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BARRIERS TO EXIT

BY

**ALBERTO CHONG
GIANMARCO LEÓN**

INTER-AMERICAN DEVELOPMENT BANK

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Abstract¹

Unlike previous empirical studies that focus on barriers to entry in international trade, we focus on barriers to exit as measured by passport costs for a cross-section of countries. We test four common theories on the determinants of such exit barriers and find that macroeconomic and brain-drain explanations do explain high barriers to exit. However, institutional and cultural hypotheses do not appear to be empirically robust explanations of such high barriers. Our findings hold when applying instrumental variables, changes in specification, and changes in cross-country periods.

JEL Classification: O1

Key Words: International Trade, Passport Costs, Barriers to Exit, Development, Labor

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1. Introduction

Despite the fact that international trade theory places equal importance on the movement of goods and services and the movement of factors of production, as well as on issues related to barriers of entry and exit, virtually all empirical studies dealing with rigidity issues in international trade focus on goods and services, and almost exclusively on the determinants and impact of barriers to entry. The very scant evidence on issues related to barriers to exit has to do with a lack of data. This paper uses recently collected data on passport costs around the world (McKenzie, 2005) as a proxy for barriers to exit, and focuses on a critical factor of production—labor—to empirically determine the key reasons barriers to exit may be high.

While there are several reasons governments may want to raise barriers to exit, very few theories, if any, have tested the possible determinants empirically and systematically. Some researchers have argued that barriers to exit may be used as a way to reduce brain drain (Miyagiwa, 1991), although others have argued that high unemployment and urbanization (Stahl, 1982) put pressure on governments to lower exit barriers (Hatton, 1995). Still others maintain that high exit barriers may result from inefficient institutions that have little capacity to carry out bureaucratic procedures or are unable to collect revenue through standard procedures (McKenzie, 2005), or from political repression (Tirtosudarmo, 2000). Additionally, while macroeconomic problems and, in particular, fiscal crises, may lead governments to search for alternative sources of revenue, say, through exit fees (Manning, 2001), trade integration may help reduce frictions and thus, lower exit barriers (Krugman and Obstfeld, 2002). Finally, culture may play a role by restricting exit due to, say, gender or religious beliefs (McKenzie, 2005).

2. Data

Our dependent variable is passport costs as a percentage of gross national income because this variable is, in fact, an excellent proxy of barriers to exit. Data on passport costs are from McKenzie (2005) and were obtained in October 2005.² They were collected in local currency,

² Countries included are Albania, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo Dem. Rep, Congo, Costa Rica, Croatia, Cyprus, Czech Rep., Denmark, Dominica, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Fiji, Finland, France, Gambia, Germany, Ghana, Guatemala, Guyana, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kenya, Korea, Lao PDR, Lebanon, Lesotho, Lithuania, Luxembourg, Malaysia, Malta, Mauritania,

converted to U.S. dollars at the prevailing interbank exchange rate. The standard was determined by collecting the price of a first-time adult passport valid for five years, with the usual number of pages, and obtained via the normal processing period. When the country only issues 10-year passports, this was the price reported. The cost collected takes into account the cost of the passport itself, but not the cost of paying for photographs, birth certificates, or other such documents that are sometimes required when applying for a passport.³ Consistent with the alternative theoretical determinants of exit barriers, we categorize the potential explanations for exit barriers in four categories, which are summarized in the following reduced form:

$$\text{Passport} = \lambda \text{LogInc} + \alpha \text{Labor} + \beta \text{Instit} + \gamma \text{Macro} + \delta \text{Tradit} + \varepsilon \quad (1)$$

where (i) “Labor” represents variables associated with labor-related theories (such as education, unemployment, and urbanization); (ii) “Instit” reflects variables associated with institutional explanations such as bureaucracy and political rights); (iii) “Macro” represents macroeconomic theories (such as economic growth, fiscal deficit, and crises); and (iv) “Tradit” is associated with explanations related to culture (such as religion). Notice that all the regressions are controlled for “LogInc,” which represents the logarithm of gross national income per capita. Finally, the last term in the reduced equation above is the error term.

The explanatory variables employed in this paper are mostly taken from the World Development Indicators of the World Bank (2005), with the exception of the data on institutions (Knack and Keefer, 1995, for ICRG; and Kaufmann et al., 2005, for regulatory quality), political and civil liberties (Gastil, 1990), and labor rigidity, such as social security index and unemployment benefits (Botero et al. 2004). From a methodological perspective, we apply ordinary least squares and instrumental variables in a cross-country approach. The explanatory variables are averaged from 1980 to 2000. In both cases, passport costs as a percentage of income (the dependent variable) are calculated for 2005. Table 1 contains summary statistics of the variables employed in this paper.

Mauritius, Mexico, Micronesia, Morocco, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Papua, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Samoa, Saudi Arabia, Senegal, Seychelles, Singapore, Slovak Rep., Slovenia, South Africa, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, United Kingdom, United States, Vanuatu, Venezuela, Vietnam, and Zambia.

³ In many countries there is not a single passport cost. Costs may differ for children and adults, for renewals, for expedited service, and even for duration and number of pages. Also, the justification for not dividing a 10-year passport price in half is that potential migrants must pay the full cost of the passport upfront (McKenzie, 2005).

3. Findings

Table 2 presents the basic findings. We find that the proxies for the macro, brain-drain, and cultural theories are all statistically significant at conventional levels. However, this is not the case for the institutional hypothesis. In particular, we find that average higher rates of growth for the period under study are associated with lower barriers to exit. People have little desire to emigrate from countries that are in solid macroeconomic condition.. Consequently, barriers to exit need not be relatively high.⁴ Similarly, countries with high unemployment rates are associated with lower exit costs because of supply-side forces or as a result of implicit government policies to ease economic pressures, for example. With respect to cultural theories, we find that predominantly Muslim countries tend to have higher barriers to exit for certain groups of the population, such as women.⁵ Finally, we do not find that the institutional quality of a country, as measured by the well-known ICRG index (Knack and Keefer, 1995) places undue barriers to exit.

While we believe it is not of great concern, we control for potential endogeneity in some variables. This is the case for macro variables and institutional variables, and to an even lesser extent, for the brain-drain variables.⁶ We use legal origin and ethnolinguistic fractionalization as instruments since they have been shown to be correlated with our potential endogenous variables (Botero et al., 2004; Knack and Keefer, 1995), but are not correlated with passport costs. The results are very similar; they are shown in Table 2. Furthermore, we repeat our exercise by using averages for 1990-2000 instead of 1980-2000 for both OLS and IV cases, and obtain very similar results. These findings are also shown in Table 2.

Empirical work may be very sensitive to the proxies employed. In Table 3 we use a broader battery of variables that are also associated with the four hypotheses tested. We obtain robust results for the macroeconomic hypothesis (inflation rate, fiscal deficits) and the brain-drain hypothesis (unemployment benefits, social security index, and higher education). We obtain somewhat less robust results in the case of the cultural explanation (former colonies of the

⁴ Alternatively, countries with sound macroeconomic environments, such as those with low fiscal deficits, have little incentive for using passport-issuance revenues as a means to help cover such deficits, as modest as they may be.

⁵ Along these lines, please see the robustness test in Table 3.

⁶ Higher passport costs may increase government revenue, help in macro-stabilization programs, and improve labor conditions, as well as institutional quality. While this may be true in theory, economically speaking none of these reverse channels appears likely. If such effects do exist, and if so, they are probably meaningless, since the marginal collection due to additional passport revenues is extremely low (McKenzie, 2005).

United Kingdom and percentage of women population). And we obtain non-robust results for the additional institutional proxies employed (political and civil liberties and regulatory quality).

Finally, in Table 4 we test whether our findings are robust to the inclusion of additional variables to the benchmark empirical specifications in Table 1, Column 1. Following Sala-i-Martin (1997), we augment the specifications by using a pool of 10 ancillary variables, choosing up to three at a time and performing regressions using all possible combinations.⁷ The variable of interest is strongly correlated or robust with the dependent variables if the weighted $cdf(0)$ is greater than or equal to 0.95. The first column of Table 4 shows the weighted mean. The second column shows the aggregate $cdf(0)$ under the assumption of non-normality. Finally, the third column presents the standard error computed from the weighted variance estimate for all the regressions. According to these results, neither the institutional hypothesis nor the cultural one is robust to changes in specification. However, both the brain-drain explanation and the macroeconomic hypothesis appear to be robust to changes in specification. In fact, this result provides some additional support to our previous findings.

4. Conclusions

Unlike previous empirical studies that focus on barriers to entry in international trade, we focus on barriers to exit for a cross-section of countries, as measured by passport costs. We test four common explanations regarding the determinants of such exit barriers and find that macroeconomic and brain-drain explanations do explain high barriers to exit. However, institutional and cultural hypotheses do not appear to be empirically robust explanations of such high barriers. Our findings hold when applying instrumental variables, changes in specification, and changes in cross-country periods.

⁷ We use 10 ancillary variables: percentage married, percentage of immigrants, percentage of firms whose headquarters are in the United States, percentage of multiethnic families, population, rate of participation, secondary education, literacy, informality, and credit to the private sector (World Bank, 2005).

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Table 1. Summary Statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|--|-----|--------|-----------|--------|----------|
| Passport cost / GNI pc | 127 | 4.933 | 13.936 | 0.000 | 125.000 |
| Log(Initial GDP pc) | 127 | 7.609 | 1.480 | 4.638 | 10.263 |
| ICRG index | 92 | 6.476 | 2.009 | 3.184 | 9.956 |
| Political and civil liberties | 126 | 3.356 | 1.800 | 1.000 | 6.857 |
| Regulatory quality | 124 | 0.281 | 0.832 | -2.603 | 2.083 |
| % of Muslim pop | 109 | 0.220 | 0.416 | 0.000 | 1.000 |
| GDP growth (annual %) | 127 | 3.062 | 3.368 | -5.892 | 29.017 |
| Inflation Rate | 121 | 85.473 | 250.443 | 0.598 | 1656.274 |
| Unemployment (% of total labor force) | 97 | 9.144 | 5.961 | 0.450 | 31.100 |
| Unemployment benefits | 69 | 0.514 | 0.374 | 0.000 | 0.940 |
| Social security index | 69 | 1.807 | 0.628 | 0.260 | 2.710 |

Table 2. Benchmark Specification

| | 1980-2000 | | 1990-2000 | |
|---------------------------------|------------------------|------------------------|------------------------|------------------------|
| | Ordinary Least Squares | Instrumental Variables | Ordinary Least Squares | Instrumental Variables |
| Log (Initial GDP pc) | -1.405 (0.423)*** | -2.694 (1.154)** | -1.553 (0.454)*** | -3.977 (2.351)* |
| Institutions (ICRG index) | 0.441 (0.278) | 1.490 (0.854)* | 0.655 (0.348)* | 2.837 (2.021) |
| Cultural (percent Muslim) | 1.703 (0.745)** | 2.249 (0.904)** | 1.715 (0.737)** | 2.364 (1.051)** |
| Macro (GDP growth) | -0.253 (0.098)** | -0.441 (0.182)** | -0.064 (0.062) | -0.110 (0.117) |
| Brain Drain (Unemployment rate) | -0.139 (0.065)** | -0.136 (0.063)** | -0.145 (0.058)** | -0.120 (0.067)* |
| Constant | 10.854 (2.163)*** | 14.149 (3.883)*** | 10.213 (1.784)*** | 13.715 (4.566)*** |
| Observations | 72 | 72 | 71 | 71 |
| R-squared | 0.61 | 0.49 | 0.63 | 0.30 |

All regressions include robust standard errors and the following continental dummies: Latin America, Middle East, and Africa. (*) significant at 10 percent; (**) significant at 5 percent; (***) significant at 1 percent.

Table 3. Robustness to Alternative Proxies

| | Proxy | Coefficient | Standard Error |
|--------------------------|-------------------------------------|-------------|----------------|
| <i>Hypothesis 1:</i> | | | |
| Institutional | <i>Benchmark:</i> ICRG index | 0.441 | 0.278 |
| | Political and civil liberties | -0.619 | 0.604 |
| | Regulatory quality | -0.776 | 1.384 |
| <i>Hypothesis 2:</i> | | | |
| Cultural | <i>Benchmark:</i> percentage Muslim | 1.703 | 0.745 |
| | Colonies from the United Kingdom | -0.984 | 0.623 |
| | Percentage of women population | 1.423 | 0.843 |
| <i>Hypothesis 3:</i> | | | |
| Macroeconomic conditions | <i>Benchmark:</i> GDP growth | -0.253 | 0.098 |
| | Inflation Rate | 0.002 | 0.001 |
| | Fiscal Deficit | -0.332 | 0.189 |
| <i>Hypothesis 4:</i> | | | |
| Brain Drain | <i>Benchmark:</i> Unemployment rate | -0.139 | 0.065 |
| | Unemployment benefits | -1.471 | 0.736 |
| | Social security index | -1.088 | 0.624 |
| | Tertiary Schooling | -0.623 | 0.240 |

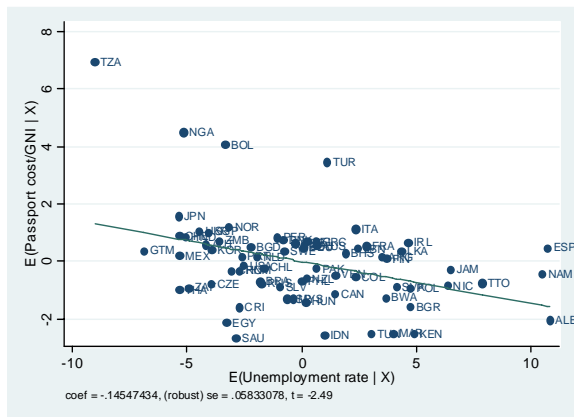
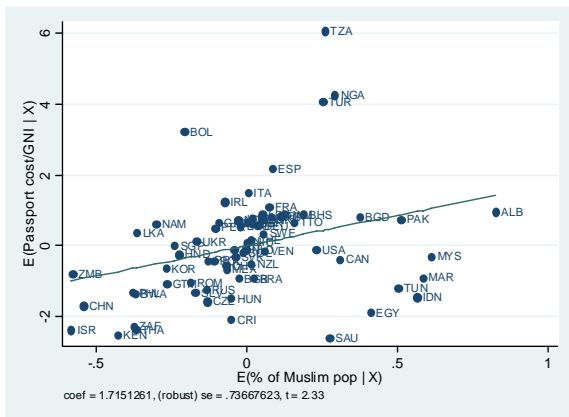
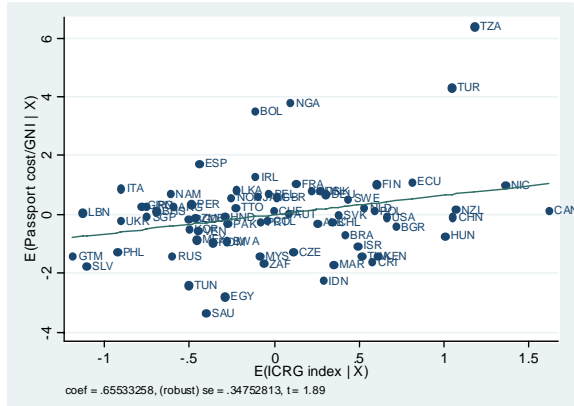
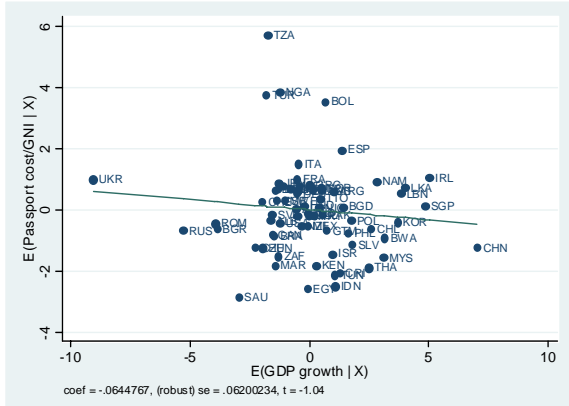
“Benchmark” refers to the proxy employed in Regression 1, Table 1. For each theory we test alternative proxies using the same benchmark specification. The second column indicates the proxy employed, the third column shows the coefficient obtained, and the last column provides the corresponding standard error.

Table 4. Sensitivity to Changes in Specification

| Hypothesis | $cdf(0)$ | Standard Error | Significance |
|--------------------------|----------|----------------|--------------|
| Institutions | -0.563 | -10.621 | 0.532 |
| Culture | 0.368 | 0.465 | 0.772 |
| Macroeconomic Conditions | -0.332 | -0.425 | 0.954 |
| Brain Drain | -0.623 | -1.136 | 0.986 |

The second column presents the standard deviation of the variable of interest, while the first column shows the cumulative distribution function (0). A variable whose weighted $cdf(0)$ is larger than 0.95 is significantly correlated with the dependent variable (i.e. robust) at a 5% significance level. The cdf is computed assuming non-normality of the parameters estimated. Results are similar if we assume normality, instead. The benchmark specification is the one presented in Column 1 in Table 1 (ordinary least squares, 1980-2000). Results are very similar for the IV case.

Appendix 1. Partial Plots from Benchmark Specification



Appendix 2. Correlation Matrix
(p-values below)

| | Passport cost / GNI pc | Log(Initial GDP pc) | ICRG index | Political and civil liberties | Regulat. quality | % of Muslim pop | GDP growth (annual %) | Inflation Rate | Unemployment (% of total labor force) | Unemploy ment benefits |
|--|---------------------------|------------------------|---------------|-------------------------------------|---------------------|-----------------------|--------------------------|-------------------|---|------------------------------|
| Log(Initial GDP pc) | -0.440 | | | | | | | | | |
| | 0.000 | | | | | | | | | |
| ICRG index | -0.306 | 0.801 | | | | | | | | |
| | 0.003 | 0.000 | | | | | | | | |
| Political and civil liberties | 0.406 | -0.724 | -0.711 | | | | | | | |
| | 0.000 | 0.000 | 0.000 | | | | | | | |
| Regulatory quality | -0.500 | 0.743 | 0.738 | -0.682 | | | | | | |
| | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | |
| % of Muslim pop | 0.132 | -0.379 | -0.374 | 0.511 | -0.317 | | | | | |
| | 0.170 | 0.000 | 0.000 | 0.000 | 0.001 | | | | | |
| GDP growth (annual %) | -0.110 | -0.131 | 0.096 | 0.090 | 0.062 | 0.170 | | | | |
| | 0.219 | 0.143 | 0.362 | 0.318 | 0.492 | 0.078 | | | | |
| Inflation Rate | 0.423 | -0.128 | -0.325 | 0.204 | -0.359 | -0.121 | -0.433 | | | |
| | 0.000 | 0.163 | 0.002 | 0.025 | 0.000 | 0.223 | 0.000 | | | |
| Unemployment (% of total labor force) | -0.122 | -0.154 | -0.178 | -0.036 | -0.130 | -0.178 | 0.018 | -0.064 | | |
| | 0.234 | 0.131 | 0.123 | 0.729 | 0.206 | 0.100 | 0.865 | 0.540 | | |
| Unemployment benefits | -0.570 | 0.659 | 0.635 | -0.558 | 0.337 | -0.481 | -0.360 | 0.026 | -0.061 | |
| | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.002 | 0.836 | 0.631 | |
| Social security index | -0.609 | 0.654 | 0.596 | -0.534 | 0.337 | -0.463 | -0.276 | 0.033 | -0.168 | 0.883 |
| | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.022 | 0.792 | 0.184 | 0.000 |