Global imbalances revisited: The transfer problem and transport costs in monopolistic competition

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A R T I C L E   I N F O
Article history:
Received 9 December 2015
Received in revised form 1 March 2017
Accepted 29 May 2017
Available online xxxx

JEL classification:
F1

Keywords:
Trade imbalances
Trade costs
Monopolistic competition
Intermediate goods

A B S T R A C T
We study the welfare effects of trade imbalances in a two-sector model of monopolistic competition. As in perfect competition, a trade surplus involves an income transfer to the deficit country and possibly a terms-of-trade deterioration. Unlike the conventional wisdom, however, trade imbalances do not impose any double burden on surplus countries. This is because of a production-delocation effect, which leads to a reduction in the local price index. In the presence of intermediate goods, new results arise: A trade surplus may lead to an appreciation of the exchange rate, to a terms-of-trade improvement and even to a welfare increase. Numerical simulations show that, under realistic assumptions about preferences and technology, the beneficial price-index effect can significantly reduce the direct cost of the transfer.

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1. Introduction

Trade imbalances are a key feature of the latest wave of globalization. Although the Great Recession and the subsequent collapse of international trade led to a significant correction, trade imbalances are still large and on the rise. For instance, as Fig. 1 shows, Germany’s total trade surplus in goods and services reached 6.7% of GDP in 2014, thereby exceeding the pre-crisis peak. In the same year, China’s trade surplus and the U.S. trade deficit equaled, respectively, 3.7 and 3% of their GDP. Moreover, in current U.S. dollars, China’s and Germany’s trade surpluses were, respectively, 40 and 15% larger in 2014 than in 2007.

Trade imbalances are not only large, they are also persistent. For instance, the United States have been running trade deficits for 40 years in a row, and Germany and China trade surpluses for more than 20 consecutive years. This is a general and often overlooked feature of trading economies. For instance, in a sample of 70 countries with available data between 1960 and 2014, we have computed the maximum number of consecutive years in which each country experienced an imbalance of the same sign. Strikingly, the median value of this measure of persistence is 27 years (and the mean is nearly 30 years). Moreover, for 6 countries in our sample, imbalances persisted with the same sign over the entire period of analysis (55 years).

Despite their prevalence, the welfare implications of these imbalances are not fully understood, because trade models typically focus on the assumption of balanced trade, while models of international finance often focus on inter-temporal rather than intra-temporal trade. This prevents the theory from shedding light on some recurrently debated issues. For instance, China’s integration into the world economy was accompanied by large and growing trade surpluses. Did this type of trade opening harm or benefit China and its main trade partners? Similarly, it is widely believed that the creation of the eurozone, and the induced rigidities in the nominal exchange rates, led Germany to accumulate huge trade surpluses. Did this help or undermine the process of European economic integration? More in general, what are the real effects of the international transfers that are so frequent in financially integrated areas such as the eurozone?

Trade theory does provide the tools for answering these questions. However, the dominant approach in the literature on trade...
imbalance builds on the assumptions of perfectly competitive markets and constant returns to scale. This approach, whose intellectual history dates back to the debate between Ohlin and Keynes on the effects of international transfers, was formalized by Samuelson (1954) and Dornbusch et al. (1977), and recently revived by Dekle et al. (2007, 2008). Its main lesson is that a trade surplus is unambiguously welfare reducing because it involves a double burden, i.e., an income transfer to the trading partner and a terms-of-trade deterioration. This conclusion is however at odds with the common wisdom surrounding policy debates. For instance, if trade imbalances always benefit deficit countries at the expense of surplus countries, how is it that the U.S. administration often complains that China's large bilateral trade surpluses are harming the U.S. economy? And how is it that China accumulated such large surpluses and tried to postpone as much as possible the rebalancing of its foreign trade? Similarly, how is it that trade imbalances within the eurozone are associated with the economic hegemony of surplus countries (by most macroeconomic indicators) and the stagnation or even the collapse of deficit countries?

In this paper, we challenge the conclusions from the traditional approach and show that the so-called “new trade theory” can provide radically different and so far overlooked answers to old questions. To this purpose, we explore the welfare effects of trade imbalances in the Dixit-Stiglitz-Krugman model of monopolistic competition. Differently from recent attempts at measuring well-known effects of rebalancing (such as the double burden of a trade surplus) using trade models suitable for quantitative analysis, our aim is to highlight some unconventional possibilities. To bring these out with the greatest clarity, the model is stylized. Yet, it builds on standard assumptions and is useful for illustrating some possibilities that seem to have been largely neglected in earlier discussions. In addition, following the literature on international transfers, we study the effects of an exogenous imbalance without taking a stand on its causes.

We therefore formulate a two-sector, multi-country, general-equilibrium version of the model in Krugman (1980) that is standard in most respects: one sector produces a homogeneous good under perfect competition and constant returns to scale, and the other produces differentiated goods under monopolistic competition and costly trade. The main novelties are that the homogeneous good is nontraded and that trade imbalances arise whenever the exchange rate (i.e., the relative wage) is inconsistent with balanced trade. These are realistic features: the differentiated sector stands for manufacturing production, which is far more traded than services, and trade is not balanced in general. In contrast, many existing models of monopolistic competition (e.g., Helpman and Krugman, 1985; Melitz and Redding, 2014) assume that the homogeneous good is freely traded and that trade is balanced.

As in the traditional theory, in our model a trade surplus involves an income transfer to the deficit country and possibly a terms-of-trade deterioration. Unlike the standard theory, however, trade imbalances do not impose any double burden on surplus countries. This is because the model features a production-delocation effect, in that a trade surplus requires a reallocation of labor towards tradables. In turn, as first shown in Venables (1987), in the presence of trade costs the resulting increase in the number of local manufacturing firms leads to a reduction in the local price index. A striking implication is that a trade surplus always leads to a reduction in the real price of traded goods which is, ceteris paribus, beneficial. Thus, a surplus involves an income transfer on the one hand, and a beneficial expansion in the traded sector on the other. The net welfare effect is, in general, ambiguous, and we show that it can be positive when the elasticity of substitution between traded goods is low and trade costs are high. We show, however, that in our baseline setup the net welfare effect is negative for reasonable parameter values.

Next, we consider a richer setup in which we allow for manufacturing intermediates in the production of final goods. We find that intermediate goods, which account for more than two thirds of international trade, can dramatically change our quantitative and qualitative conclusions. In particular, we find that a trade surplus may lead to an appreciation of the exchange rate, to a terms-of-trade improvement and even to a welfare increase under reasonable parameter configurations. We then simulate the model’s behavior under two different scenarios replicating the imbalances of China and Germany, the two largest surplus countries in the world. In both cases, the beneficial price-index effect reduces significantly the direct cost of the transfer. This finding is confirmed when we extend our analysis to allow for more general assumptions about preferences and technology, for endogenous labor supply and for variable markups.

Finally, we perform a different but related thought experiment: rather than studying the price effect of an exogenous increase in the transfer, as in most of the literature, we study instead what happens if a government fixes the international relative wage, i.e., the exchange rate. For example, the Chinese government might have been intervening in the international capital markets so as to avoid any deterioration of the country’s competitiveness. Since in our model the general-equilibrium relationship between the exchange rate and the transfer is dictated by a trade-imbalance condition, one might suspect that fixing the exchange rate or the transfer is immaterial for the results. We find that, surprisingly, this is not the case in the presence of intermediate goods. The reason is that intermediate goods give rise to agglomeration economies through the cost and demand linkages between producers of intermediate and final goods, as in Krugman and Venables (1995). With fixed relative wages, agglomeration economies imply that, depending on the parameter configurations, the manufacturing sector may tend to concentrate in one country.

These results have far-reaching implications. They may help explain why a country like China, who resists the real appreciation of its currency through the accumulation of foreign reserves and capital controls, can become a ‘world factory’.1 They also revisit

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1 In Song et al. (2011) a constant wage also plays a key role in explaining the Chinese growth miracle. However, in their model it is the result of labor reallocations, and not of government intervention.
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