



Source: IMF (1997) in Acocella (2005).

as a result of containerization and is thus this time savings that has contributed to the rising popularity of this mode of transport. The improvement of transit times alone is estimated to be the equivalent of reducing tariffs from 20% to 5.2%.¹⁶

Another significant improvement in international transportation has been in air transport. Air transport costs have declined considerably for both cargo as well as passenger travel, falling by about a third since the 1960s. Not captured by the declining costs but also important are more frequent flights and more direct flights. Although air transport is still significantly more expensive than marine transport, it is of course much quicker as well. Further demonstrating the importance of time as a trade cost is the rising use of air transport in trade. More than one-third of U.S. exports by value are now shipped by air and this figure jumps to more than half if exports to Canada and Mexico are excluded

(for which ground transport is particularly important).¹⁷ For Canada, 31% of exports to non-U.S. destinations are by air, roughly double the share only ten years ago.

In total, it is estimated that the advent of faster transportation (air shipping and faster ocean travel) is equivalent to reducing tariffs on manufactured goods from 32% to 9% between 1950 and 1998.¹⁸

Improvements in Information and Communication Technologies (ICTs)

Improvements to communications – lower costs, more reliable service, greater access of all forms of communications including voice, video and data – make it easier to control far-flung operations, make deals, access information and coordinate activities. In addition, improvements in ICTs make it possible to trade services that were once considered non-tradable such as computer programming, offering financial services or a radiologist reading an X-ray.

It has been calculated that the average cost of processing information fell from \$75 per million operations to less than one-one hundredth of a cent between 1960 and 1990. And, the cost of a three minute telephone call from New York to London fell from \$245 in 1930 to under \$50 in 1960 to \$3 in 1990 to about 35 cents in 1999 (all in 1990 prices).¹⁹

These figures only capture the tip of the iceberg in terms of the transformative effect that technological improvements have had on trade. For example, because of standardization of software formats, an engineer in Russia can collaborate on producing an engineering drawing with a colleague in Winnipeg, but there is no good statistics which can adequately capture this innovation.

¹⁶ For a more detailed discussion on trends in international shipping rates see Hummels (1999)

¹⁷ Hummels (2001).

¹⁸ Ibid

¹⁹ UN "Human Development Report" 1999