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Should I Stay or Should I Go...North? First Job Location of U.S. Trained Doctorates 1957-2005

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Abstract:

Based on a survey of graduating PhD students in the U.S., we study the determinants of location of their first jobs. We consider how locating in Canada versus the U.S. for all graduates is influenced by both their background and time-varying factors that affect international mobility. We also study the choice of European graduates between North America and returning to Europe. We find that in many cases macro factors have the expected effect of choices after controlling for biases for home, which depend upon background variables in expected ways.

JEL Classification: J6, J44, I2

Keywords: Doctoral Education, International Mobility, Brain Drain

Executive Summary

The U.S. plays a major role in post-graduate training of not just its own citizens but also Canadians and third country nationals. Many non-Canadians trained in the U.S. come to Canada to contribute to teaching and research. We study the location of first jobs after receiving a doctorate from a U.S. university since 1957 using the U.S. National Science Foundation's Survey of Earned Doctorates (SED). We focus on locating in Canada versus the U.S. and how that decision relates to the background of the person and economic conditions in the year they graduate. Our results relate to policies designed to retain and attract highly trained people in an international setting. Our analysis complements work on other transitions and international movements of high skill workers including Huang (1988), Bratsberg (1995), Kuhn and McAusland (2006), and Freeman et al. (2004).

The SED asks about post-graduate plans, their status (definite or not), and location. The SED also includes university type, detailed fields of study, and several standard demographic variables not available in most administrative data. Since the SED is sent to every new doctorate and response rates are very high, we can carry out separate analysis for U.S. citizens, Canadians, and third country nationals (3CNs) even though the propensity to move to Canada is small for non-Canadians. With nearly 50 years of data available we can observe the response of international mobility to the Vietnam War Era, the era of free trade, and the post-9/11 era.

Our probit analysis is motivated by a simple framework. First, a major element of the supply side of the location decision is that new doctorates have a bias to locate in their home country and the strength of this bias varies with observed factors. The home bias works in the opposite direction for U.S.-trained Canadians and their American counterparts. For 3CNs the effect of variables that are posited to shift the bias should lie in between those two values. Second, on the demand side, more able graduates should exhibit greater mobility as they pursue their comparative advantage in research. Local demand for new doctorates should be related to the local labour market and research environment. The trend toward globalization should also favour increasing mobility across international borders over time.

With a few exceptions, our estimates are consistent with the framework. Foreign funding of the graduate's education, age, language, sex and marital status all have the expected effects on international mobility. The coefficients for 3CNs usually fall between the estimates for Americans and Canadians. Movement across international borders is indeed increasing over time, even after controlling for changes in the characteristics of graduating cohorts. The Vietnam War and post-9/11 eras had expected effects on international location of new U.S.-trained doctorates. The notion of Canada as a haven during the Vietnam War holds up after controlling for other characteristics. And Canada appears to have played a similar role for doctorates from Middle Eastern countries after 9/11. The effects of the North American Free Trade Agreement are ambiguous. Higher relative unemployment in the U.S. is associated with greater movement of Americans and 3CNs towards Canada, but does not increase the pull for Canadians to return

home. In fact, the effect is the opposite for them. We also consider a more complex nested logit analysis for citizens of the European 15 countries. For this subsample we consider the choice of Europe versus North America and then within North American between Canada and the U.S. For Europeans both local unemployment and R&D expenditure have significant effects of the expected sign.

Together our results indicate that international location of new doctorates is governed by understandable demand and supply factors. Further work on how specific policies may affect the flow of doctorates out of the U.S. is warranted. In addition, policies that are not targeted to doctorates per se can have an unintended impact on the flow of doctorates. This is especially true for Canada which relies on the U.S. educational system to train a large fraction of its doctorate workforce.