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The role of savings rate in exchange rate and trade imbalance nexus: Cross-countries evidence

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ABSTRACT

Will a higher savings rate improve a country's trade imbalance? Using data for 76 countries for the period 1975–2010, we examine the relationship between trade balance, savings rate, and real exchange rate. To address the potential non-linear effects of the savings rate, we use the panel smooth transition regression (PSTR) model with instrumental variables. Our results indicate that countries with a savings rate above the threshold of 14.8% can improve their trade balance by increasing the savings rate or depreciating their currency. Even though the sample is divided into two groups on the basis of income level, the empirical results vary little, suggesting that our findings are robust to the data separation.

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1. Introduction

International trade is one of the fundamental factors stimulating economic development, but a trade deficit arises when a country is importing more than it is exporting. Although a short-run trade deficit is not much of a problem, a prolonged one is often regarded as a symptom of a greater problem (Mankiw, 2006). An important question in the literature is whether currency depreciation helps reduce the trade imbalance. In other words, how to cut the trade deficit has become a major challenge for many countries, especially the U.S.

Theories indicate that nominal exchange rate depreciation improves the trade balance in the long run, although it worsens it in the short run. Nonetheless, existing empirical studies suggest conflicting conclusions.¹ For instance, the traditional approach of the Marshall–Lerner condition examines the effects of currency depreciation on a trade balance, with a significant positive effect found in Narayan (2006), Groenewold and He (2007), and Chiu et al. (2010). An insignificant and/or negative impact is confirmed in Nadenichek (2000), Wilson and Tat (2001), Chinn (2005), and Wang et al. (2012). Gavin (1991), based on the theoretical results, explains that these inconsistent results may be due to neglecting the savings effect. This is because the link between stability and the Marshall–Lerner condition depends very much upon the precise formulation of savings behavior.

The literature has recently shifted towards analyzing the effect of the savings rate on a trade balance, with several studies concluding that the

massive U.S. trade deficits result from low net savings (Engel and Rogers, 2006; Feldstein, 2008; Lee et al., 2006; Mckinnon, 2007). For example, Mankiw (2006) argues that the trade deficit will not disappear in the face of low national savings. Thus, a country needs an increase in national savings to eliminate its trade deficit. The empirical analysis addressed in Kandil (2009) indicates that higher export revenues are likely to decrease dependence on foreign capital inflow, resulting in higher domestic savings in developing countries. Blanchard and Milesi-Ferretti (2012) suggest that if a country attempts to increase its savings rate, but in order to avoid a decrease in domestic demand and output, the central bank at the same time reduces the interest rate, then exchange rate depreciation occurs along with an improvement in the trade balance.

From a theoretical standpoint, savings could have direct and indirect effects on trade balance. First, GDP is measured as the sum of consumption, investment, government spending and net exports, which also equals to the sum of consumption, savings and taxation. It can be rewritten and shown that the trade balance is a function of savings and investment; thus, savings has a direct effect on trade balance. Second, the loanable funds theory states that a rise in savings increases the supply of loanable funds and the interest rate falls, bringing both domestic investment and net capital outflow to increase. A rise in net capital outflow raises the supply of domestic currency, therefore the exchange rate depreciates. This leads to an improvement in the trade balance, illustrating an indirect effect of savings on the trade balance.

Table 1 presents the summary statistics of trade balance, real effective exchange rate, and savings rate for 76 countries. Countries that experience a trade deficit tend to save less (an average savings rate of 15.8%) than those with trade surplus (27.3%). Although the impact of an expansionary monetary policy (i.e. currency devaluation) on the trade balance is already a stylized fact as verified by many empirical

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¹ Auboin and Ruta (2013) provide a comprehensive review of the relationship between exchange rates and international trade.

Table 1
Descriptive statistics of trade balance, real effective exchange rate, and savings rate for 76 countries in 1975–2010.

	Trade balance (millions)			Real effective exchange rate index (2005 = 100)			Savings rate (%)		
	Mean	Max	Min	mEan	Max	Min	Mean	Max	Min
<i>38 high-income countries</i>									
Australia	−5929	10,717	−24,237	95.2	115.1	77	25.1	28.9	22
Austria	−4907	557	−10,210	95.5	107.3	86	24.9	28.9	20.4
Bahamas	−1066	272	−2536	103.9	114.9	93.1	22.5	29	−2.9
Bahrain	607	6335	−799	131.6	212	87.8	38.1	56.8	17.1
Belgium	15,155	21,283	6000	100.8	117.9	91.7	23.5	26.8	18
Canada	12,185	34,798	−15,904	98	116.8	78.1	23	26	17.4
Chile	2137	20,502	−3559	113.4	204	88	23.5	34	9.4
Cyprus	−2507	−158	−9047	96	109.3	85.5	18	25.1	1.3
Denmark	3362	12,344	−3705	94.8	122.1	83	22.8	27.2	17.1
Finland	4144	11,580	−2126	108.6	132.1	95.6	26.2	30	19.5
France	−17,335	17,822	−106,486	100.4	110.3	92.3	20.1	23.7	17.1
Gabon	1638	5800	404	139.2	217.6	94.4	48.9	73	23.8
								[1976]	
Germany	80,116	267,820	4858	109.6	136.6	94.3	22	26.3	18.9
Greece	−16,370	−3063	−52,600	90.5	106.9	73.6	14.6	26.1	7
Iceland	−272	669	−1845	93.6	163.7	62.3	21.4	29.3	15.9
Ireland	14,893	58,145	−2931	90.6	112.7	68	26.5	39.4	12.4
Israel	−5144	0	−11,010	117.9	165.8	99.6	11	20.3	−3.4
Italy	−2179	43,947	−39,135	98.3	115.5	86.9	22.6	26.1	18.3
Japan	60,630	121,770	−10,855	102.7	136.3	71.1	28.8	33.8	20
Korea, South	5117	41,172	−20,624	94.3	130.4	67.1	32	38.5	20.2
Luxembourg	−2267	−31	−11,504	99.6	105.8	94	38.3	53.2	25.1
Malta	−825	−195	−2033	98.9	117.7	85.1	15.3	18.9	8.9
Netherlands	15,356	55,703	−3793	96.5	103.5	88.8	25.9	28.8	22.1
New Zealand	−630	1508	−4928	83.7	100	63.3	22.4	25.1	19.3
Norway	16,324	82,328	−4003	97	117.9	87.7	31.8	41.8	26.3
Poland	−7753	5214	−36,538	281	1123.80	37.5	21.9	42.3	15.2
					[1984]				
Portugal	−11,031	−1899	−37,161	88.9	104.7	71.5	17.4	22	9.4
Saudi Arabia	44,346	198,294	1072	140.5	240.7	94.9	34.8	68.8	−12.1
Singapore	3759	41,076	−11,222	109	125.5	91.9	44.5	53	29.4
Spain	−35,909	−5266	−139,353	94.3	108.6	76.1	22.8	25.7	20.2
St. Kitts & Nevis	−95	−3	−246	97.1	123.7	26.6	17.6	32.6	−7.3
Sweden	8441	22,516	−2533	112.5	136.8	89.3	23.4	27.8	19
Switzerland	1443	18,902	−6709	96.2	111.5	83.8	28.8	32.5	26.5
Taiwan	10,512	29,109	−657	102.5	140.1	92.3	30.2	38.6	21.8
Trinidad and Tobago	1180	9024	−741	105.5	169.2	86.4	31.5	55.6	16.2
U.K.	−48,519	307	−185,867	88.7	105.2	76.3	17.1	21.7	12.4
U.S.	−288,459	2975	−879,810	102.9	134.2	91	16.7	21.3	11.3
			[2006]						
Uruguay	−474	396	−2523	105.4	141.5	70.8	16.8	20.4	11.1
<i>38 low-income countries</i>									
Belize	−177	−22	−547	108.2	137.3	94.7	14.5	29.3	−1.8
Bolivia	34	1977	−879	156.4	543	99.5	14.2	24.5	7.3
Brazil	7848	41,969	−11,248	111.9	146.9	77.2	20.4	30.4	15
Burundi	−127	16	−409	154.6	256.8	90.3	−3.2	11.5	−17.9
Cameroon	26	782	−924	116.4	160.9	87	20.6	29.1	12.9
Central African Rep.	−19	44	−190	134.4	199.2	89	1.3	11	−8.9
China	40,643	297,040	−14,902	140.4	315.1	82.7	39.9	52.7	28.3
		[2008]			[1980]				
Colombia	−846	2155	−3855	113.2	181.5	79.2	19	24.9	13.4
Congo, Dem. Rep.	1060	6200	−206	317.5	1025.30	100	9.1	27.5	−1
Costa Rica	−1071	308	−5791	106.6	164.2	89.5	16.9	27.6	12.2
Côte d'Ivoire	1017	2800	−4	103.9	130.4	76.9	20.2	33.6	10.4
Dominica	−64	−8	−207	109.5	137.1	87.9	7	19	−27.8
								[1979]	
Dominican Rep.	−3555	5	−13,729	95.2	137.6	66.3	13.9	22.2	4.6
Ecuador	75	1434	−3176	107.9	191.7	67.7	19.9	28	11.9
Fiji	−390	−98	−1338	111.4	152.3	90.3	15.7	30.7	2.5
Gambia	−144	−16	−316	183.5	271.8	94.2	4.7	18.5	−4.8
Grenada	−124	−12	−347	103.9	127	83.9	8.3	27.2	−5.9
Guyana	−41	546	−518	303.8	1036.30	97.7	13.8	33.2	−9.8
Hungary	−1020	7147	−5070	74.2	110.2	48.9	25.1	32.8	11.2
Iran	5585	59,120	−10,746	194.7	570.4	51	30.4	43.8	11.4
Malawi	−237	44	−910	156.4	217	95.1	8.2	20.5	−5.5
Malaysia	9481	45,307	−3777	134.5	195.9	100	36.7	48.7	23.3
Mexico	−7588	13,477	−33,330	92.7	124	61.1	23	30.3	17.1
Morocco	−4523	−1025	−22,021	106.1	140	92.4	18.5	25.2	10.4
Nicaragua	−1300	206	−17,964	241,694	5,965,510	26.8	3.4	20.3	−15.1
					[1987]				
Pakistan	−3880	−814	−22,006	132.7	232.6	97.1	12	17.6	4.7

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