openness of a country, meaning how many students generally come to a destination, is positively related with bilateral student flows. This might be due to institutional support or a destination being attractive due to high-quality education.

Including the difference in cultural values (models 2 and 4) does not affect the other determinants, yet most of the cultural differences are highly significant, although their effect is small. Furthermore, as has been seen before, the differences in cultures might be positive or negative per country, hence the effect on bilateral student flows depends on the sign of the difference which can be seen in Figure 9 on the regional level. For instance, on average the power distance difference is positive, which implies a positive impact on bilateral student flows. The overall negative differences for individualism, masculinity and indulgence combined with the negative coefficients also imply a positive relation with student flows. Only long-term differences are positive or negative, therefore, the impact at regional level cannot be deducted from these results. Again, it must be noted that of course country differences might differ from the region averages. Nonetheless, cultural differences seem to be positively related with the number of students going abroad.

Table 1 Determinants of student flows for the entire period

VARIABLES	(1) Pooled OLS 1	(2) Pooled OLS 2	(3) Poisson 1	(4) Poisson 2
log (population in origin)	0.456*** (0.003)	0.622*** (0.005)	0.150*** (0.001)	0.163*** (0.002)
log (population in destination)	0.101*** (0.004)	0.198*** (0.009)	0.035*** (0.002)	0.049*** (0.003)
log (GDP per capita)	0.216*** (0.005)	0.726*** (0.013)	0.069*** (0.002)	0.185*** (0.004)
log (distance)	-0.734*** (0.006)	-0.670*** (0.008)	-0.247*** (0.002)	-0.187*** (0.002)
Contiguity	1.106*** (0.031)	0.907*** (0.044)	0.126*** (0.009)	0.113*** (0.011)
Common official language	1.003*** (0.025)	0.538*** (0.046)	0.313*** (0.007)	0.143*** (0.011)
Common de facto language	0.474*** (0.024)	0.749*** (0.043)	0.103*** (0.007)	0.098*** (0.010)
Colonial relationship	1.097*** (0.028)	0.882*** (0.038)	0.198*** (0.006)	0.177*** (0.010)
Level of democracy (origin)	-0.011*** (0.002)	-0.031*** (0.004)	-0.008*** (0.001)	-0.010*** (0.001)
level of democracy (destination)	0.001 (0.002)	0.108*** (0.006)	-0.001 (0.001)	0.044*** (0.002)
Openness of destination	0.718*** (0.004)	0.760*** (0.008)	0.231*** (0.002)	0.198*** (0.003)
Differences in cultural values				
power distance		0.004*** (0.000)		0.001*** (0.000)
individualism		-0.008*** (0.000)		-0.002*** (0.000)
masculinity		-0.001*** (0.000)		-0.000 (0.000)
uncertainty avoidance		0.001** (0.000)		-0.000 (0.000)
long-term orientation		-0.005*** (0.000)		-0.001*** (0.000)
indulgence		-0.011*** (0.000)		-0.003*** (0.000)
Constant	-8.531*** (0.105)	-19.582*** (0.226)	-2.678*** (0.036)	-4.823*** (0.072)
Observations	114,284	40,366	114,284	40,366
R-squared	0.512	0.656		
Country effects	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

To be able to account for changes in determinants over time, which cannot be done by pooled OLS or PPML itself, it is useful to split the sample period into smaller ones. As has been argued by Didisse et al. (2019), only comparing certain years might capture sudden shocks, therefore using averages over 10-year periods might be a better way.

Table 2 shows the results when using pooled OLS without (columns 1-3) and with cultural differences (columns 4-6). The results using PPML confirm the results from Table 2 and are reported in the Appendix 2 (p. 54). Comparing models 1, 2 and 3, most of the variables keep their direction of relationship constant over time, although the size of the estimates might increase or decrease. But, for instance, having a common spoken language or having a common colonial past becomes increasingly negatively related to bilateral student flows. This is in the line with the previous descriptive results and might be explained by globalization, a common language becoming less important due to English as lingua franca in academia or that colonial relationships become increasingly unimportant with longer independence, a finding in line with Varghese (2008).

The relationship between bilateral student flows and cultural differences change little over time (model 4 to 6), possibly because culture changes slowly over time. The largest decline in the coefficients of cultural differences is between model 4 and 5 (1990s) implying that culture plays a less important role in the decision for a destination afterwards. This contradicts the hypothesis that students today would prefer to experience a different culture while the internet facilitates the contact with home. Rather the impact could decline because cultures become more similar over time due to globalization, or because it is easier to experience other cultures other than through foreign education.

Table 2 Determinants of bilateral student flows over time (pooled OLS)

VARIABLES	(1) 1985-94	(2) 1995-04	(3) 2005-2015	(4) 1985-94	(5) 1995-04	(6) 2005-15
log (population in origin)	0.282*** (0.004)	0.364*** (0.003)	0.311*** (0.002)	0.168*** (0.009)	0.370*** (0.004)	0.298*** (0.004)
log (population in destination)	0.038** (0.015)	0.248*** (0.017)	-0.935*** (0.021)	-0.633*** (0.031)	-0.109*** (0.027)	-0.414*** (0.027)
log (GDP per capita)	0.326*** (0.004)	0.376*** (0.004)	0.327*** (0.003)	0.619*** (0.011)	0.787*** (0.007)	0.463*** (0.007)
log (distance)	-0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Contiguity	-0.174*** (0.021)	-0.036** (0.015)	0.021 (0.013)	-0.126*** (0.023)	-0.047*** (0.015)	-0.022* (0.013)
Common official language	-0.034** (0.016)	-0.004 (0.017)	-0.037*** (0.014)	0.073*** (0.028)	0.077*** (0.025)	0.090*** (0.022)
Common de facto language	0.092*** (0.016)	0.015 (0.016)	0.009 (0.014)	-0.031 (0.026)	-0.052** (0.023)	0.001 (0.021)
Colonial relationship	0.015 (0.019)	-0.024 (0.015)	-0.075*** (0.013)	0.074*** (0.025)	-0.074*** (0.019)	-0.180*** (0.016)
Level of democracy (origin)	-0.034*** (0.002)	0.022*** (0.002)	-0.035*** (0.001)	-0.037*** (0.002)	-0.006* (0.004)	-0.009*** (0.002)
level of democracy (destination)	0.189*** (0.008)	-0.023*** (0.009)	-0.405*** (0.007)	0.452*** (0.019)	-0.624*** (0.019)	-0.386*** (0.013)
Openness of destination	-1.012*** (0.028)	-0.273*** (0.017)	-0.043*** (0.015)	-2.181*** (0.067)	0.207*** (0.030)	-0.454*** (0.025)
Differences in cultural values						
power distance				0.003*** (0.000)	0.002*** (0.000)	0.007*** (0.000)
individualism				-0.018*** (0.000)	-0.013*** (0.000)	-0.012*** (0.000)
masculinity				0.010*** (0.000)	0.004*** (0.000)	0.005*** (0.000)
uncertainty avoidance				-0.016*** (0.000)	-0.006*** (0.000)	-0.010*** (0.000)
long-term orientation				-0.000 (0.000)	0.004*** (0.000)	0.003*** (0.000)
indulgence				-0.009*** (0.000)	-0.006*** (0.000)	-0.004*** (0.000)
Constant	5.231*** (0.371)	-5.517*** (0.329)	17.890*** (0.333)	25.124*** (0.823)	-2.492*** (0.464)	11.118*** (0.436)
Observations	27,948	39,035	54,064	13,195	17,143	24,337
R-squared	0.592	0.668	0.691	0.630	0.699	0.802
Time effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

IV. Foreign Education and Corruption

The previous part has shown that cultural differences have a significant impact in the choice of the destination countries. In contrast, this section identifies the impact of culture on the transmission of norms and institutions through foreign education, more specifically, it investigates if foreign education affects corruption in the sending country and if cultural values play a role in this.

Methodology

To estimate the relationship between corruption and foreign students following equation is estimated by pooled OLS and fixed effects regression. Based on the study of Spilimbergo (2009), who estimates the impact of foreign education on the democracy level five years after, the following model adapted to corruption is estimated:

$$\begin{aligned} corruption_{it} = & \alpha_1 + \alpha_2(corruption_{it-5}) + \alpha_3(studentsabroad_{it-5}) + \\ & \alpha_4(corruption \text{ in receiving country}_{it-5}) + \\ & \alpha_5(studentsabroad_{it-5} * corruption \text{ in receiving country}_{it-5}) + \beta(X_{it}) + \\ & fixed \ effects_i + \varepsilon_{it} \end{aligned} \quad (2)$$

In this model, the dependent variable is the level of corruption in the sending country each year, as measured by a corruption index. Independent variables include the lagged level of corruption in the sending country and the destination countries, which is calculated by

$$Corruption \text{ in host countries}_{ot} = \left(\sum_d \frac{S_{odt}}{\sum_o S_{odt}} * corruption_{dt} \right)$$

where S_{odt} is the share of students from country o that go to country d in year t . Hence, corruption in destination d in year t is multiplied by the share of students from origin o over all the students leaving origin o that same year. Summing up all weighted corruption indices of the destination countries, gives the corruption in host countries. This variable can be constructed for all years t and

might change over time if either the level of corruption in the host or origin countries varies, or if the students' destinations change. To simplify the interpretation of this coefficient, the set of destination countries is restricted to countries with low levels of corruption. Further, the number of students as a share of potential foreign students are added. To do so, the number of students abroad are normalized by the sending country's potential population of (foreign) students, proxied by the population in the age group 15-24.¹⁰ Additionally, this term is interacted with the corruption score of the destination countries, henceforth labeled as corruption interaction.

To account for cultural differences, a weighted average of Hofstede's cultural dimensions in the destination countries are added in some estimations using following specification

$$cultural\ value_{dt} = \left(\sum_d \frac{S_{odt}}{\sum_o S_{odt}} * cultural\ value_{dt} \right)$$

which is essentially the same as the weighted average for corruption explained above. Due to changes in the student shares per destinations ($\frac{S_{odt}}{\sum_o S_{odt}}$), the time-invariant cultural values of each individual destination become time-variant and can be included in the fixed effect models. Again, since the strength of the effects of the cultural differences might be dependent on the size of the student population abroad, interaction terms are included.

Possible control variables in later extensions, that have been shown to have an effect on corruption, and that can be controlled for, included by the vector X, are income levels (measured by GDP per capita), trade openness and global integration as well as the share of natural resources in exports (Ahrend, 2002). Further, following Spilimbergo (2009), controls for education attainment and tertiary enrollment should be included. In addition, as democracy itself has been found to be a determinant of corruption (Seldadyo & De Haan, 2005), a democracy index is added.

These variables are all measured with a lag of five or ten years to account for the time that is needed for the effect of foreign education and social remittances to show. It can be argued that higher education takes on average up to five years, so the return of a migrant is not to be expected immediately. Besides, institutions are difficult to change, and time is needed for this process. Docquier et al. (2010) find for instance that migration generally can have an impact in the short-run while

¹⁰ Although students might be outside the age group of 15-24 years when studying, this age group was chosen due to data availability on population in age groups (data come from the World Bank Development Indicators)

skilled migration only shows an effect in the longer-run. Therefore, the same model is estimated with lags of 10 years. This allows the model to capture the fact that return students have a greater impact in their job after having worked for some time and being in more senior positions.

Equation (2) is estimated using pooled OLS and fixed effects. While pooled OLS gives the correlations of the control variables with corruption and can control for time effects, it does not account for the fact that things might change within each origin country over the time period provided by the data. Accordingly, additionally fixed effects are included.

In a fixed effects estimation, also called within transformation, the average of each variable per group is subtracted from the base model, thereby eliminating any time-invariant explanatory variables, as well as the unobserved error. Therefore, because it will be eliminated, the unobserved effect is allowed to be correlated with the explanatory variables (Wooldridge, 2015). Including country fixed effects has been shown to be important in the study of corruption (Treisman, 2000) and can further help to account for the time-invariant determinants of corruption, such as culture. This has been shown by Frechette (2006) who argues that corruption might depend on culture if the prevailing norms make a society accepting bribery demands and thereby lowering the danger of being caught, thus he includes fixed effects in his panel data analysis. Therefore, although the cultural values in the origin countries cannot be included in the fixed effect models since they are time-invariant, their effects can be captured by the model specification itself.

Data

For this section, many of the same data as before are used, namely the bilateral student flows from UNESCO, Hofstede's cultural dimensions, and some of the control variables. Data on corruption levels and control variables are supplementing them and are listed in the following part.

1. Corruption

Data on the level of corruption have been mainly collected since the 1990s. Only the *International Country Risk Guide* (ICRG) provides information on corruption since 1984 as part of their political risk assessment and is therefore being used as the main source for corruption. In total 143 countries are recorded, however, not all countries are covered for the entire time period, either due to border

changes or because they were only included at a later point in time. The scale of the corruption measure ranges from zero to six, with zero being the highest risk and six the lowest. Although bribery is a large part of corruption, this index focuses on “excessive patronage, nepotism, job reservations, ‘favor-for-favors’, secret party funding, and suspiciously close ties between politics and business” as this is to be seen as a greater risk for foreign business, for instance through the creation of overly inefficient controls and regulations or even by leading to a popular uprising in case of a large-scale scandal (Howell, n.D.). Considering that foreign educated students tend to become the business elite this index captures their impact on corruption better than indices that have a larger focus on petty corruption or bribery.

2. Control Variables

Several control variables are included in subsequent models. Some of them have been summarized before and include GDP per capita (in PPP) and level of democracy. Thus, the following section gives an overview of the newly added variables that have been found to be important in the corruption literature¹¹.

Levels of human capital are proxied by secondary and tertiary enrollment from the World Bank (flow variable) and tertiary attainment from the Barro and Lee dataset. To account for integration into the global economy, two different proxies are employed: One is an index of globalization from the KOF Globalization Index that measures economic, social and political integration (provided by the Quality of Government dataset). The other proxy is trade openness of the origin country, as measured by the sum of imports and exports as a share of GDP, constructed using the World Development Indicators of the World Bank. Additionally, the time since independence is included to account for the time a country was being exposed to democratic values and because colonialism fostered corruption, hence, since independence the country had time to create institutions fighting corruption or strengthen it. The data are taken from Spilimbergo (2009). Finally, the share of protestants¹² is added which has been measured by La Porta et al. (1999) and is part of the Quality of Government dataset.

¹¹ An overview of the variables, their underlying sources, as well as measurement information are specified in Appendix 1 (p.57)

¹² This variable has been measured once, in 1980, therefore it is time-invariant and can only be added to the pooled OLS models

Empirical Analysis

In order to see the effects of foreign education on corruption, the above described model with 5- and 10-year lags is estimated using Pooled OLS and fixed effects (Table 3).¹³ As mentioned before, the data set has been restricted to destination countries where corruption is low. The threshold for being a destination country was set at a score of four or higher when averaging the corruption score by ICRG over the time period 1985-2015. This leaves 26 destination countries¹⁴ with an average corruption score of 4.9 compared to 2.95 for the entire set of countries.¹⁵

The dependent variable is corruption in the sending country, where a higher value signifies a lower risk of corruption, hence a positive coefficient is related with a lower level of corruption. In model 1, 2, 5 and 6 only the basic independent variables are included, i.e. (i) the lagged value of corruption in the origin country, (ii) the normalized number of students abroad, (iii) the weighted average of corruption in the destination countries, as well as (iv) the interaction of latter two. The other four models further include the weighted cultural values of the destination countries and the interactions with the normalized student flows.

Considering that previous literature found corruption to be highly persistent it is unsurprising that previous levels of corruption are highly significant in most of the models. Yet, against the prediction, the effects for corruption in origin countries are positive, implying that the relationship is positive and corruption levels decrease over time, although the coefficients are insignificant in the fixed effect models. Besides, comparing the 5- and 10-year lags, the size of the coefficients becomes smaller with larger lags indicating that correlation over time decreases. Moreover, the weighted corruption difference is significant with a positive sign in all models that include 5-year lags, however, they turn negative in models 5-8, indicating a corruption reducing impact in the short run, yet not so anymore after ten years.

In line with the predictions that students abroad have a positive influence on the corruption level in the origin, the coefficients are positive and significant in the models with five-year lags. As can

¹³ The results from a non-reported regression using random effects give similar results, however, a consequent Hausman test provides evidence that the fixed effects model gives consistent estimators.

¹⁴ See the complete list of destination countries in Appendix 3 (p.55)

¹⁵ See same regression based on the *Corruption Perception Index* in the Appendix 4 (p.55)

be seen by the negative interaction terms, the combined effect of the corruption in the destination countries and the student share is increasing the level of corruption. This result is in line with the previous literature on the effect of foreign education on democracy (Spilimbergo, 2009) and corruption (Ferrerias, 2013), where the interaction term was found to have a negative while the share of students abroad has a positive impact. However, while Spilimbergo (2009) finds a positive impact of the democracy in the host countries, Ferrerias (2013) finds a negative impact on corruption. The results in Table 3 are in accordance with the results from Spilimbergo, thereby giving further support to the hypothesis that foreign education has an impact on institutions in the home country.

However, this thesis tries to further control for the role of culture in the transfer of norms and institutions by including the cultural dimensions. After the inclusion of the cultural values in the destination countries, as well as the interaction with the student flows, the results change little in terms of significance or direction of relationships which is another supportive indicator. Yet, the main variables' estimates lose some of their size, while the R-square increases. Considering model 3, a greater power distance and more indulgence in the destinations are positively related with the corruption in the origin country. All other cultural dimensions, except masculinity which is insignificant, show a positive relation, meaning they are corruption reducing.

Surprisingly, these relationships change under the inclusion of country fixed effects (model 4). In contrast to the pooled OLS models, masculinity and indulgence are positively related under fixed effects, something that contradicts previously found results. For instance, Cheung and Chan (2008) found that masculinity fosters corruption since it demands achievements, no matter how. Equally, the negative sign for the coefficient on individualism differs with earlier research that argues that individualism relies stronger on formal relationships, hence allows for fewer opportunities of nepotism and favoritism (Yeganeh, 2014). Moreover, uncertainty avoidance and long-term orientation lose their significance.

Still, foreign education and the prevailing cultures in the destination countries appear to affect corruption in the origin countries. The change in some relationships after applying fixed effects indicates that unobserved country effects may play a role in the relationship between corruption and cultural values, requiring more control variables than are included here.

Table 3 Basic regression of foreign education on corruption (5- and 10-year lags)

VARIABLES	5-year lag				10-year lag			
	(1) Pooled OLS 1	(2) Fixed Effects 1	(3) Pooled OLS 2	(4) Fixed Effects 2	(5) Pooled OLS 1	(6) Fixed Effects 1	(7) Pooled OLS 2	(8) Fixed Effects 2
corruption in origin	0.246*** (0.0221)	0.0252 (0.0275)	0.201*** (0.021)	0.018 (0.013)	0.168*** (0.023)	0.013 (0.025)	0.127*** (0.019)	0.012 (0.025)
weighted corruption in destinations	0.0218*** (0.00681)	0.0293*** (0.00984)	0.008 (0.008)	0.026*** (0.005)	-0.006 (0.007)	-0.016* (0.009)	-0.029*** (0.008)	-0.017* (0.010)
normalized student flow	2.322* (1.215)	2.522* (1.418)	17.558*** (5.165)	13.848* (7.728)	0.212 (1.641)	0.122 (1.277)	6.353 (6.885)	-8.390 (9.051)
interaction (corruption)	-0.718*** (0.267)	-0.726* (0.374)	-0.693*** (0.264)	-0.508* (0.290)	-0.261 (0.346)	0.035 (0.260)	-0.401 (0.278)	0.151 (0.311)
Cultural values in hosting countries								
power distance			-0.005*** (0.001)	0.001 (0.001)			-0.007*** (0.001)	-0.001 (0.002)
individualism			0.003*** (0.001)	-0.002* (0.001)			0.005*** (0.001)	0.001 (0.001)
masculinity			0.001* (0.001)	0.002** (0.001)			0.000 (0.001)	0.000 (0.001)
uncertainty avoidance			0.002*** (0.001)	0.001 (0.001)			0.003*** (0.001)	0.001 (0.001)
long-term orientation			0.000 (0.000)	-0.000 (0.000)			0.000 (0.000)	-0.000 (0.001)
indulgence			-0.003*** (0.001)	0.002** (0.001)			-0.004*** (0.001)	-0.000 (0.002)
interaction (power distance)			0.101 (0.071)	0.131 (0.089)			0.155 (0.101)	0.093 (0.139)
interaction (individualism)			-0.172** (0.078)	-0.146* (0.086)			-0.119 (0.124)	-0.017 (0.168)
interaction (masculinity)			-0.026 (0.032)	0.112** (0.049)			-0.058 (0.049)	0.035 (0.101)
interaction (uncertainty avoidance)			-0.195*** (0.056)	-0.176** (0.070)			-0.182** (0.082)	-0.022 (0.137)
interaction (long-term orientation)			0.104*** (0.022)	0.016 (0.028)			0.122*** (0.029)	0.033 (0.047)
interaction (indulgence)			0.019 (0.083)	-0.055 (0.115)			0.078 (0.131)	0.052 (0.132)
Constant	3.831*** (0.129)	4.990*** (0.177)	4.081*** (0.127)	4.853*** (0.071)	4.599*** (0.131)	5.490*** (0.145)	4.969*** (0.123)	5.443*** (0.167)
Observations	4,166	4,166	4,166	4,166	3,278	3,278	3,278	3,278
R-squared	0.911	0.938	0.917	0.939	0.836	0.903	0.853	0.904
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects		Yes		Yes		Yes		Yes
Number of origin countries		182		182		180		180

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 (pooled OLS) and Table 5 (fixed effects) include subsequently different control variables with a lag of 5-years. In the first of the two tables, the four main variables remain mostly significant while the size of their estimates are once more reduced compared to model 3 in Table 3. The results are in line with Ferreras (2013) who finds a similar coefficient for the interaction term itself although she uses different control variables. Further, the relationship between the cultural values and corruption remain significant and of the same direction as without the inclusion of the controls, again a reassuring sign of their importance and robustness. With regards to the control variables themselves, the results are mainly significant and consistent with the literature.

Table 5 gives the results when the models are estimated with fixed effects.¹⁶ Only in model 9, when all variables are included, the previous level of corruption is significant with the expected sign. In contrast, in the same model, the share of students abroad is also highly significant with a corruption reducing effect, further confirming the expected positive impact of foreign education.

Concerning the control variables themselves it is to be noted that few remain significant and they often change their sign compared to the previous models. For example, years since independence which was positive in the pooled OLS estimations, now has a negative relationship, an effect that might arise because of political instability. This explanation would be in line with the fact that the level of democracy has a significant and positive coefficient, hence that more democratic institutions support a country in being less corrupt. Apart from the control variables becoming less significant in model 9, the cultural values also lose their significance. Although some of them, such as masculinity or the interaction of uncertainty avoidance, remain consistently significant over different specifications, they appear to be no longer in model 9.

¹⁶ The dummy for a predominantly protestant country has been left out, since fixed-effect models delete time-invariant variables.

Table 4 Further Control Variables (pooled OLS)

VARIABLES	(1) GDP per capita	(2) school enroll- ment	(3) tertiary en- rollment	(4) tertiary at- tainment	(5) global inte- gration	(6) trade open- ness	(7) time since inde- pendence	(8) Protestant	(9) level of de- mocracy	(10) all
corruption in origin	0.211*** (0.026)	0.168*** (0.028)	0.182*** (0.027)	0.243*** (0.021)	0.186*** (0.020)	0.179*** (0.021)	0.220*** (0.018)	0.236*** (0.020)	0.203*** (0.021)	0.115*** (0.037)
weighted corruption in destinations	0.010 (0.009)	0.011 (0.010)	0.017* (0.009)	0.024*** (0.008)	0.019** (0.007)	0.011 (0.008)	0.019*** (0.007)	0.016** (0.007)	0.016** (0.008)	0.026** (0.010)
normalized student flow	12.784** (5.984)	26.927*** (6.047)	26.538*** (5.749)	16.811* (10.054)	11.950** (5.000)	18.705*** (4.260)	16.725*** (5.105)	17.616*** (5.220)	15.310*** (5.222)	27.210* (14.703)
interaction (corrup- tion)	-0.475 (0.307)	-0.433* (0.261)	-0.359 (0.264)	-0.712*** (0.239)	-1.027*** (0.248)	-0.412 (0.258)	-0.840*** (0.258)	-0.753*** (0.242)	-0.898*** (0.262)	-0.499* (0.275)
power distance	-0.003*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.003 (0.002)
individualism	0.002 (0.001)	0.004*** (0.001)	0.003*** (0.001)	-0.000 (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	-0.001 (0.001)
masculinity	0.002*** (0.001)	0.001 (0.001)	0.001* (0.001)	0.002*** (0.000)	0.002*** (0.001)	0.001** (0.001)	0.001** (0.001)	0.001** (0.001)	0.001** (0.001)	0.002*** (0.001)
uncertainty avoid- ance	0.001 (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.002*** (0.001)	0.002 (0.001)
long-term orientation	0.001* (0.000)	-0.001 (0.000)	-0.000 (0.000)	-0.001* (0.000)	-0.001*** (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
indulgence	-0.003*** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.001 (0.001)	-0.005*** (0.001)	-0.003*** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	0.002 (0.002)
interaction (power distance)	0.171** (0.075)	0.286*** (0.091)	0.284*** (0.091)	0.115 (0.090)	0.017 (0.067)	0.187*** (0.070)	0.045 (0.068)	0.192*** (0.072)	0.075 (0.071)	0.444*** (0.151)
interaction (individu- alism)	-0.185** (0.083)	-0.401*** (0.083)	-0.358*** (0.080)	-0.075 (0.139)	-0.196** (0.076)	-0.262*** (0.070)	-0.074 (0.074)	-0.160** (0.078)	-0.169** (0.078)	-0.321* (0.178)
interaction (mascu- linity)	-0.047 (0.033)	0.006 (0.031)	-0.001 (0.030)	-0.081* (0.044)	-0.055* (0.030)	-0.023 (0.028)	-0.035 (0.030)	-0.028 (0.031)	-0.039 (0.031)	-0.012 (0.058)
interaction (uncer- tainty avoidance)	-0.196*** (0.063)	-0.389*** (0.070)	-0.366*** (0.068)	-0.165** (0.076)	-0.120** (0.053)	-0.237*** (0.056)	-0.146*** (0.052)	-0.253*** (0.057)	-0.167*** (0.058)	-0.366*** (0.116)

interaction (long-term orientation)	0.098***	0.186***	0.161***	0.074**	0.119***	0.101***	0.076***	0.102***	0.111***	0.040
	(0.024)	(0.029)	(0.027)	(0.031)	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.045)
interaction (indulgence)	0.082	0.085	0.041	-0.056	0.162**	0.077	-0.056	0.009	0.063	0.022
	(0.097)	(0.113)	(0.109)	(0.075)	(0.077)	(0.078)	(0.081)	(0.080)	(0.079)	(0.117)
GDP per capita (PPP)	-0.000***									-0.000***
	(0.000)									(0.000)
enrollment in secondary education		0.000**								0.000
		(0.000)								(0.000)
enrollment in tertiary education		0.001***	0.001***							-0.000
		(0.000)	(0.000)							(0.000)
tertiary schooling attained				0.002***						0.001
				(0.000)						(0.000)
Index of globalization					0.002***					0.001***
					(0.000)					(0.000)
trade openness						-0.000				-0.000***
						(0.000)				(0.000)
years since independence							0.000***			0.000***
							(0.000)			(0.000)
Protestant								-0.020***		-0.020**
								(0.007)		(0.009)
Level of democracy									0.003***	-0.000
									(0.001)	(0.001)
Constant	4.046***	4.178***	4.057***	3.809***	4.052***	4.167***	3.905***	3.834***	4.028***	4.275***
	(0.179)	(0.168)	(0.156)	(0.119)	(0.122)	(0.129)	(0.109)	(0.117)	(0.127)	(0.219)
Observations	3,174	2,319	2,688	3,217	4,030	3,794	3,977	3,590	4,097	1,280
R-squared	0.784	0.940	0.938	0.939	0.923	0.921	0.927	0.930	0.920	0.893
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5 Further Control Variables (fixed effects)

VARIABLES	(1) GDP per capita	(2) school enroll- ment	(3) tertiary enroll- ment	(4) tertiary attain- ment	(5) global integra- tion	(6) trade open- ness	(7) time since inde- pendence	(8) level of de- mocracy	(9) all
corruption in origin	-0.017 (0.037)	-0.039 (0.033)	-0.016 (0.027)	-0.020 (0.023)	0.007 (0.028)	-0.003 (0.021)	-0.009 (0.022)	0.012 (0.028)	-0.088*** (0.033)
weighted corruption in desti- nations	0.033*** (0.009)	0.020** (0.009)	0.023*** (0.009)	0.027*** (0.007)	0.028*** (0.008)	0.027*** (0.007)	0.023*** (0.007)	0.029*** (0.008)	0.028*** (0.010)
normalized student flow	20.672 (13.188)	16.969* (8.831)	26.975*** (8.906)	25.167 (16.216)	13.004 (8.782)	15.984** (7.119)	13.135 (8.245)	13.957* (7.827)	10.944 (17.316)
interaction (corruption)	-0.842 (0.525)	-0.762*** (0.212)	-0.584** (0.242)	-0.188 (0.369)	-0.827** (0.352)	-0.242 (0.447)	-0.534 (0.335)	-0.635* (0.353)	-0.510 (0.339)
Cultural values in hosting countries									
power distance	0.003* (0.002)	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.000 (0.001)	0.001 (0.002)	0.001 (0.002)	0.000 (0.002)
individualism	-0.004** (0.002)	0.000 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.002)
masculinity	0.002** (0.001)	0.002** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002*** (0.001)	0.002** (0.001)	0.001 (0.001)
uncertainty avoidance	-0.001 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.002)
long-term orientation	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)
indulgence	0.004** (0.002)	0.001 (0.002)	0.002 (0.002)	0.003** (0.001)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.001)	0.001 (0.002)
interaction (power distance)	0.049 (0.157)	0.073 (0.127)	0.149 (0.150)	0.253 (0.172)	0.096 (0.102)	0.106 (0.102)	0.080 (0.096)	0.117 (0.098)	0.127 (0.152)
interaction (individualism)	-0.018 (0.134)	-0.292*** (0.103)	-0.269** (0.109)	-0.268 (0.233)	-0.116 (0.103)	-0.125 (0.095)	-0.124 (0.094)	-0.165* (0.092)	-0.143 (0.207)
interaction (masculinity)	0.066 (0.096)	0.117*** (0.037)	0.103** (0.040)	0.084 (0.072)	0.087 (0.063)	0.056 (0.044)	0.099* (0.057)	0.114* (0.058)	-0.007 (0.084)
interaction (uncertainty avoidance)	-0.120 (0.108)	-0.118 (0.100)	-0.211* (0.118)	-0.205 (0.129)	-0.139* (0.083)	-0.165** (0.083)	-0.142* (0.076)	-0.165*** (0.077)	-0.155 (0.129)
interaction (long-term orien- tation)	-0.054 (0.056)	0.008 (0.044)	-0.007 (0.044)	-0.060 (0.049)	0.008 (0.035)	0.018 (0.030)	0.008 (0.033)	0.021 (0.033)	0.068 (0.066)
interaction (indulgence)	-0.204 (0.187)	0.081 (0.138)	-0.066 (0.138)	-0.055 (0.065)	-0.041 (0.112)	-0.076 (0.102)	-0.047 (0.107)	-0.032 (0.095)	0.020 (0.194)
Control variables									
GDP per capita (PPP)	-0.000 (0.000)								0.000 (0.000)

enrollment in secondary education		0.000							-0.000
		(0.000)							(0.000)
enrollment in tertiary education		0.000	0.000						0.000
		(0.000)	(0.000)						(0.000)
tertiary schooling attained				-0.001					-0.001
				(0.001)					(0.002)
Index of globalization					0.002***				0.000
					(0.001)				(0.001)
trade openness						0.000**			0.000*
						(0.000)			(0.000)
years since independence							-0.015***		-0.018***
							(0.001)		(0.002)
Level of democracy								-0.004*	-0.000
								(0.002)	(0.005)
Constant	4.965***	5.162***	5.001***	5.061***	4.808***	4.931***	6.047***	4.861***	7.141***
	(0.223)	(0.201)	(0.169)	(0.139)	(0.184)	(0.152)	(0.191)	(0.185)	(0.349)
Observations	3,174	2,319	2,688	3,217	4,030	3,794	3,977	4,097	1,280
R-squared	0.839	0.954	0.953	0.956	0.941	0.941	0.945	0.941	0.916
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of origin countries	177	170	175	139	177	176	169	179	108

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Foreign education and corruption by income groups and regions

The above found results are based on a global sample with large variation across the countries. Therefore, to be able to deepen the analysis, this section reports the results of models 3 and 4 of Table 3 after splitting the sample (i) by income groups and (ii) by regions.

The first separation allows to control for how effects of foreign education depend on income of the origin country. For once, richer countries can afford more students to study abroad, especially considering that the set of destination countries in this sample are mainly developed countries in the Global North, therefore the impact might be different. Moreover, low-income countries tend to have higher levels of corruption and accordingly the difference to the destination countries in terms of norms and institutions might be larger. This could imply that even if students only adopt the host countries norms in parts, the impact could be visible and could lead to a reduction in corruption at home.

The results based on income groups as defined by the World Bank are reported in Table 6. Splitting the sample further leads to a reduction of observations per sub-sample, but all groups remain with around 1,000 observations and the goodness of fit remains high. Interestingly, the relationship between previous and current corruption in the sending country becomes larger over the income groups, implying that having low corruption is self-enforcing yet this effect is stronger for high-income countries. Further, the level of corruption in the destination country is only positively related with corruption in the origin country for low-income countries. In terms of size this effect decreases with higher income, however, note that the coefficients are insignificant. Although the share of students abroad is insignificant, which already has been found before, the interaction remains significant for lower-middle and high-income countries. Surprisingly, the sign is positive for the former groups and negative for the latter one, implying that lower-middle income countries experience a corruption reduction due to foreign education while higher income countries do not. A possible explanation could be that the destination countries are included in the high-income group which suggests that less institutions can be transferred.

With regards to the cultural values, one can see that they are differing in size and sometimes in their direction over the different sub-samples (model 1-4). The fact that high income countries have the smallest coefficients might again be due to destination countries being mainly high-income countries, hence the effect of culture is already incorporated in for example the level of

corruption. Same reason might underlie the insignificant cultural interaction terms in column 4. These are especially strong in the low- and lower-middle income countries, again hinting at the greater cultural difference compared to the destination countries.

Columns 5-8 exhibit the results for the models after the inclusion of country fixed effects. Many of the variables become insignificant, as was the case in earlier fixed effect models. Although a non-reported F-test showed that the variables are jointly significant, many of the individual coefficients are not. As has been argued by Barro (2012), this might be due to the combination of only few years in the panel with slowly changing explanatory variables, leading to imprecisely estimated coefficients. This is probably the case in this model as well. Neither corruption, nor student flows or cultural values change quickly over time, nor is the variation within the sub-samples large since the countries included are somewhat similar per group. For that reason, focusing on fixed effects might be problematic here.

To separate the sample by regions is interesting due to the different cultural values that prevail in the regions and the differences of the destination cultures (Figure 9). Moreover, as explained in the descriptives part, the regions differ greatly with regard to destination countries. Thus, it is to be expected that the relationships are differing, too.

The results from the pooled OLS support the previous findings, namely that earlier and current corruption in the origin are positively related. For Africa, the corruption in the destination countries is also significantly and positively related, whereas in Asia the student flow and in the West the interaction term is negatively related with corruption. As expected, the cultural values in the host countries have different relations with corruption at home, for instance a more masculine host society relates to more corruption in Africa, yet to lower corruption in Asia.

The insignificance of all variables in Eastern Europe might be explained by the fact that the region includes many countries that cease to exist at some point and borders changing due to the end of the Soviet Union. Consequently, measuring the evolution of corruption over time is challenging here. Moreover, the destination countries of Eastern European students mainly included other countries in that group until the mid-1990s. However, these are not included as destination countries in the dataset considered here, explaining the much lower number of observations.

The fixed effects models (columns 5 to 8) also show interesting results, for instance is corruption most persistent in Africa while Asia has a positive development. Generally, the fixed effects models

give similar results as the pooled OLS estimations for Africa, Asia and the West, proofing the robustness of the results. That the interaction term is negative for the West might be because most of the destination countries are within the West, hence if an origin country is less corrupt than the destinations, this might be detrimental for the home country, showing that institutional transfer is not only beneficial.

Generally, these sub-samples show that the results differ over income groups and regions, suggesting that foreign education impacts corruption to various extents while the main results remain that institutional transfer exists and that culture plays a role in the extent of corruption.

Table 6 Regression by income-group

VARIABLES	Pooled OLS				Fixed effects			
	(1) low income	(2) lower-middle income	(3) upper-middle income	(4) high income	(5) low income	(6) lower-middle income	(7) upper-middle income	(8) high income
corruption in origin	0.093*** (0.032)	0.120*** (0.038)	0.142*** (0.044)	0.367*** (0.039)	-0.045 (0.033)	0.055 (0.046)	-0.082 (0.059)	0.030 (0.065)
weighted corruption in destinations	0.026** (0.013)	-0.019 (0.012)	-0.011 (0.022)	-0.000 (0.021)	0.027** (0.013)	0.022 (0.014)	-0.002 (0.030)	0.010 (0.020)
normalized student flow	-83.406 (169.008)	-14.361 (28.700)	17.758 (26.574)	9.436 (18.562)	-44.891 (267.285)	22.916 (61.935)	13.546 (35.316)	0.883 (26.154)
interaction (corruption)	-0.018 (3.501)	5.692*** (1.781)	2.703 (1.714)	-1.315*** (0.298)	2.700 (2.083)	0.531 (1.863)	2.860 (2.787)	-0.585 (0.499)
Cultural values in hosting countries								
power distance	-0.016*** (0.002)	0.000 (0.002)	-0.016*** (0.002)	-0.004* (0.002)	-0.005 (0.005)	0.003 (0.003)	-0.009** (0.004)	0.003 (0.003)
individualism	0.007*** (0.002)	0.003* (0.002)	0.014*** (0.002)	0.008*** (0.003)	-0.000 (0.003)	-0.003 (0.002)	0.006** (0.003)	-0.001 (0.004)
masculinity	-0.002** (0.001)	-0.000 (0.001)	-0.006*** (0.002)	-0.003** (0.001)	0.001 (0.002)	0.001 (0.002)	-0.001 (0.002)	0.001 (0.001)
uncertainty avoidance	0.011*** (0.002)	-0.001 (0.001)	0.010*** (0.002)	0.005** (0.002)	0.006 (0.003)	-0.001 (0.002)	0.004 (0.003)	-0.005* (0.003)
long-term orientation	-0.002*** (0.001)	0.002*** (0.001)	-0.003*** (0.001)	0.003*** (0.001)	-0.001* (0.001)	0.001 (0.001)	-0.003 (0.002)	0.001 (0.002)
indulgence	-0.002 (0.002)	-0.001 (0.002)	-0.013*** (0.003)	-0.001 (0.001)	0.004 (0.003)	0.004 (0.003)	-0.007* (0.004)	-0.003 (0.002)
interaction (power distance)	10.959*** (2.726)	-0.235 (0.279)	1.243*** (0.293)	-0.180 (0.167)	-0.378 (4.765)	0.930 (1.324)	0.554 (0.451)	-0.023 (0.227)
interaction (individualism)	-8.200*** (1.975)	-0.584* (0.348)	-1.219*** (0.342)	-0.159 (0.223)	0.021 (3.655)	-1.649 (1.479)	-0.345 (0.507)	-0.181 (0.403)
interaction (masculinity)	6.823*** (1.842)	0.548*** (0.190)	0.629* (0.334)	0.019 (0.073)	1.510 (2.497)	0.672 (0.496)	0.369** (0.169)	0.080 (0.126)
interaction (uncertainty avoidance)	-7.754*** (1.881)	0.036 (0.209)	-1.047*** (0.205)	0.031 (0.132)	0.288 (3.613)	-1.027 (1.089)	-0.377 (0.474)	0.061 (0.185)
interaction (long-term orientation)	1.545*** (0.543)	0.281** (0.142)	0.168 (0.124)	0.029 (0.053)	0.163 (0.987)	0.523 (0.403)	-0.086 (0.162)	-0.039 (0.078)
interaction (indulgence)	4.019* (2.334)	-0.089 (0.453)	0.441 (0.386)	0.192 (0.118)	-0.951 (4.616)	0.995 (1.513)	-0.278 (0.490)	0.169 (0.167)
Constant	4.475*** (0.194)	4.555*** (0.228)	4.956*** (0.310)	2.665*** (0.320)	5.097*** (0.191)	4.633*** (0.301)	6.029*** (0.399)	5.359*** (0.569)
Observations	1,172	1,146	831	1,008	1,172	1,146	831	1,008
R-squared	0.931	0.928	0.911	0.931	0.940	0.929	0.926	0.955
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects					Yes	Yes	Yes	Yes
Number of origin countries					71	98	74	57

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7 Regression by regions

VARIABLES	Pooled OLS					Fixed effects				
	(1) Eastern Europe	(2) Latin America	(3) Africa	(4) West	(5) Asia	(6) Eastern Europe	(7) Latin America	(8) Africa	(9) West	(10) Asia
corruption in origin	0.056 (0.036)	0.130*** (0.047)	0.223*** (0.028)	0.245*** (0.047)	0.150*** (0.043)	-0.011 (0.040)	0.038 (0.027)	-0.065* (0.035)	0.011 (0.043)	0.097* (0.052)
weighted corruption in destinations	0.005 (0.016)	-0.007 (0.034)	0.023** (0.010)	0.019 (0.018)	-0.012 (0.024)	-0.007 (0.016)	-0.001 (0.032)	0.026** (0.010)	0.040 (0.024)	0.027 (0.029)
normalized student flow	17.830 (49.131)	308.774 (321.979)	46.513 (39.349)	0.751 (13.828)	-716.459 *** (165.810)	-79.704 (66.630)	729.624 (512.831)	80.158** (36.937)	-2.837 (17.448)	-510.248 *** (159.110)
interaction (corruption)	0.422 (4.521)	0.399 (1.822)	-1.745 (1.099)	-0.518** (0.258)	1.044 (1.410)	-0.866 (4.900)	-0.334 (3.238)	-1.049 (1.006)	-0.692 *** (0.214)	-0.765 (1.193)
Cultural values in host countries										
power distance	0.002 (0.003)	-0.019*** (0.006)	-0.010*** (0.002)	0.001 (0.002)	-0.003 (0.002)	0.004 (0.004)	0.002 (0.009)	-0.003 (0.003)	0.002 (0.003)	-0.005 (0.004)
individualism	0.001 (0.003)	0.009* (0.005)	0.008*** (0.002)	-0.001 (0.002)	0.007*** (0.002)	-0.001 (0.003)	0.000 (0.008)	0.000 (0.003)	0.000 (0.004)	0.000 (0.003)
masculinity	0.001 (0.002)	-0.004 (0.003)	-0.004 *** (0.001)	0.001 (0.001)	0.004*** (0.001)	0.004 (0.003)	0.003 (0.005)	0.001 (0.001)	0.001 (0.001)	0.001 (0.002)
uncertainty avoidance	-0.003 (0.002)	0.013** (0.005)	0.006*** (0.001)	0.000 (0.002)	-0.002 (0.002)	-0.004* (0.002)	0.000 (0.008)	0.002 (0.002)	-0.005 (0.003)	0.004* (0.002)
long-term orientation	0.001 (0.001)	-0.002 (0.002)	-0.001 *** (0.001)	-0.001* (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.003)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)
indulgence	-0.002 (0.002)	-0.006 (0.004)	-0.005 *** (0.002)	-0.003** (0.001)	-0.011*** (0.003)	-0.003 (0.002)	-0.001 (0.007)	0.001 (0.003)	-0.006** (0.002)	0.000 (0.004)
interaction (power distance)	0.262 (0.635)	-1.121 (3.862)	-1.438 *** (0.532)	0.093 (0.111)	4.307*** (0.920)	-0.336 (0.645)	-3.136 (3.846)	-1.067* (0.548)	0.103 (0.143)	2.501*** (0.796)
interaction (individualism)	-0.823 (0.636)	-1.044 (1.109)	0.168 (0.264)	-0.106 (0.169)	-0.590 (0.471)	0.006 (0.676)	1.055 (1.761)	0.268 (0.217)	-0.225 (0.271)	-0.166 (0.712)
interaction (masculinity)	0.100 (0.387)	0.144 (1.030)	-0.931* (0.559)	0.005 (0.046)	-1.223 (1.067)	-0.462 (0.518)	-1.271 (0.982)	-1.833 *** (0.463)	0.057 (0.078)	0.201 (1.081)
interaction (uncertainty avoidance)	-0.007 (0.399)	-1.418 (3.214)	0.488* (0.283)	-0.146 (0.106)	2.373*** (0.717)	0.717 (0.630)	-2.352 (3.021)	0.125 (0.215)	-0.048 (0.134)	1.024 (0.771)
interaction (long-term orientation)	0.049 (0.254)	-0.241 (0.532)	0.548*** (0.126)	0.097* (0.053)	1.721** (0.687)	0.524* (0.307)	-1.225 (0.852)	0.297* (0.159)	0.062 (0.065)	1.422** (0.617)
interaction (indulgence)	0.425 (0.468)	-1.678 (3.571)	0.217 (0.478)	0.141* (0.075)	7.401*** (1.696)	0.874 (0.550)	-7.076 (5.912)	0.571 (0.440)	0.218** (0.094)	4.749*** (1.431)
Constant	5.052*** (0.225)	4.606*** (0.360)	4.063*** (0.165)	4.142*** (0.313)	4.588*** (0.250)	5.478*** (0.216)	4.835*** (0.258)	5.364*** (0.209)	5.584*** (0.423)	4.544*** (0.276)
Observations	458	742	1,618	592	704	458	742	1,618	592	704
R-squared	0.958	0.921	0.921	0.977	0.923	0.959	0.934	0.943	0.984	0.935
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects						Yes	Yes	Yes	Yes	Yes
Number of origin countries						28	30	67	23	31

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Cutoff 2000

In the 1980s and 1990s, the cold war was first still ongoing and later, the consequences were still visible in many areas. This is also the observable for foreign education: Students from then-Communist countries received foreign education in their former allies' universities. Therefore, the difference in cultural values, as well as political and institutional environment, hence corruption, was similar. For changes to become visible, some years had to pass. As seen above, in the 21st century students from Eastern Europe and the former Soviet Union countries increasingly went to the here studied destination countries which are mainly Western countries. Moreover, after 2000, the internet was well-established, allowing for communication over greater distances and facilitating information exchange, i.e. more social remittances. Among others, these aspects led to the stark increase in numbers of foreign educated people, so that as of 2000, more than two million people were educated abroad annually, reaching more than twice as many in 2015. This is a substantial increase compared to the decades before. To see if the effects are substantially changing with larger numbers of students abroad, a different composition of origin countries and greater long-distance communications, the baseline models from Table 3 are repeated and their results are reported in Table 8.

Although the number of observations is reduced substantially, the regressions are still based on 2,000 observations for the 5-year lag and 1,000 observations, when the 10-year lag is included. However, compared to the goodness of fit of the first models (approximately 0.9), these models are less well specified and only obtain a R-squared of around 0.6. Nonetheless, the F-tests confirm that the variables are highly jointly significant, although few remain significant individually, particularly in the models with 5-year lags. In the pooled OLS models, only the corruption in origin remains significant with a positive relationship, which is even stronger than what has been found before when using the entire sample (Table 3).

After including the country fixed effects, previous corruption levels turn insignificant, nevertheless, the weighted corruption in the destination countries becomes significant and the direction of the relation is positive. Again, and as expected, the coefficients are larger than in the entire sample but confirm them. Including the cultural dimensions increases the effect once more. Although some of the cultural values and the interaction terms are significant in model 3 of Table 8, and also in model 4 of Table 3 (fixed effects with cultural dimensions, 5-year lag), only power and uncertainty avoidance remain significant in model 4. The positive sign for power distance contradicts previous literature, while the negative one for uncertainty avoidance confirms it.

Interestingly, more variables are found to be significant in the models that include 10-year lags. While corruption in the origin country is positively related in all four models, the weighted corruption of the destination countries and the share of students turns negative. Still, in columns 6-8, the interaction term is positive and comparatively large, thereby counteracting the negative relationships of the individual terms, again supporting the hypothesis that foreign education can improve corruption at home.

That more variables show signs after including 10-year lags is most remarkable change in Table 8, compared to the results using 5-year lags as well as compared to the results using the entire time period (Table 3). Compared to the 5-year lag, this indicates that the time for consequences to arise might be longer than 5-years. This gives rise to the question for the consequences when even longer lags are employed, a question that cannot be researched yet since the time period covered is too short until today. Compared to the 10-year lag results including the entire sample, the greater significance of student shares abroad hints at the possibility that the effect of students receiving foreign education seems to become more relevant in recent decades than it used to before and that this effect depends on the share of students that study abroad.

On the other hand, fewer or none of the cultural dimensions persist significantly in the last two specification, implying that cultural differences may play a role in the short term, yet not in the longer-run and used to play a greater role in the time before 2000 than now. This can be explained by the rise of globalization and the higher number of students abroad. Once, this implies that cultures became more similar over time. To further test this would require an update of the cultural dimensions which have so far been measured once by Hofstede. Second, it might be related to the greater number of foreign students, due to which it becomes increasingly easier to remain inside the 'international student bubble'. Thereby many students forego much of the interaction with natives which could lead to fewer institutional adoptions.

Table 8 Regression with student flows after 2000

VARIABLES	5-year lag				10-year lag			
	(1) Pooled OLS 1	(2) Fixed Effects 1	(3) Pooled OLS 2	(4) Fixed Effects 2	(5) Pooled OLS 1	(6) Fixed Effects 1	(7) Pooled OLS 2	(8) Fixed Effects 2
corruption in origin	0.314*** (0.037)	0.028 (0.056)	0.252*** (0.034)	0.024 (0.052)	0.149*** (0.041)	0.096** (0.039)	0.131*** (0.029)	0.103** (0.042)
weighted corruption in destinations	0.017 (0.010)	0.029** (0.014)	0.001 (0.012)	0.034*** (0.012)	0.006 (0.010)	-0.027* (0.015)	-0.095*** (0.023)	-0.032* (0.019)
normalized student flow	-0.202 (2.269)	3.135 (3.172)	-1.465 (6.579)	-3.832 (19.361)	-2.092 (2.734)	-6.550* (3.696)	-20.868 (15.475)	-69.292** (28.546)
interaction (corruption)	-0.083 (0.530)	-0.846 (0.902)	0.482 (0.967)	-1.221 (1.130)	0.367 (0.624)	1.771** (0.824)	4.159** (1.863)	1.876* (0.956)
Cultural values in host countries								
power distance			-0.003** (0.001)	0.004** (0.002)			-0.008*** (0.002)	-0.003 (0.002)
individualism			0.003** (0.001)	-0.001 (0.002)			0.003 (0.002)	0.001 (0.002)
masculinity			0.001 (0.001)	0.000 (0.001)			-0.001 (0.001)	0.002 (0.002)
uncertainty avoidance			-0.001 (0.001)	-0.003* (0.002)			0.001 (0.002)	0.001 (0.002)
long-term orientation			0.001*** (0.000)	0.001 (0.001)			0.001 (0.000)	-0.000 (0.001)
indulgence			-0.005*** (0.001)	-0.002 (0.003)			-0.002 (0.002)	-0.002 (0.003)
interaction (power distance)			0.139* (0.079)	-0.097 (0.188)			0.287** (0.145)	0.157 (0.322)
interaction (individualism)			-0.261*** (0.082)	-0.198 (0.139)			-0.165 (0.155)	0.183 (0.380)
interaction (masculinity)			0.002 (0.031)	0.118 (0.116)			0.011 (0.053)	-0.179 (0.192)
interaction (uncertainty avoidance)			-0.118* (0.063)	0.108 (0.124)			-0.149 (0.108)	0.321 (0.235)
interaction (long-term orientation)			0.104*** (0.026)	-0.008 (0.063)			0.123*** (0.043)	0.213* (0.123)
interaction (indulgence)			0.239** (0.094)	0.255 (0.226)			0.080 (0.209)	0.376 (0.446)
Constant	3.160*** (0.193)	4.425*** (0.293)	3.705*** (0.221)	4.525*** (0.275)	4.017*** (0.198)	4.392*** (0.174)	4.707*** (0.219)	4.350*** (0.288)
Observations	1,944	1,944	1,944	1,944	1,056	1,056	1,056	1,056
R-squared	0.568	0.675	0.613	0.678	0.308	0.543	0.426	0.555
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects		Yes		Yes		Yes		Yes
Number of origin countries		178		178		177		177

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Possible limitations

One limitation in the here presented study is the comparatively short time period for which data for corruption is available. After including lagged values for the level of corruption, the number of observed years reduces to 20-25 years, however, with an ever-lower number of countries for which data are available. Especially with regards to institutions, such as corruption, this time span is not long since institutions only change slowly. This becomes again the before mentioned argument by Barro (2012), that panels of 20-40 years and independent variables with little variation over time make the use of fixed effect models difficult, an explanation for the low significance levels in the here presented fixed effect models. Nonetheless, the observed results are coherent with the other models which gives support to their validity.

Another concern is that previous research found that higher levels of human capital generally (including foreign education) lead directly or indirectly to an improvement of corruption, for instance through a more active civic society (Ahrend, 2002). Therefore, it is difficult to identify the exact channel how foreign education impacts institutional settings or more specifically corruption. The concept of social remittances has been researched before and found to be reliable, but the effect of more education might also go through better economic development and an improvement of political institutions.

Finally, in his work on the relation between foreign education and democracy, Spilimbergo (2009) argues that an endogeneity problem arises due to students anticipating positive democratic developments at home, thus choosing to study in a more democratic country now. To account for this, he uses an instrumental variable that is based on predicted bilateral student flows using a gravity model. Based on these predicted bilateral student flows, he constructs the predicted democracy in host countries, too. In the System GMM models, he uses these two variables as instruments and bases his analysis on it. This approach is not followed here due to two reasons: (i) Spilimbergo (2009) himself states that his instruments are only weakly related to the instrumented variables, therefore, the results are, although supporting, not definite; (ii) endogeneity might be of no or a smaller problem in the case of foreign education and corruption, as argued by Ferreras (2013). So far, corruption has not been determined as a push factor for international education but only for (skilled) migration. This literature argues for instance that corruption reduces future returns to

education (Cooray & Schneider, 2016; Dimant et al., 2013). As mentioned before, returns to skills are a very important factor for international student mobility, however, stay rates of students in the country of education are not substantial, e.g. less than 50% (Spilimbergo, 2009), hence corruption might also be less of an impacting factor in deciding to study abroad.

Nonetheless, endogeneity cannot be excluded entirely, suggesting that the results presented above should not be taken as causal but as an indication of relationships between corruption and foreign education, the cultural differences as well as other possible factors. Even so, considering the weakness of the instrument that was proposed by Spilimbergo (2009), System GMM is no good alternative either until future research identifies a valid instrument.

V. Conclusion

Foreign education becomes increasingly important as numbers of students abroad grow. Although determinants of bilateral student flows have been researched in recent years, the cultural differences have been left out. Similarly, the consequences of foreign education have remained largely unresearched, and again, in the little existing literature, cultural differences were not included. This thesis tries to fill this research gap by looking at the impact of cultural differences in the decision to migrate for tertiary education. In the empirical analysis, they appear to have a positive influence on bilateral student flows, although their impact declined over the studied time period. Although the cultural values by Hofstede have not been updated since they were estimated for the first time in the 1980s, later supporting studies found that they are still valid. Rather it could be the case that cultural differences in times of globalization appear smaller, considering that it is easier to experience different cultures other than through being abroad, that it is possible to buy the same products worldwide and that the contact with relatives at home is easier through social media and the like.

Further, the relation of foreign education and corruption in the destination countries appeared positive and dependent on the share of students abroad. This is in line with the results by Spilimbergo (2009) concerning the impact of foreign education on democracy. However, the strength of the relationship is not the same over income levels nor in different regions, suggesting that the effects

of foreign education cannot be generalized globally. Further, since foreign education increased ever more since 2000, the effects also became stronger, possibly due to a combination of larger student flows and larger interaction possibilities via social media and the like, thereby allowing for more social remittances.

Finally, a significant relationship between corruption in the origin country and the cultural values in the destination countries was found, indicating that culture plays a role as a determinant of corruption and that the corruption level can be changed by the adoption of new cultural values. This result gives further support to the previous literature that found that levels of corruption depend on cultural values.

However, further research on this topic is required since there are some above explained limitations in the analyses carried out in this thesis. Firstly, the effect of foreign education often disappears after the inclusion of country fixed effects, indicating that they might be picked up by other unobserved country characteristics. Next to this limitation, a possible endogeneity problem must be kept in mind when interpreting the results. As explained, as of now, no suitable instrument has been identified to strengthen the results. On the other hand, as argued by Ferreras (2013), the problem might be small since corruption has not been found to be a push factor for students. This limitation therefore remains open for further research.

Moreover, the here used dataset only included total bilateral student flows. However, determinants, also with regards to cultural differences, and consequences of bilateral flows possibly depend on gender as well. It could be thinkable that women prefer to study in a more feminine society to avoid gender discrimination. Likewise, it could be the case that women and men adopt different norms and values while being abroad, thereby having different impacts after their return. To further investigate this, the UNESCO database provides the bilateral student flows disaggregated by gender.

Another aspect open for future research with regards to the relation between foreign education and corruption, or institutions generally, could be the distinction by study programs. Most likely, study programs lead to different career paths after return, hence, impacts might differ, too, depending on the returnees' possibility to influence common practices. Besides, study programs might attract different types of people that have different norms and values and transfer them differently, too.

In conclusion, aside from the supporting evidence that foreign education influences corruption in the sending country, this thesis showed that cultural values in the destination countries play a role,

thereby supporting the hypothesis that adoption of new norms by the students themselves as well as by their relatives back home through social remittances. Nonetheless, other channels on how foreign education might influence corruption are possible, too. These include for instance that higher levels of human capital, either influence corruption directly, or indirectly through an improvement of economic development or the general institutional environment.

While much research remains to be done, this study supports previous findings that foreign education has an impact on corruption in origin countries. Considering that the often vicious circle of corruption is difficult to break, foreign education provides a powerful tool that policy makers should keep in mind, both in traditional development cooperation aiming at institutional strengthening as well as in the provision of scholarships and the like.

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Appendix

1. Data sources and overview

Variable	Source	Measurement	Years available
Students abroad	UNESCO and Spilimbergo (2009)	Number of students going from origin to destination country, per year (recorded by host country's institutions)	measured since 1954; data used from 1970
Corruption	International Country Risk Guide	Risk of corruption in a country, based on surveys; scale from 0 to 6, with six being the lowest risk of corruption	measured since 1984
	Transparency International	Perceived corruption in a country, based on surveys; scale from 0 to 10 with 10 being the least corrupt	measured since 1995 (change in methodology in 2012)
Power Distance	Hofstede (1983)	Degree to which hierarchy is being accepted; scale from 0 to 100, with 100 being more hierarchical	
Individualism		Degree of the importance of being integrated into groups; scale from 0 to 100, with 100 being the most individualistic	
Uncertainty Avoidance		Extent a society tolerates uncertainty vs. the need for norms and guidelines; scale from 0 to 100, with 100 indicating a greater need for rules and regulations	
Masculinity		Extent a society prefers achievement, heroism and material rewards for success; scale from 0 to 100, with 100 indicating that performance is highly valued	
Long-term Orientation		Degree of viewing pragmatic problem-solving as necessary and traditions are readily changed; scale from 0 to 100, with 100 indicating greater adaption to current situations	

Indulgence		Extent that members can fulfill their human desires unconstrained; scale from 0 to 100, with 100 being most indulgent	
Population	World Development Indicators, World Bank	Population per country	measured since 1969
Secondary, tertiary school enrollment		Gross enrollment (irrespective of age) in respective educational level (% of population)	measured since 1969
Tertiary education completed (attainment)	Barro and Lee (2013)	Educational attainment for 146 countries in 5-year intervals for population over 25	measured since 1950
GDP per capita	Penn World Tables	Measured in PPP 2011	measured since 1980
Level of democracy	PolityIV project/Freedom House	Based on average of freedom house and polity score; scale from 0 to 10, with 10 being the most democratic	
Religion	La Porta et al. (1999)	Percentage of population belonging to certain religion (Catholic, Protestant, Muslim, other) in 1980	
Bilateral Distance	GeoDist Database by CEPII	Distance between the two most populated cities (in km)	
Common official language		Common official primary language (dummy)	
Common de facto language		Common language spoken by at least 9% of both populations (dummy)	
Contiguity		Common border (dummy)	
Colony		Country pair was ever in colonial relationship (dummy)	
Level of democracy	Freedom House (2018)	Measures political rights, civil liberties (Freedom House) and polity scores (Polity); scale from 0 to 10 with 10 the most democratic	measured since 1972
Index of globalization	KOF Globalization Index	measures economic, social and political integration for 185 countries, scale from 0 to 100 with 100 being the most integrated	measured since 1970
Trade openness	World Development Indicators, World Bank	Sum of imports and exports as a share of GDP	measured since 1969
Time since independence	Spilimbergo (2009)	Time between current year and year of independence	

2. Determinants of bilateral student flows over time (using PPML)

VARIABLES	(1) 1985-94	(2) 1995-04	(3) 2005-15	(4) 1985-94	(5) 1995-04	(6) 2005-15
log (population in origin)	0.053*** (0.001)	0.069*** (0.001)	0.057*** (0.000)	0.031*** (0.002)	0.062*** (0.001)	0.048*** (0.001)
log (population in destination)	0.009*** (0.003)	0.053*** (0.004)	-0.173*** (0.004)	-0.098*** (0.006)	0.029*** (0.005)	-0.036*** (0.005)
log (GDP per capita)	0.063*** (0.001)	0.071*** (0.001)	0.060*** (0.001)	0.112*** (0.002)	0.128*** (0.001)	0.078*** (0.001)
log (distance)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Contiguity	-0.034*** (0.004)	-0.008*** (0.003)	0.003 (0.002)	-0.022*** (0.010)	-0.007*** (0.003)	-0.004** (0.002)
Common official language	-0.004 (0.003)	-0.002 (0.003)	-0.008*** (0.003)	0.010** (0.005)	0.014*** (0.004)	0.013*** (0.004)
Common de facto language	0.015*** (0.003)	0.004 (0.003)	-0.000 (0.002)	-0.004 (0.005)	-0.010** (0.004)	0.000 (0.003)
Colonial relationship	-0.001 (0.004)	-0.008** (0.003)	-0.016*** (0.002)	0.013*** (0.004)	-0.013*** (0.003)	-0.029*** (0.003)
Level of democracy (origin)	-0.008*** (0.000)	0.002*** (0.000)	-0.007*** (0.000)	-0.004*** (0.000)	0.000 (0.001)	0.002*** (0.000)
level of democracy (destination)	0.050*** (0.002)	0.009*** (0.002)	-0.065*** (0.001)	0.078*** (0.003)	-0.102*** (0.003)	-0.072*** (0.002)
Openness of destination	-0.240*** (0.006)	-0.055*** (0.003)	-0.005* (0.003)	-0.414*** (0.012)	0.015*** (0.006)	-0.089*** (0.004)
difference (power distance)				0.001*** (0.000)	0.000*** (0.000)	0.001*** (0.000)
difference (individualism)				-0.003*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
difference (masculinity)				0.002*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
difference (uncertainty avoidance)				-0.003*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)
difference (long-term orientation)				-0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
difference (indulgence)				-0.002*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Constant	1.955*** (0.081)	-0.571*** (0.066)	3.891*** (0.061)	5.132*** (0.146)	-0.294*** (0.083)	2.252*** (0.070)
Observations	27,948	39,035	54,064	13,195	17,143	24,337
Time effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3. Destination countries for ICRG corruption index

Table 9 Destination countries with average corruption above four

Australia	France	New Zealand
Austria	Germany	Norway Portugal
Belgium	Hong Kong	Singapore
Canada	Iceland	Spain
Czechoslovakia	Ireland	Sweden
Denmark	Japan	Switzerland
Eastern Germany	Luxembourg	United Kingdom
Finland	Netherlands	United States

4. Robustness Check using Corruption Perception Index

Although corruption indices are comparable in many ways and research established that they are highly correlated (Ahmad & Aziz, 2001; Frechette, 2006), the following section repeats the baseline models from Table 3, yet using the *Corruption Perception Index* (CPI) from Transparency International as dependent variable. This index dates back to 1995 with originally 42 countries surveyed. The last available year is 2018 for 180 countries, however, due to methodological changes in 2012, only the period 1995-2011 is selected. The CPI measures the “perceived levels of public sector corruption according to experts and business people” (Transparency International, 2018). Although the CPI is based on more information than the index provided by ICRG, it will be used as a robustness check only, because it mainly focuses on public sector corruption but leaves private sector corruption aside. Besides, it only covers a shorter time.

As for the corruption index by *ICRG*, a higher score on the CPI implies a lower level of corruption, with 10 being the maximum. Due to methodological changes after 2012, the time period is restricted to 1995 and 2011, thereby reducing the sample, in particular when using 10-year lags. Nonetheless, the time period is largely comparable with the one used in Table 8, therefore also mainly capturing years in which global education was becoming more prevalent and the cold war implications leveled off. As with the corruption index from ICRG, only low-corruption countries are considered as destination countries, though for the CPI this means a country needs to have an average score greater than 7 (the full list of destination countries is recorded in Table 10). These

two restrictions lead to a great reduction of the sample size, nonetheless, approximately 800 observations remain for the 5-year lag estimations and almost 200 for the 10-year lag ones.

Compared to Table 8, the results using the CPI (Table 11) are different, though not incompatible. With pooled OLS the data continue to show a positive relationship between previous and current corruption in the origin country though larger in size. Besides, the corruption in the destination countries is negatively related, yet offset by the interaction term which is positive and highly significant. Therefore, these two terms combined are still positively related to corruption, although in a different way than under the corruption index by ICRG. Adding country fixed effects, the results change in so far that corruption in the origin country is the only significantly remaining main variable, even though it shows the expected persistent relationship. In model 6 and 8, the predicted positive relation between corruption in destination countries and corruption in the origin country shows, again hinting at a rather long-term effect and in line with the results from the models using data after 2000 and the ICRG corruption index. Similarly, the cultural dimensions are not always significant, however, they exhibit the predicted sign, for instance, a greater power distance or a more masculine society in the destination country is negatively related with corruption in the origin country.

Table 10 Destination countries with average CPI score above seven

Australia	Denmark	North Macedonia
Austria	Finland	Netherlands
Bahamas	United Kingdom	Norway
Barbados	Hong Kong SAR, China	New Zealand
Canada	Ireland	Singapore
Switzerland	Iceland	South Sudan
Chile	Japan	Sweden
Germany	Luxembourg	United States

Table 11 Regression using CPI

VARIABLES	5-year lag				10-year lag			
	(1) Pooled OLS 1	(2) Fixed Effects 1	(3) Pooled OLS 2	(4) Fixed Effects 2	(5) Pooled OLS 1	(6) Fixed Effects 1	(7) Pooled OLS 2	(8) Fixed Effects 2
corruption in origin	0.941*** (0.011)	-0.112** (0.046)	0.933*** (0.012)	-0.100** (0.046)	0.906*** (0.030)	0.013 (0.076)	0.874*** (0.036)	0.028 (0.081)
weighted corruption in destinations	-0.051 (0.096)	-0.034 (0.172)	-0.337** (0.155)	-0.082 (0.189)	0.360 (0.298)	0.397* (0.228)	0.313 (0.458)	0.568* (0.300)
normalized student flow	3.555 (60.813)	-21.224 (49.607)	-673.741 (630.115)	-816.316 (536.110)	112.750 (81.327)	-22.976 (58.826)	-876.253 (1,735.367)	503.307 (2,921.494)
interaction (corruption)	0.296 (7.299)	4.188 (6.239)	52.976*** (17.818)	-4.721 (7.171)	-13.234 (9.818)	3.774 (7.223)	33.676 (38.121)	-6.827 (10.322)
Cultural values in host countries								
power distance			-0.055*** (0.014)	-0.029** (0.013)			-0.052 (0.042)	-0.114 (0.168)
individualism			-0.017 (0.019)	-0.010 (0.023)			0.042 (0.070)	0.110 (0.103)
masculinity			0.006 (0.012)	0.005 (0.014)			-0.020 (0.046)	-0.131* (0.073)
uncertainty avoidance			0.007 (0.017)	-0.015 (0.029)			0.079 (0.070)	0.026 (0.069)
long-term orientation			-0.010 (0.012)	-0.021 (0.015)			0.019 (0.045)	0.025 (0.054)
indulgence			0.011 (0.026)	-0.032 (0.027)			0.068 (0.078)	-0.021 (0.104)
interaction (power distance)			0.000*** (0.000)	0.000* (0.000)			0.000** (0.000)	-0.000** (0.000)
interaction (individualism)			12.649*** (3.076)	2.911 (2.653)			18.458** (7.238)	26.345* (13.499)
interaction (masculinity)			-3.171 (5.261)	1.873 (3.764)			1.755 (12.136)	-2.574 (26.953)
interaction (uncertainty avoidance)			-0.649 (2.171)	-1.285 (1.504)			-3.704 (6.178)	-0.837 (11.567)
interaction (long-term orientation)			-0.698 (3.697)	3.037 (3.183)			1.679 (9.342)	-13.801 (14.861)
interaction (indulgence)			1.288 (2.352)	3.269* (1.849)			2.251 (6.364)	-1.418 (11.166)
Constant			1.224 (3.368)	6.130* (3.259)			-2.158 (11.114)	-6.160 (17.203)
Constant	0.713 (0.756)	5.086*** (1.320)	5.480* (2.945)	10.540** (4.652)	-2.479 (2.331)	1.486 (1.771)	-11.464 (12.034)	2.723 (5.443)
Observations	826	826	826	826	173	173	173	173
R-squared	0.934	0.034	0.938	0.064	0.917	0.068	0.928	0.263
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects		Yes		Yes		Yes		Yes
Number of origin countries		154		154		95		95

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1