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Tracking world trade and GDP in real time

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ABSTRACT

This paper proposes a simple procedure for obtaining monthly assessments of short-run perspectives for quarterly world GDP and trade. It combines high-frequency information from emerging and advanced countries so as to explain quarterly national accounts variables through bridge models. The union of all bridge equations leads to our world bridge model (WBM). The WBM approach of this paper is new for two reasons: its equations combine traditional short-run bridging with theoretical level-relationships, and it is the first time that forecasts of world GDP and trade have been computed for both advanced and emerging countries on the basis of a real-time database of approximately 7000 time series. Although the performances of the equations that are searched automatically should be taken as a lower bound, our results show that the forecasting ability of the WBM is superior to the benchmark. Finally, our results confirm that the use of revised data leads to models' forecasting performances being overstated significantly.

1. Introduction

The analysis of current and future developments in global economic activity is a central concern for international financial institutions, governments and central banks. Recent failures to foresee global economic developments have called into question the appropriateness of widely-used econometric models. In particular, they have shown a clear deficiency in their treatment of emerging market economies, the importance of which has grown steadily over the last ten to fifteen years. The great recession of 2008–2009 brought to the fore the increasing divide between the GDP dynamics of advanced and emerging countries, with the former still being mired in recession or struggling to recover, and the latter being on a stronger growth path. This does not mean that there has been a decoupling of the two groups of economies: emerging countries continue to depend heavily on the rich markets of advanced countries, although domestic factors have been acquiring a more prominent role.

In this situation, commercial links and the related flows at a global level have been changing steadily, and are now completely different from what they were in the past. Widespread globalisation, fostered by a powerful wave of liberalisation, and the information technology revolution, have paved the way for a greater fragmentation of production. Global supply chains tend to locate productive activities in places where human and other resources make those activities competitive. Manufacturing output has therefore shrunk in a number of advanced economies (Germany and the United States are notable exceptions), with entire sectors practically disappearing. Links in these global chains are not limited to industry, but also include a growing range of services (such as research and development, business processes, etc.), as a result of sharp reductions in transaction, organisation and communication costs. Such factors help to improve our understanding

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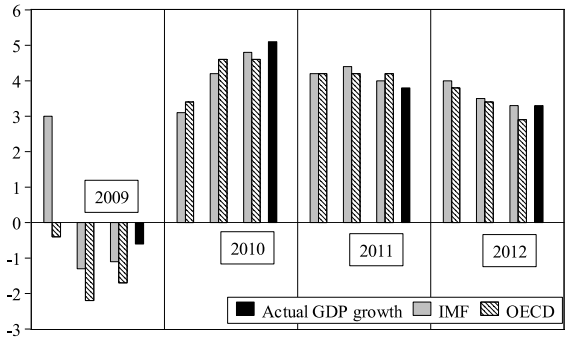

Fig. 1. The pattern of IMF and OECD world GDP forecasts, 2009–2011. The black bars measure the latest available figures drawn from the IMF, *World Economic Outlook*, April 2013. IMF forecasts (in grey bars) are from the *World Economic Outlook*; OECD forecasts (in hatched white bars) are from the *Economic Outlook*. For each year, there are three pairs of forecasts before each black bar: those released in October–November of the previous year, and their updates of April–May and of October–November of the same year.

of the significant divergence which has recently characterised world trade and GDP dynamics, being particularly evident in the much larger decline in the former during the 2008–2009 recession.[1]

The scant attention which has been devoted to the development of emerging market economies can be accounted for by an insufficient knowledge of their socio-political and economic characteristics, and, more importantly, by a lack of reliable statistical information. The immediate reaction of most analysts, when progressively exposed to the risk of forecast failures, has been to update their predictions frequently, which entails the difficult and time-consuming tasks of specifying, estimating and maintaining large models and very complex datasets.[2] Fig. 1 shows how the IMF's *World Economic Outlook* and the OECD's *Economic Outlook* updates of world GDP forecasts evolved over the period 2009–2012. The solid black bars in the histogram measure the latest available world GDP growth, drawn from the *World Economic Outlook* issue of April 2013; IMF forecasts are shown as grey bars, and OECD forecasts are shown as white hatched bars. For each year, there are three forecast releases before each black bar: in October–November before the year being forecast, and updates in April–May and October–November during the year being forecast.

Quite monotonically, the closer the forecast release is to the publication of the actual GDP figure, the closer the prediction is to the target, as new information becomes available over time through indicator updates. Conversely, the first forecast release in autumn of the previous year (when no indicator is yet available for the year to be forecast) is clearly influenced by the current-year outcome. For example, in autumn 2009 both the IMF and the OECD forecast a growth rate of about 3% for 2010, whereas the actual rate was about 5%. Of course, the forecast releases were then revised upwards during 2010, slowly converging on the actual rate.

Fig. 1 suggests that better predictions of world variables could be obtained by exploiting the information content of indicators – as soon as they are released, i.e. monthly – using simple and easily-updated empirical models for GDP and trade. Given that policymakers and other analysts have to assess different options on the basis of a preliminary, partially revised information set, the *ex ante* forecast performance of these models has to be validated using only real-time data, in order to limit "spillovers" from information which was not available at the time when the forecast was made. The purpose of this paper is to introduce a tool that can provide decision-makers with additional information which is consistent with the releases which were available at the time when the information was actually used.[3] Finally, these models should refer to a "representative" mix of advanced and emerging countries, in order to provide a balanced view of the world as a whole.

In short, developing such empirical models raises many issues about the modelling approach, the fully real-time nature of the analysis, and the choices of the countries to model and the variables to target. Such issues have been addressed only partially by the existing literature on forecasting developments in world GDP and trade.

In the case of short-run world GDP forecasting, while many alternative methods are available for advanced countries (essentially the G7 countries),[4] the literature for emerging market economies is still in its infancy.[5] It is therefore not surprising that world GDP developments are usually extrapolated through either the G7 or OECD country groups.[6] Only recently have authors such as Borin, Cristadoro, Golinelli, and Parigi (2012) and Matheson (2010) developed models which include not only the advanced countries but also a set of 19 developing countries (the former), and 10 Asian economies plus Brazil and Russia (the latter), and are able to forecast world GDP more accurately as a result.

With regard to short-run world trade, Burgert and Dees (2009) compare the forecasting abilities of aggregate models with those of disaggregate models, in which world trade results from the aggregation of country forecasts, but the emerging world is considered as a single entity. Guichard and Rusticelli (2011) forecast aggregate world trade using dynamic common factors extracted from aggregate indicators. Jakaitiene and Dees (2012) improve on this model further by taking into account monthly trade, industrial production and prices when forecasting short-run world

[1] See for example Bussière, Callegari, Ghironi, Sestieri, and Yamano (2013), Cheung and Guichard (2009) and Levchenko, Lewis, and Tesar (2010).

[2] See for example Hervé, Pain, Richardson, Sédillot, and Beffy (2011) and Pain, Mourougane, Sédillot, and Le Fouler (2005).

[3] See for example the premises and issues raised by Bernanke and Boivin (2003) and Jacobs and van Norden (2011).

[4] See, among others, Baffigi, Golinelli, and Parigi (2004) for bridge models; Stock and Watson (2006) for factor-based models; Clements and Galvao (2008) for MIDAS regressions; and Camacho and Perez-Quiros (2010) for approximate Kalman filter models.

[5] Liu, Matheson, and Romeu (2011) form a recent exception for 10 Latin American countries.

[6] See for example Aruoba, Diebold, Kose, and Terrones (2010), Chauvet and Yu (2006), Golinelli and Parigi (2007), Kose, Prasad, and Terrones (2008) and Nilsson and Guidetti (2008).