Journal of International Money and Finance 31 (2012) 1551–1573

Contents lists available at SciVerse ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Has the euro affected the choice of invoicing currency?

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JEL classification:
F33
F41
F42
E31
C25

Keywords:
Euro
Invoicing currency
Exchange rate risk
Inflation volatility
Vehicle currencies
Compositional multinomial logit

A B S T R A C T

We present a new approach to study empirically the effect of the introduction of the euro on the pattern of currency invoicing. Our approach uses a compositional multinomial logit model, in which currency choice is explained by both currency-specific and country-specific determinants. We use unique quarterly panel data on the invoicing of Norwegian imports from OECD countries for the 1996–2006 period. We find that eurozone countries have substantially increased their share of home currency invoicing after the introduction of the euro, whereas the home currency share of non-eurozone countries fell slightly. In addition, the euro as a vehicle currency has overtaken the role of the US dollar in Norwegian imports. The substantial rise in producer currency invoicing by eurozone countries is primarily caused by a drop in inflation volatility and can only to a small extent be explained by an unobserved euro effect.

1. Introduction

Currency invoicing of international goods trade has interested academics and policy makers as early as the 1970s when the Bretton Woods system of fixed but adjustable exchange rates collapsed and the principal trading countries in the world moved to flexible exchange rates. The introduction of the euro in non-cash form (i.e., electronic transfers, banking, etcetera) on January 1, 1999 and in cash form on

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doi:10.1016/j.jimonfin.2012.02.015

January 1, 2002[1] has given a renewed impetus to the invoicing literature.[2] The introduction of the euro is believed to have had a substantial impact on traders' choice of invoicing currency. More specifically, the euro would boost home currency invoicing by firms located in eurozone countries and euro use by non-eurozone exporters trading with eurozone countries.[3] This paper empirically investigates to what extent a country's pattern of invoicing currency choice is affected by euro introduction.

Knowing which factors affect the pattern of invoicing is important on three accounts. The first reason is that invoicing patterns matter for how a country's trade balance responds to a change in its exchange rate. If countries' exports are fully invoiced in the exporter's currency (and thus imports are by definition invoiced in a foreign currency), a depreciation of the exporter's currency—given that trade contracts are given in the short run—would cause an initial worsening of the trade balance.[4] Second, the choice of invoicing currency affects the degree to which import prices are affected by exchange rate movements—the so-called exchange rate 'pass-through'—for which Gopinath et al. (2010) provide an empirical underpinning.[5] Finally, from a microeconomic point of view, the choice of invoicing currency determines a firm's exposure to exchange rate uncertainty. If a transaction is invoiced in any other currency than its own, a trading firm is exposed to exchange rate uncertainty, leading to revenue uncertainty.

Little is known empirically about the determinants of invoicing currency choice, let alone the effect of currency unions on invoicing patterns. The limited number of studies no doubt reflects the considerable confidentiality with which the invoicing data are treated by central banks and customs offices. Recently, a few econometric studies—using actual invoicing data for a single country—have analyzed invoicing determinants, that is, Donnenfeld and Haug (2003) and Goldberg and Tille (2011) for Canada, Wilander (2006) for Sweden, Ligthart and da Silva (2007) for the Netherlands, and Donnenfeld and Haug (2008) for the United States. Kamps (2006) and Goldberg and Tille (2008) are the only ones employing aggregate cross-country invoicing data, where the latter paper studies vehicle currencies only.[6] Most of these studies focus on the partner country's world trade share, inflation rate, exchange rate volatility, share of differentiated products, and EU membership as invoicing determinants.

Our work is most closely related to the unpublished study by Kamps (2006), who empirically assesses the effect of a country's eurozone membership on the invoicing share of the euro, the US dollar, and a country's home currency. She uses an unbalanced cross-country invoicing data set for 42 countries at an annual frequency covering the 1994–2004 period. Because of her focus on a single aggregate currency share in each equation, Kamps (2006) cannot analyze the effect of the euro on invoicing patterns, that is, the system of all currency shares. Furthermore, the annual frequency of her data in combination with the short time span of analysis makes it hard to separate the transition effect from the steady-state effect of euro introduction.

To investigate the effect of euro introduction on individual currencies and currency groups during the two stages of euro introduction, we use a unique invoicing data set for Norway. We have chosen Norway because it is not part of the eurozone, which allows the study of the effect of the euro on partner currency use in Norwegian imports from eurozone countries and on vehicle currency invoicing in Norwegian imports from countries outside the eurozone.[7] Furthermore, with Germany as its second

[1] The euro was introduced on January 1, 1999 in Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Greece joined on January 1, 2001, bringing the total number of European Union (EU) member states adopting the euro (the so-called eurozone) to 12 countries. Nowadays, the eurozone consists of 17 countries.

[2] The 'New Open Economy Macroeconomics' literature based on Obstfeld and Rogoff's (1995) paper also contributed to this revival. An important issue in this literature is in which currency prices are assumed to be sticky. The Redux model assumes exporters set prices in their home currency.

[3] Bacchetta and Van Wincoop (2005) present a theoretical analysis, whereas Kamps (2006) provides empirical evidence.

[4] See Melvin and Sultan (1990) for an empirical study on the link between invoicing currency patterns and the impact of a currency depreciation on the balance of trade.

[5] There is an extensive literature on exchange rate pass-through. Feenstra (1989) and Feenstra et al. (1996) are early contributions.

[6] The studies by Fischer et al. (2007), Friberg and Wilander (2008), and Ito et al. (2010) employ survey data for Switzerland, Sweden, and Japan, respectively, to study the effect of firm size on invoicing.

[7] A 'vehicle currency' or 'third currency' is neither the currency of the exporter nor that of the importer in a trade transaction. We will use the terminology vehicle currency and third currency interchangeably.