DOMESTIC AND EXTERNAL DEMAND SHOCKS IN UKRAINE

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Plan of presentation

- Introduction
- Theoretical considerations
- VAR/VEC model
- Empirical results
- Policy implications
1 Introduction

- A distinct feature of the 2011-2013 period in Ukraine has been an increase in the budget deficit combined with a worsening of the current account and the real interest rate hike.
- Thus preconditions of a deep financial crisis of 2014 have been created.
Explanations of economic difficulties:

- Worsening of external conditions and unfavourable gas contract of January 2009
- Возна і Жаліло (2014, с. 23–34): structural deformations
  a) real estate bubble of 2003–2008
  b) excessive credit growth of 2006–2008
  c) debt accumulation in public and private sectors,
  d) weakening of investment activities
2 Theoretical considerations

- The IS–LM–BP model with the aggregate supply effects
- The reconstruction of the 2010–2014 developments in the Ukraine’s economy
\[ y_t = c_1(m_t - p_t) - c_2(e_t + p_t^* - p_t) + u_t, \quad (1) \]

\[ y_t = a_1(y_t - \tau_t) + a_2 g_t - a_3 r_t + a_4(e_t + p_t^* - p_t) \]
\[ - a_5 y_t + a_6 y_t^* + \varepsilon_t, \quad (2) \]

\[ m_t - p_t = b_1 y_t - b_2 r_t, \quad (3) \]

\[ a_3(e_t + p_t^* - p_t) - a_5 y_t + a_6 y_t^* + k(r_t - r_t^*) = 0, \quad (4) \]

where \( y_t \) and \( y_t^* \), \( p_t \) and \( p_t^* \), \( r_t \) and \( r_t^* \) are domestic and foreign output, price level and interest rate, respectively;

\( m_t \) is the money supply,

\( e_t \) is the nominal exchange rate,

\( g_t \) is the budget deficit,

\( \tau_t \) are taxes,

\( u_t \) and \( \varepsilon_t \) are stochastic shocks.
Accommodation of the adverse terms-of-trade shock with the expansionary fiscal policy
Exchange rate depreciation effects (demand-side)
Exchange rate depreciation effects (supply-side)
Exchange rate depreciation effects (a synthesis)
3 VAR/VEC model

- A VAR system of \( n \) endogenous variables:

\[
A(L)z_t = e_t,
\]  

(5)

where the matrix polynomial \( A(L) \) has degree \( k \).

The VAR system (1) can be rearranged as

\[
A^*(L)\Delta z_t = -\Pi z_{t-1} + e_t,
\]  

(6)

where \( \Pi = A(1) \) and the degree of \( A^*(L) \) is \( k - 1 \).
If endogenous variables are $I(1)$ and cointegrated with rank $r \ (0 < r < n)$, then the VECM representation is as follows:

\[
A(L) \Delta z_t = -\alpha \beta z_{t-1} + \varepsilon_t,
\]

(7)

where $A(L)$ is the matrix polynomial with degree $k$, $\alpha$ and $\beta$ are $n \times r$ matrices of rank $r$, $z_t$ is the vector of endogenous variables, $\varepsilon_t$ is the vector of stochastic innovations. Exact identification of $\beta$ requires $r$ restrictions on each of the $r$ cointegrating vectors.
Impulse responses are calculated from the vector moving average representation

$$z_t = A(L)^{-1} e_t = C(L) e_t,$$  \hspace{1cm} (8)

where the leading matrix in $C(L)$ is the identity matrix.

VECM methods use long-run information as part of identification process between cointegrated $I(1)$ variables
The vectors of endogenous variables and stochastic innovations are chosen as follows:

\[
Z_t = (\Delta e_t, \Delta rl_t, \Delta bd_t, \Delta y_t)
\]

\[
\varepsilon_t = (e_t, \varepsilon_{rl_t}, \varepsilon_{bd_t}, \varepsilon_y_t)
\]

where \(e_t\) is the nominal effective exchange rate, \(rl_t\) is the interest rate, \(bd_t\) is the budget balance, and \(y_t\) is the output.
4 Empirical results

- Impulse response functions
- Variance decomposition
a) determinants of the exchange rate

b) determinants of the interest rate
c) determinants of the budget balance  
d) determinants of the output
## Variance decomposition

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<th>Response to</th>
<th>Forecast horizon</th>
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Conclusions

- The budget deficit is not expansionary in Ukraine, being a factor behind the exchange rate depreciation
  - The budget intertemporal constraint
- Exchange rate depreciation is contractionary and brings about an increase in the interest rate combined with worsening of the budget balance
- Higher interest rate is associated with the exchange rate depreciation, budget deficit and output contraction
- There is no positive link between output and budget balance
THANKS FOR ATTENTION!!!