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Expectations of future income and real exchange rate movements

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ABSTRACT

We show that changes in expectations of future income driven by exogenous factors (such as the discovery of oil and an increase in global demand for natural resources) can cause movements in the real exchange rate (RER) in excess of, and sometimes even in the opposite direction to, what one would expect given the changes in current income. We provide both a theoretical model and empirical evidence of this. In particular, we show that the signing of numerous production sharing agreements (PSAs) between the government of Azerbaijan and foreign oil companies in 1994–1998 fueled expectations of higher future incomes, resulting in a considerable appreciation of the RER. Some of these PSAs subsequently failed or ran into difficulties, which led to a downward revision of expected future income and a depreciation of the RER in 1999–2003, even though the current income started to rise, due to an increase in the current oil revenue.

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1. Introduction

Azerbaijan is one of the 15 countries of the former Soviet Union (FSU) that became an independent state after the disintegration of the FSU in 1991. It has been undergoing a transition from a centrally planned to a market-based economy since 1992 and experiencing an oil boom since 1994, and its economic fundamentals have generally been strengthening since 1996. All of these factors tended to put upward (appreciation) pressure on the real exchange rate (RER) of the country's national currency, the Manat, in the second half of the 1990s and the early 2000s, yet the RER of the Manat depreciated significantly over the period 1999–2003.

Some of the researchers working on Azerbaijan's economy (including those at the IMF) view the depreciation of the Manat in real terms over the period 1999–2003 as being a result of the foreign exchange interventions of the National Bank of Azerbaijan (NBA), the country's central bank, and its loose monetary policy (IMF, 2004). Accordingly, the depreciation of the RER led to its deviation from the equilibrium level (that is, to exchange rate misalignment). The reason for this is that only real variables (known as RER fundamentals) can affect the equilibrium RER (ERER). Mone-

tary policy cannot impact ERER. Net purchases of foreign exchange by a central bank can cause a depreciation of RER, but put appreciation pressure on ERER through the accumulation of official reserves.

We argue that the depreciation of the Manat in real terms over the period 1999–2003 was, to a considerable degree, a result of the oil euphoria that occurred in Azerbaijan in the mid-1990s. The signing of numerous production-sharing agreements (PSAs) between the government of Azerbaijan and foreign oil companies between 1994 and 1998 led to the expectation of a higher future oil income and an excessive (after controlling for the effects of ERER fundamentals on RER) appreciation of RER at that time, even though actual oil income remained small. Subsequently, some of the PSAs failed or ran into difficulties, which led to a downward revision of expected future oil income and, thus, to the depreciation of RER over the period 1999–2003, even though the actual oil income started to increase. The excessive appreciation of 1994–1998 was apparently undone by the depreciation of 1999–2003, as RER started appreciating again in 2004. Similar phenomena seem to have happened or be happening during boom and doom times in other economies, such as Australia, the UK and the USA.

A more general point we make is that expectations of future income, driven by exogenous factors such as oil euphoria, an increase in the global demand for natural resources, high levels of external

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financial assistance during economic crises, etc., can have a strong influence on RER in a booming/dooming economy. To the best of our knowledge, this point has been completely overlooked in the literature to date. We provide both a theoretical model and empirical evidence showing that changes in expectations about future income levels cause movements in RER in excess of, and sometimes even in the opposite direction to, what one would expect given the changes in current income.

The balance of the paper is organized as follows. In the next section, we provide a plausible list of the fundamentals of RER for Azerbaijan, taken from other studies which have been conducted on transition and natural resource boom economies. In Section 3, we derive and construct Azerbaijan's RER. We set up the theoretical model for the problem in Section 4, and discuss the construction of measurements of future income in Azerbaijan in the following section. We then provide empirical results in Section 6. In Section 7 we discuss the implications of RER depreciation in Azerbaijan's economy and provide a plausible explanation of the influence of expectations of future income on the RER of other major economies during their boom and doom times. Finally, in Section 8 we provide concluding remarks.

2. Fundamentals of RER

In this section, we summarize the findings of other studies as to the ways in which being in a transition state, having a resource boom, and the strengthening of economic fundamentals would affect RER.

In a centrally planned economy, RER is generally set above the equilibrium level. In other words, RER is overvalued. Therefore, the transition from a centrally planned to a market-based economy brings about a sharp depreciation of RER (Halpern and Wyplosz, 1997). This sharp initial depreciation of RER is then followed by its gradual appreciation. One reason for this is that the transition process involves the dismantling of old production structures and structural reforms, which lead to increases in productivity, especially in the production of tradable goods. Consequently, real wages and the relative prices of non-tradable goods rise, inducing an appreciation of RER (Halpern and Wyplosz, 1997; Obstfeld and Rogoff, 1996).¹ In many transition economies, another reason for the gradual appreciation of RER (after its sharp initial depreciation) is high inflation and a less-than-commensurate depreciation of the nominal exchange rate (Orlowski, 1998). Furthermore, the liberalization of capital accounts, and subsequent capital inflows, can also lead to an appreciation of RER at later stages of the transition process (Orlowski, 1998; Coricelli and Jazbec, 2004).

A number of studies demonstrate the way in which economic fundamentals drive movements in RER. For example, the relationship between economic fundamentals and movements in RER is investigated by Paiva (2001) for Costa Rica, Kuralbayeva et al. (2001) for Kazakhstan, and Beguna (2002) for Latvia. The economic fundamentals used in these studies that affect movements in RER rate are fiscal stance, net capital flows, the degree of openness, the terms of trade (TsOT), productivity, and the interest rate differential. Égert et al. (2006) investigate whether productivity and net foreign assets explain the appreciation of RER in 11 transition economies in the period of the 1990s and the early 2000s. They find that productivity causes RER to appreciate in five Central and Eastern European economies (CEE-5), and has no effect in Baltic transition economies. Contrary to our expectations, an increase in net foreign liabilities led to a real appreciation in the Baltic coun-

tries, but to the expected depreciation in the CEE-5 economies. Lim (1992) provides empirical evidence of the rejection of hypotheses of purchasing power parity (PPP) (as a theory of the long-run behavior of the real exchange rate), and the uncovered interest parity (as a theory of short-run behavior) for RER between the US and other G-10 countries. Instead, he finds support for the idea of RER fundamentals (such as productivity, TsOT, and interest rate differentials) explaining the variation in RER. In connection with the PPP theory for RER (i.e., whether RER can be a stationary process), there is a considerable body of literature that provides empirical evidence either for or against the PPP theory. See for instance Zhou and Kutan (2011), Chortareas and Kapetanios (2009), Sarno and Valente (2006), Nikolaou (2008), and Parsley and Wei (2007), among many others.

There are also studies that focus solely on the relationship between RER and the variable of interest in a controlled environment. For example, the relationship between productivity and the movement of RER is explored by Égert (2002) for the Czech Republic, Hungary, Poland, Slovakia and Slovenia; Égert (2005) for three south-eastern European countries (Bulgaria, Croatia and Romania), two CIS economies (Russia and Ukraine) and Turkey; and De Broeck and Sløk (2006) for 26 different countries.² The relationship between RER and oil price movements is examined by Kutan and Wyzan (2005) for Kazakhstan; Koranchelian (2005) for Algeria; Zalduendo (2006) for Venezuela; and Korhonen and Juurikkala (2009) for the OPEC countries, among others. Likewise, Bagella et al. (2006) analyze the relationship between the volatility of real effective exchange rates (REER) and growth in per capita income. Their approach to testing such a hypothesis is unique, in the sense that they test the effects of flexible exchange rates and volatile exchange rates jointly, which had not been possible previously, due to the high correlation between exchange rate regimes and bilateral exchange rate volatility measures.

There is an expanding body of literature on commodity currencies, which relates commodity prices to RERs (Chen and Rogoff, 2003; Cashin et al., 2004, and followers). These studies, among others, find a link between RER and the commodity prices, although the results are somewhat weak and mixed. For instance, this link only exists for about one-third of the 44 commodity exporting countries studied by Cashin et al. (2004), whereas Chen and Rogoff (2003) find RER being affected by commodity prices in two of the three commodity exporting countries they consider. However, we believe that the missing link in this literature is the effect of a substantial change in commodity prices on expectations of a country's future income, which depend not only on current commodity prices, but also on expected future commodity prices. In some countries and in some sub-periods, the changes in the commodity prices are not sufficient to change the expectations of the country's future income, and hence to cause significant RER movements, as appears to be the case when RER does not respond to changes in commodity prices as per this literature.

To the best of our knowledge, there has been no study to date which has discussed the role of oil companies in creating oil production hype by providing estimates of oil reserves which are in excess of actual reserves, which in turn raises expectations of future income levels, thereby affecting the real exchange rate movements in a resource booming economy. This study is an attempt to fill this gap.

¹ This phenomenon is often referred to as the Balassa-Samuelson effect.

² Ten EU accession countries (the three Baltics, Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, and Slovenia) and 16 other transition economies (Albania, Croatia, the former Yugoslav Republic of Macedonia, Mongolia, Russia, and the other countries of the former Soviet: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan).

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