

A dynamic general equilibrium analysis of migration and capital formation: the case of Canada

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Abstract

A dynamic general equilibrium model is constructed to examine the impact of mass immigration on capital accumulation in life-cycle economies. The model is calibrated to match Canadian demographic characteristics over 1861–1913. This was a period when Canada experienced a dramatic shift in migration patterns, with increasing immigration flows, and a surge in domestic savings and capital inflows. Model results suggest that up to three-quarters of the increase in the capital formation rate and the foreign capital inflow rate, and all of the increase in the domestic savings rate, in the Canadian economy over 1899–1911, can be attributed to the dramatic inflow of migrants over this period.

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1. Introduction

This article presents a dynamic general equilibrium model to explain how migration affects capital accumulation in life-cycle economies. The model abstracts from business cycles, and earnings and employment uncertainty to examine a deterministic small open economy. The model is calibrated to match Canadian demographic characteristics over 1861–1911. To do so, I identify age- and gender-specific Canadian net migration patterns. During this period, Canada shifted from being a country of net emigration, to one of net immigration, circa 1897, with improved economic conditions leading up to the First World War. I then use the model to examine the impact of this demographic shift on domestic

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Canada's experience during the four decades leading up to WWI consisted of two remarkably different periods, with 1897 as the defining year of change. In the three decades following Confederation in 1867, Canada was a net supplier of migrants with emigration rates similar to those of Norway and the British Isles (McInnis, 1994; Hatton and Williamson, 1994). During this period, total real income growth averaged three percent per year, and capital formation rates amounted to about fifteen percent of real GNP (Urquhart, 1988). After 1896, the Canadian economy was dramatically altered. Canada became a net receiver of immigrants with a net immigration rate of 15.1% over 1901–1911 (as a percentage of the 1901 population). Canadian real output grew six percent per year. Gross capital formation as a percentage of output grew steadily from twelve percent in 1896 to thirty-three percent in 1913 (Urquhart, 1988). This level of capital accumulation has not been repeated in Canadian history, nor has the rate of immigration. Figure 1 presents the Canadian gross domestic capital formation, domestic savings, and foreign capital inflow rates over 1870–1914. Figure 2 shows the annual pattern of migration for Canada from 1870 to 1914. What impact did migration have on capital accumulation? New immigrants would have to be equipped for production, and social infrastructure would need to be developed. Can the massive inflow of immigrants account for the surge in capital accumulation that Canada experienced prior to WWI? Can the age composition of immigrants explain the composition of investment between domestic and foreign sources?

The economic effects of immigration have garnered much attention in the US recently. Work has focused on the impact of immigration on wages and the migration of natives in

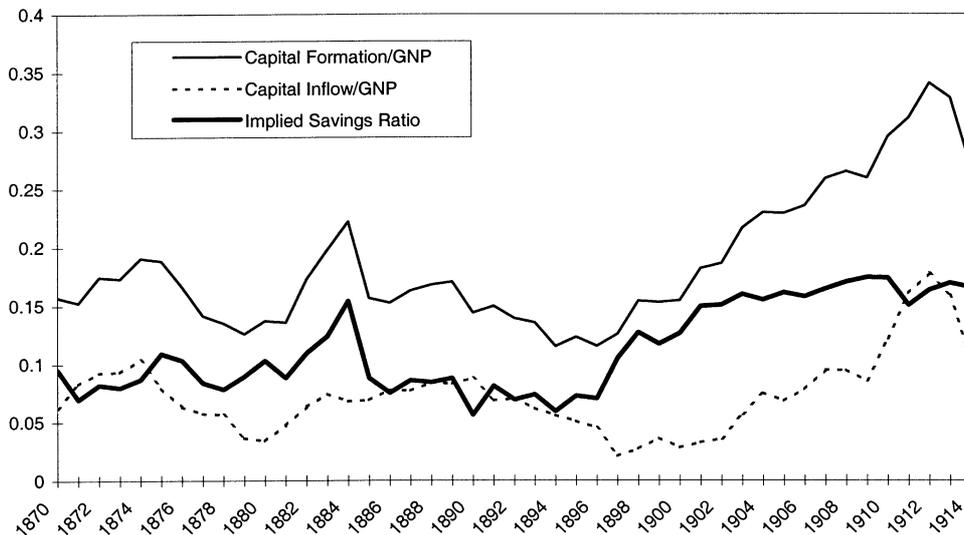


Fig. 1. Canadian gross domestic capital formation, savings, and capital inflow rates, 1870–1914 (source: Urquhart, 1988).

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