



OTC derivatives: Impacts of regulatory changes in the non-financial sector[☆]



Gustavo Silva Araujo*, Sérgio Leão

Central Bank of Brazil, Av. Presidente Vargas, 730, Centro, Rio de Janeiro, 20070-000, RJ, Brazil

ARTICLE INFO

Article history:

Received 11 March 2015

Received in revised form 10 July 2015

Accepted 3 November 2015

Available online 12 November 2015

JEL classification:

F3
F38
G1
G32

Keywords:

OTC markets
Capital controls
Carry trade
Capital flows
Cost of hedging

ABSTRACT

In the aftermath of the 2007–2008 global financial crisis, a series of measures have been proposed to regulate the OTC derivatives market. The motivation is to increase the disclosure of OTC transactions aiming to decrease the probability of crisis. The main objective of this paper is to investigate how regulatory changes in the OTC derivatives market affect the non-financial sector. The Brazilian FX derivatives market provides a natural experiment for this issue: in 2011, the Brazilian government taxed short positions in FX derivatives to reduce the carry trade, which was causing the local currency to appreciate. Although Chamon and Garcia (2013, Capital control in Brazil: effective? *International Monetary Fund, manuscript*) find that this policy helped reduce the incentives for carry trade strategies, it could have unintended consequences on other markets. For example, if banks pass through the extra cost to clients, this taxation may affect the FX hedges of non-financial firms. This paper investigates whether, and if so how much, the increase in the cost of OTC derivatives is transferred to the non-financial sector. The results indicate that this cost more than doubled for companies exposed to devaluation of the local currency (for instance, importers). Although a thorough welfare analysis is beyond the scope of this paper, the findings suggest that this cost increase may be a concern to the extent that it could prevent EME firms from hedging their FX positions, as the NDF quotation of some EMEs is high due to the interest rate differentials.

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1. Introduction

After the 2007–2008 financial crisis, a series of measures have been proposed to regulate the derivatives market. The goal is to decrease the probability of systemic crisis. Acharya and Bisin (2014) observe that the opacity of the over-the-counter (OTC) market appears to have played a central role in this financial crisis. The main objective of this paper is to investigate how regulatory changes in the OTC derivatives market affect the non-financial sector. The subject is in vogue due to the current discussion about implementation of a series of regulatory changes to make the OTC market more

standardized and secure (FSB, 2013). These changes can generate additional costs for financial institutions that may be passed on to customers through the bank spread. With the intent to evaluate the impact of these proposals, the Macroeconomic Assessment Group on Derivatives (MAGD) estimates that the expected benefits of the regulatory changes outweigh the costs, according to the results of macroeconomic models (BIS, 2013)¹.

This paper studies the costs of regulatory changes in the OTC derivatives markets with a new approach, instead of relying on predictive macroeconomic models. We evaluate whether an exogenous increase in the cost of FX derivatives is transferred to non-financial firms through prices in OTC derivatives. The Brazilian FX derivatives market provides a natural experiment for the issue: in the third quarter of 2011, the Brazilian government taxed net short positions in FX derivatives to reduce the carry trade, which was causing the local currency to appreciate. The aim was to reduce the entry of international speculative capital in carry-trade

[☆] The views expressed in the paper are those of the authors and do not necessarily reflect those of the Central Bank of Brazil. We appreciate the comments and suggestions of the editors (Iftekhar Hasan, João Barroso, Benjamin Tabak and Jouko Vilmunen), the anonymous referees of the Journal of Financial Stability, Cláudio Márcio Cunha, Eduardo Lima, Márcio Garcia, Michael Moore, Raquel Oliveira and Waldyr Areosa. We would also like to thank João André Pereira for the access to the data.

* Corresponding author. Tel.: +55 2121895075; fax: +55 2121895092.

E-mail addresses: gustavo.araujo@bcb.gov.br (G.S. Araujo), sergio.leao@bcb.gov.br (S. Leão).

¹ The Macroeconomic Assessment Group on Derivatives (MAGD) is a group led by the Chief Economist of the Monetary and Economic Department of the Bank for International Settlements (BIS) and is comprised of representatives of 29 member institutions of the Financial Stability Board (FSB).

operations. However, this taxation may cause unintended outcomes in the real economy. For example, this tax may undermine the FX hedges of non-financial firms if banks pass through the extra cost to clients. Therefore, this paper investigates whether, and if so how much, the increase in the cost of OTC derivatives is transferred to non-financial firms—the so-called end-users of derivatives. We also investigate if there is a different outcome of the taxation when the non-financial firms assume long or short positions in this derivative market.

In our methodology for estimating the effect of the tax on non-financial corporations, we compare the spread between non-deliverable forward (NDF) transactions and the FX Brazilian future market before and after the beginning of the taxation in question. A larger absolute spread afterward means that the banks passed at least some of the regulatory costs on to firms. Comparing the OTC market with the FX futures market allows us to control for macro and micro-economic shocks that influence FX prices. Furthermore, using firm fixed effects, we control for time invariant firm-specific characteristics that influence firm demand for FX derivatives. We also employ bank fixed effects in order to guarantee that our results are not driven by bank selection in our sample. The database of this study consists of all NDF transactions between April 2011 and February 2012.

Our results show that the cost of hedging in the OTC market more than doubled for non-financial companies exposed to devaluation of the local currency (e.g., importers). For our main sample, we have nine different model specifications and the minimum and the maximum values of the cost increase are respectively 50% and 183%, always statistically significant at 1%. As the BRL-USD NDF quotation² (and the NDF quotation of other EMEs) is high due to the interest rate differentials, this cost increase can be worrisome to the extent that it could prevent firms from hedging their FX positions.

Consider an example that may shed some light on the problem. In May 2011, the average FX spot quotation was R\$1613.49 per US\$1000 and the average expectation of the FX spot quotation for six months ahead was R\$1618.18³. In the futures market, the average quotation was R\$1674.43 for the same maturity, 3.78% higher than the average spot price due to the high interest rate differentials and 3.48% higher than the average expectation. This figure represents the premium that an importer has to pay for hedging its future dollar cash flows. Therefore, the cost paid by non-financial firms in emerging countries exposed to devaluation of the local currency is significant. Moreover, when firms resort to the OTC market, banks charge an additional cost of R\$4.80 per US\$1000 on average. Our results show that this bank margin more than doubled with the taxation and the hedge quotation ended up higher than R\$1689 (i.e., more than 4.37% higher than the average expectation).

As the topic we are studying is contemporary, the literature is still scarce. According to BIS (2013), in September 2009, G-20 leaders agreed on the main rule changes for the OTC market in response to the 2007–2008 crisis: (i) standardizable derivatives must be traded on exchanges or electronic trading platforms and settled through a central counterparty; (ii) other OTC derivatives must be registered; and (iii) OTC derivatives traded with no central counterparty must have higher capital requirements.

MAGD, by request of the OTC Derivatives Coordination Group⁴, assessed the costs and benefits of the regulatory changes proposed for OTC derivatives by the G-20. Among the benefits that are being evaluated are the economic gains from reducing the chances of economic crises that may arise from the propagation of defaults in bilateral OTC derivatives contracts. MAGD estimates that a chance of a financial crisis triggered by default in the derivatives market is reduced by 0.26 percentage points. As the cost of systemic crises can be about 60% of GDP, the expected value of the benefit is 0.16% of GDP. The estimated costs are related to higher capital requirements, changes in the composition of collateral and operational costs of the central counterparty. According to the study, these costs for financial institutions are passed on to customers through the bank spread. Macroeconomic models predict the impact of the increase of the long-term bank spread at between 0.03 and 0.09% of GDP.

Acharya and Bisin (2014) develop a general equilibrium model for the OTC markets in a setup where risk-sharing agents have incentives to default and their financial positions are not mutually observable. Their model justifies the regulatory changes in the OTC market. OTC markets feature a counterparty risk externality that can lead to ex-ante productive inefficiency. This externality is absent when trading is organized via either a centralized clearing mechanism that provides transparency of trade positions, or a centralized counterparty such as an exchange that observes all trades and sets prices.

Mello and Parsons (2012) discuss whether restrictions on the derivatives markets have impacts on the non-financial sector. More specifically, they study whether a margin mandate on OTC derivative increases the cost of hedging by non-financial corporations. They argue that a non-margined derivative is equivalent to a package of a margined derivative and a contingent line of credit. Therefore, imposing margin requirement does not change the total financing or capital that the non-financial corporation requires in order to back its hedging. Nor does it raise the cost to banks of offering the hedge, at least not directly. Our article addresses this point through an empirical strategy based on a natural experiment involving the FX derivatives market in Brazil.

This work also fits in the literature of capital controls and macroprudential policies. The global financial crisis of 2008 has been followed by a new wave of experimentation with macroprudential capital controls. Recently, the IMF published policy-oriented studies encouraging the adoption of “Capital-Flow Management” measures (CFM) as a part of a “policy toolkit” in order to deal with the post-crisis economic challenges, particularly the negative effects of large and volatile capital flows (IMF, 2011a,b, 2012). According to Forbes et al. (2015), “CFMs refer to types of measures: (1) capital controls or any types of restrictions on cross-border financial activity that discriminate based on residency; and (2) macroprudential measures which do not discriminate based on residency, but relate to cross-border or foreign-currency exposure and lending (not including prudential regulations targeting individual institutions or macroprudential regulations unrelated to cross-border exposure).”

Although some papers, like Cerutti et al. (2015), Forbes et al. (2015) and Ostry et al. (2012), analyze the adoption and results of implementing CFMs, the literature on the costs and tradeoffs of these policies on the real economy are scarce, particularly due to a lack of data and experiences (Claessens, 2014). Our article fills this

² The BRL-USD NDF quotation means that this forward is quoted in real/dollar. Therefore, when an importer wants to hedge a future payment in dollars, it enters into a long position on the BRL-USD NDF, i.e., it buys NDF contracts. On the other hand, if an exporter wants to hedge its cash flow, it enters into a short position selling NDF contracts.

³ The FX expectations are collected in the Central Bank of Brazil’s Market Expectations System. For details of the system, see Marques (2013).

⁴ The OTC Derivatives Coordination Group is composed of the chairmen of the following international organizations: FSB (Financial Stability Board), BCBS (Basel Committee on Banking Supervision), IOSCO (International Organization of Securities Commissions), CPSS (Committee on Payment and Settlement Systems) and CGFS (Committee on the Global Financial System).

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