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The role of financial conditions in transmitting external shocks to South Africa

Thanda Sithole, Beatrice D. Simo-Kengne*, Modeste Some

Department of Economics and Econometrics, University of Johannesburg, Johannesburg, South Africa

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ABSTRACT

This paper analyses the spillover effects of external financial conditions to South Africa using quarterly domestic and international data from 1996Q1 to 2014Q4. First, principal component analysis and vector autoregressive model are utilized to build financial conditions indices for South Africa and its main trading partners, namely, China, Germany, the United States, Japan, the United King, Netherlands, Italy, France and Belgium. Consistently across both methodologies, the financial conditions indices obtained track each other fairly well and capture the 2008/09 global financial crisis. Second, a Global Vector Autoregressive model comprised of financial indices and other macroeconomic variables is implemented to assess how international financial shocks spillover into South Africa. Our findings show that a sudden tightening of the US financial conditions has a significant but short lived effect on the South Africa's real GDP growth while the spillover effects from other trading partners appear to be of negligible impact throughout the sample period.

1. Introduction

The recent financial crisis has emphasized the importance and the effects of global economic and financial connectedness.[1] Kose and Prasad (2010), note that the 2008/09 global financial crisis has vividly thought us that financial markets around the world are closely tied together and shocks in one part of the global financial system can and often do have a large and immediate effects on other parts. Furthermore, they argue that crisis has been a bitter reminder that, for all their benefits, deeper trade and financial linkages can serve as a mechanism for magnifying shocks and intensifying their effects on the real side of the economy. It is therefore important for policymakers in South Africa (SA) to understand how external shocks from trading partners,[2] particularly financial shocks, influence South Africa's macroeconomic variables.

Data from the International Monetary Fund (IMF) direction of trade statistics shows that South Africa's trade with its trading partners, namely, the Euro Area,[3] China, the United States, Japan and the United Kingdom has increased over time. This data is plotted in Figs. A1 and A2 in Appendix A and illustrates, firstly, that South Africa's trade with the Euro Area remain high compared to other trading partners albeit as a share of total trade has somehow slowed. Secondly and most notably is the increasing trade trend between South Africa and China which has materially surpassed that of the United States, Japan and the United Kingdom and now

* Corresponding author.
E-mail addresses: thanda.sithole45@gmail.com (T. Sithole), bdsimo-kengne@uj.ac.za (B.D. Simo-Kengne), somemodestey@gmail.com (M. Some).

[1] The 2008 financial crisis which originated from the United States strongly affected emerging economies including South Africa. Since the 2008 financial crisis, SA growth contracted by 1.5 per cent in 2009 after growing by an average 4.2 per cent from 2000 to 2008. Five years after the 2009 recession, the South African economy has been struggling to grow at pre-crisis level, only growing at an average 2.4 per cent (calculations using South African Reserve Bank GDP data show).

[2] The analysis includes the main trading partners with leading currencies as the focus is on the financial transmission shocks.

[3] For the Euro Area we have used data for five countries only; namely;, Germany, Netherlands, Belgium, Italy and France.

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accounts for just above 30% of total trade. Figs. A1 and A2 also demonstrate that even though in value terms South Africa's trade trend with the United States, Japan and the United Kingdom remain above 1998 levels, it has proportionally slowed.

As shown in Fig. A3–A6 in the Appendix A, South Africa is also undeniably connected to the global economy through financial linkages arising from capital movements. Fig. A3 indicates that total stock of both foreign liabilities and assets in South Africa has increased over time relative to GDP; reaching above 100% of GDP since 2010. The South African foreign assets stock also recently increased above 100% of GDP in 2013 and 2014. Fig. A4 shows that post 1994, total net incurrence of liabilities increased significantly as a share of GDP reaching 10% and 11.3% of GDP in 1999 and 2006, respectively, before dropping to 2.2% of GDP in 2008 due to the 2008/09 crisis. It then stabilized around 5.8% of GDP between 2009 and 2015. Notably, these inflows are mainly driven by short term portfolio inflows searching for higher yields.[4] A similar trend emerges with net acquisitions of financial assets in Fig. A5 where outflows are mainly driven by portfolio outflows. Fig. A6 shows that the balance between net incurrence of liabilities and acquisition of assets has generally increased over time relative to GDP.

In light of the above it is apparent therefore that South Africa's degree of trade and financial openness has increased overtime and this motivates an investigation of the vulnerability of the South African economy to external shocks. If there is some degree of trade and financial linkages between South Africa and the rest of the world, then logically external shocks, both real and financial, would somehow be transmitted into South Africa. Enlightening examples are to be found during financial crises that emanate from the United States and propagate to the rest of the world including South Africa. For instance, as a result of the 2008/09 global financial crisis, South Africa's GDP growth contracted by 1.5% in 2009.

Several empirical studies, adopting different methodologies, have assessed the transmission of global financial shocks into South Africa. Ncube et al. (2012) apply a structural VAR model to assess how abrupt United States bond yield increases, monetary stimulus and federal funds rate tightening shocks spill over into South Africa. Fink and Schuler (2013) also employ a structural VAR model to evaluate international transmission of United States financial stress shocks to emerging market economies including South Africa. Akinci (2013) implements a panel structural VAR to investigate the extent to which United States global financial conditions (i.e. global risk free interest rate and global financial risk) and country spreads contribute to macroeconomic fluctuations in emerging markets, including South Africa.

Through acknowledging South Africa's increasing degree of trade and financial linkages, this paper attempts to examine how foreign financial shocks are transmitted into South Africa. To this end, we consider financial shocks as unexpected changes in Financial Conditions Index (FCI hereafter) of the aforementioned South Africa's trading partners. FCI is defined by Hatzius et al. (2010) as the current state of financial variables that influence economic behavior and (thereby) the future state of the economy. In other words FCI is an aggregate measure of financial variables which can be used to assess current and future economic activity. Differently from previous studies on financial transmission shocks to South Africa, this paper considers a composite measure of financial conditions rather than narrowly defined financial measures such as interest rates, yields and credits (Ncube et al., 2012). A few exception includes Akinci (2013) who however makes use of a PVAR methodology which can only enable the study of the average cross-country response to external shocks. Unlike this set up, our methodology helps isolate the response of a single country to shocks emanating from a specific trading partner; hence allowing country specific policy implications.

Following a two-step procedure, we the first construct the FCI for South Africa and its trading partners based on the commonly used methodologies, the Vector Autoregressive (VAR) model and the Principal Component Analysis (PCA). In the second step, a Global Vector Autoregressive (GVAR) in the constructed FCI and other macroeconomic variables is used to assess the extent to which foreign financial shocks spill over into South Africa. Unlike standard VAR models, GVAR approach is able to deal with curse of data dimensionality while representing a resourceful tool for analyzing global macroeconomic and financial linkages through various channels.

Our findings show that a sudden tightening of the United States financial conditions has a significant but short lived effect on the South Africa's real GDP growth while the spillover effects from other trading partners appear to be of negligible impact throughout the sample period. Particularly, South Africa's real GDP growth falls for eight quarters, reaching the largest impact (−0.15) by the fourth quarter. Even though, in this paper, we focus on a broader measure of financial conditions instead of narrow measures of financial conditions such as short term interest rates, credit and yields, our results are more in line with findings of existing literature on financial spillovers from the United States to South Africa and are consistent with what happened during the 2008/09 global financial crisis. In terms of magnitude, South Africa's and China's response to the United States financial stress appear to be less than that of developed countries; possibly suggesting a strong contagion effect between developed countries.

The rest of this paper is structured as follows. Section 2 reviews the literature on global financial spillovers. Section 3 describes the data and methodologies applied for both the construction of the FCI and the analysis of global financial spillovers. Section 4 discusses the empirical results and the last section provides some concluding remarks and policy recommendations.

2. Literature review

Several empirical studies have contributed to the investigation of global financial spillovers. Eickmeier et al. (2011) apply a time-varying factor-augmented vector autoregressive (FAVAR) model and assess how United States financial shocks (FCI shocks) are transmitted to nine major advanced economies (G7 countries as well as Australia and Spain). They find that positive United States

[4] A closer look at the data showed that these inflows are mainly from the private non-banking sector with only a small share from the banking sector in a form of short term loans and deposits.