U.S. technology was denied to Canadian firms in the pre-patent scenario and is accessible with the patent, then extending patent protection is unambiguously welfare improving for both the U.S. and Canada. However, if the innovative foreign products and technology had been available in Canada without patent protection, there would now also be a cost. Monopoly pricing would reduce consumption, relative to the unprotected market, to a suboptimal level in Canada. The effect of extending patent protection in Canada, in this case, is to transfer a part of the welfare of Canadian consumers to the U.S. monopoly-innovators.

The benefits from extending the protection arise entirely from the new R&D that is made profitable in this additional market, but which would not have been profitable in the U.S. market alone. In general, the larger the previously protected market, the greater will be the number of innovations already undertaken, and the less desirable will be the ones that remain. Hence, the incremental benefit of R&D projects undertaken declines.

The cost of extending patent protection to this additional market is the amount by which consumers' benefit is reduced by the monopoly price and the monopoly profits earned on the innovations (which are transferred to the innovator in the U.S.). As patent protection is extended further, and as more and more R&D projects are stimulated, these losses add up.[44] However, in this extreme case, we did not factor in the possibility that patent protection for process innovations is difficult to enforce. In practice, U.S. innovators taking out patents in Canada will transfer technology from the U.S. and manufacture the product in Canada. The benefits of the technology transfer, discussed in section II.2(B) above, will offset the costs of higher consumer prices and the transfer of rents to the U.S.

Berkowitz and Kotowitz[45] (BK, henceforth) develop a model, much in line with the above discussion, for a small trading economy. In determining a fixed optimal patent term policy, the country maximizes welfare[46] of its residents and ignores externalities conferred by foreign technology. In a world characterized by a uniform patent term of T years, the

[44] Alan V. Deardorff, "Should Patent Protection Be Extended to All Developing Countries?" *The World Economy*, 13 (4), December 1990: 497-507.

[45] M.K. Berkowitz and Y. Kotowitz, "Patent Policy in an Open Economy", *Canadian Journal of Economics*, 15(1), 1982: 1-17.

[46] The welfare in the economy is defined as (a) the gross benefits to local innovators from the world-wide patent and the local patent rights during the local patent period plus the benefits during the time between expiration of the local patent and expiration of the global patent; plus (b) the gain to local producers from their ability to utilize the innovation after the local patent expiration, but prior to expiration of the patent elsewhere; plus (c) local consumers surplus at the global expiry of the patent due to the lower world price, and minus (d) the cost of local resources spent on innovation in the relevant industry.