TOWARDS OVERCOMING MAIN SHORTCOMINGS OF DIRECT METHODS USED TO MEASURE THE SHADOW ECONOMY

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Like most phenomena that are not directly observable, shadow economies are difficult to measure.
Existing methods

- Indirect methods
  - Macro methods
  - Multiple indicator multiple cause (MIMIC) method

- Direct methods
  - Surveys, audits, etc.
Conclusion by Schneider (2014)

“No ideal or dominating method – all have serious problems and weaknesses” (Schneider, 2014: 41)
“It is time to acknowledge how little we really know about unobserved economies despite forty years of effort to measure their size and growth” ... “econometricians must be encouraged not only to critique existing macro methods but to develop constructive alternative means of measurement”

(Feige and Urban, 2008: 300)
Looking for a solution…

- We aim to extend the promising group of ‘direct methods’ by developing and testing a method that has several novel features
Most common shortcomings of direct methods

- Direct methods tend to underestimate the level of shadow economy
- Direct methods are usually more expensive to apply
- Direct methods are usually more time consuming to apply
- Dealing with non-responses
This study makes a methodological contribution by developing an index that measures the size of a shadow economy as a percentage of GDP
What we do

The Index combines estimates of
- misreported business income
- unregistered or hidden employees
- unreported “envelope” wages

to obtain estimates of the size of the shadow economies as a proportion of GDP

Additionally we estimate amount of bribery, including bribery in Government orders
What we do

- We survey entrepreneurs: owner/ managers
- The surveys are conducted between March and April of each year (since 2010) and contain questions about shadow activity during the previous two years
  - For example, the survey conducted in March-April 2014 collects information about shadow activity during 2013 and 2012.
- Random sample, Orbis data set, semi-panel data
- Approximately 500 phone interviews in Latvia, 500 in Lithuania and 500 in Estonia
How we overcome shortcomings of most commonly used direct methods

- Why we ask questions via phone?
- Phrasing misreporting questions indirectly
- Gradually introducing the most sensitive questions after less sensitive questions
- Framing the survey as a study of satisfaction with government policy
How we overcome shortcomings of most commonly used direct methods

- In the analysis, controlling for factors that correlate with potential untruthful response such as tolerance towards misreporting

- We use the overlapping years (e.g., answers in both the 2013 survey and 2012 survey about the level of shadow activity in 2011) to filter out inconsistent responses
Other ‘pros’

- We do not analyse non-responses, yet non-respondents in this seemingly sensitive survey are not more than in ‘usual’ survey.

- This is first method (to our knowledge) that uses entrepreneurs as a source of information.
  - Due to their unique position in dealing with both business income and employee wages, they know about both main components of shadow activity (corporate tax evasion, and misreported employee income/unregistered employees).
Other ‘pros’

- We make far less assumptions than other methods, thus method is more stable.

- Survey is also more precise about what parts of observed or unobserved production are included in the estimates.
  
  Therefore shadow economy estimates from our method may be used in adjusting GDP to account for shadow production.
Other ‘pros’

- Surveys are able to produce evidence on attitudes and perceptions, which can also be useful in guiding policy.

- Surveys also have the advantage of providing detailed information on the structure of the shadow economy across different sectors, regions, enterprises and individuals.
Regardless of the potential criticisms that various countries can not be compared (i.e. Estonians might underestimate amount of shadow economy, whereas Latvians overestimate), method provides with good picture on the dynamics within each country.
The index is based on the income approach, calculates GDP as the sum of gross remuneration of employees and gross operating income of firms.

Computation of the Index proceeds in four steps:

(i) We estimate the extent of underreporting of employee remuneration and underreporting of firms’ operating income using the survey responses.
(ii) We estimate each firm’s shadow production as a weighted average of its underreported employee remuneration and underreported operating income, with the weights reflecting the proportions of employee remuneration and firms’ operating income in the composition of GDP.

(iii) We calculate a production-weighted average of shadow production across firms.

(iv) We follow the methodology of the World Economic Forum in their Global Competitiveness Report and apply a weighted moving average of calculated from the most recent two survey rounds.
Definition of the shadow economy

All legal production of goods and services that is deliberately concealed from public authorities

## Main results

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<thead>
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<th></th>
<th>Latvia</th>
<th>Lithuania</th>
<th>Estonia</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>23.8%</td>
<td>15.3%</td>
<td>15.7%</td>
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<tr>
<td>2012</td>
<td>21.1%</td>
<td>18.2%</td>
<td>19.2%</td>
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<tr>
<td>2011</td>
<td>30.2%</td>
<td>17.1%</td>
<td>18.9%</td>
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<tr>
<td>2010</td>
<td>38.1%</td>
<td>18.8%</td>
<td>19.4%</td>
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<tr>
<td>2009</td>
<td>36.6%</td>
<td>17.7%</td>
<td>20.2%</td>
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Dynamics of the shadow economy in the Baltic countries, 2009-2013

- LV
- LT
- EE

Graph showing the percentage of the shadow economy across the years 2009 to 2013 for Latvia (LV), Lithuania (LT), and Estonia (EE). The percentages are as follows:

- Latvia: 36.6, 38.1, 30.2, 21.1, 23.8
- Lithuania: 20.2, 19.4, 18.9, 19.2, 15.7
- Estonia: 17.7, 18.8, 17.1, 18.2, 15.3
Components of the shadow economies in each of the Baltic countries, 2013
Level of underreporting income (percentage of annual profits), 2009-2013
Level of underreporting the number of employees (percentage of the actual number of employees), 2009-2013
Level of underreporting of salaries (percentage of actual salaries), 2009-2013
Level of bribery (percentage of revenues spent ‘to get things done’), 2009-2013

- LV
- LT
- EE

2009: LV 10.4%, LT 19.5%, EE 5.8%
2010: LV 10.8%, LT 19.6%, EE 5.6%
2011: LV 12.9%, LT 8.9%, EE 5.5%
2012: LV 14.0%, LT 8.7%, EE 5.6%
2013: LV 10.5%, LT 10.3%, EE 4.7%
Percentage of the contract value paid to government to secure the contract, 2010-2013
Influential factors: key conclusions

- Higher perceived probability of being caught evading taxes and more severe consequences ➔ less involvement in shadow economy

- Strong effect (regression coefficients)

- Signal for SRS, similarly like in previous years!
Influential factors: key conclusions

- Dissatisfaction $\Rightarrow$ more shadow activities

- Dissatisfaction affects the involvement in the shadow economy:
  - with business legislation (the strongest effect)
  - with State Revenue Service
  - with tax policy
  - with governments’ support
Thank you!

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