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The Usefulness of the Scoreboard of the Macroeconomic Imbalances Procedure in the European Union: Potentials for Reform

Abstract

The Macroeconomic Imbalances Procedure includes a scoreboard of economic indicators used as an early warning system. The current construction of the scoreboard includes eleven indicators, of which two allow for different thresholds for euro and non-euro countries. Elsewise, the scoreboard follows a 'one size fits all' approach. While previous research has shown that a panel approach for early warning systems is often a necessity for calibration purposes — in particular, in the absence of past crises in some of the countries — it has also been shown that considering country specifics makes early warning systems more accurate. The present paper illustrates the advantage of more specific early warning systems for different country groups within the European Union.

1 Introduction

Within the reform process of European institutions in the follow-up to the outbreak of debt crises in the European Union, the introduction of the Macroeconomic Imbalances Procedure has been enacted as part of the so-called sixpack regulations.¹ Its creation emerged from the fact, that macroeconomic imbalances have been observed within the Union prior to the crises. The use of an early warning system is an established tool for other international institutions, such as the International Monetary Fund or national authorities, such as central banks. New features of the scoreboard of the European Union include: (1) that its procedure and results are published; (2) that it provides the formal basis for political discussions; and (3) that it implies semi-automatic consequences for European Union (EU) member countries that fail to score.

The political argument behind the Macroeconomic Imbalances Procedure is that building up these imbalances

might not only result in vulnerabilities for crisis in single member states, but might also impact other member states negatively, owing to contagion of crises or costly interventions. Thus, the observation of imbalances results in requests for reform and can, if reform proposals are considered to be inadequate, lead to financial sanctions. So far, no fines have been imposed, but several countries underwent in-debt reviews and had to present proposals for economic adjustments to curtail macroeconomic imbalances.

Thus, the scoreboard ought to be as precise as possible. It should avoid false alarms, which might result in costly economic adjustment programmes, or in fines to government. It should, however, also avoid missing an upcoming crisis and therefore creating costs not only for the single member country, but also for the rest of the Union. To this end, researchers in economics suggest a range of different methods for the calibration of early warning

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¹ European Parliament 2011a, 2011b.

systems; systems that aim to minimize these potential errors of early warning systems. In this paper the most simple but also the most popular approach, the Signals Approach, is used for the calculation of thresholds and the assessment of the usefulness of a scoreboard.

The paper aims to take stock of the usefulness of the scoreboard by measuring its performance to forecast crisis and non-crisis periods. It also suggests adjustments of thresholds of scoreboard indicators to increase its performance. The main contribution is, however, to calibrate early warning systems, based on the indicators provided by the European Commission for different groups of countries within the European Union. The research question is: to what extent would a more specific formulation of thresholds on the scoreboard lead to better results for the early warning system, and therefore to fewer costs for member states and the European Union? The hypothesis is that the construction of early warning systems for more homogeneous groups of countries leads to better forecasting results.

The paper is structured as follows. In Section 2 the methodology employed is explained. Section 3 highlights the data used in the analysis. Section 4 presents the results, while section 5 concludes.

2 Method

The empirical literature on early warning systems uses different approaches that vary with regard to the employed techniques. Standard approaches are bivariate Logit/Probitmodels and signals approaches, as developed by Kaminsky & Reinhart (1999).² Logit/Probit-models use the bivariate variable crisis/no crisis as the endogenous variable, and estimate the impact of different sets of explanatory variables.³ Signals approaches are non-parametric approaches⁴ that examine the behaviour of potential explanatory variables prior to the detected crises, and compare it with non-crises periods. If some of the variables pass a certain threshold their changes are used as crisis signals.⁵ In addition to these two techniques, further concepts are outlined in the literature. These include artificial neural networks (ANN), whose advantage is the reflection of complex interaction between the variables;⁶ value-at-risk models;⁷ restricted VAR models;⁸ and Markov-switching approaches, which do not depend on an a priori definition of crises.⁹

This paper largely follows the Signals Approach as developed by Kaminsky & Reinhart (1999). The Signals Approach is used because of its easy applicability, and because it was found to outperform the alternatives.¹⁰ The paper deviates from Kaminsky & Reinhart (1999), with regard to the optimization criteria, as discussed below.

The first step in employing a Signals Approach is to define crises periods. With regard to the scoreboard of the Macroeconomic Imbalance Procedure, it is not clearly defined which types of crises are meant to be signalled. It can, however, be assumed that politicians had in mind the type of crisis that the European Union was facing at the time of the introduction of the scoreboard: public debt crises. A public debt crisis can be referred to as a state in which governments fail or have difficulty in repaying their debts. One obvious empirical definition of public debt crisis might therefore be a government default. This definition might be too narrow, however, if one considers that a default might just have been avoided as a result of assistance from European or international institutions, or other governments. Thus, a second possibility to define a crisis empirically might be to refer to situations when programmes by the International Monetary Fund or the European Union have been provided to a country in crisis. This approach is, however, also not without its problems. First, these programmes usually start only after a crisis has already happened. Thus, the dating of the crisis might be too late. Second, the crisis might be stopped by measures other than programmes of international institutions. So, for example, the Central Bank could announce that it will do whatever it takes to avoid defaults. In this case, the crisis might be overcome without any programme in place. Therefore, in this paper, a third type of definition is used. The problem that usually

⁹ E.g. Abiad (2003), Knedlik & Scheufele (2008).

² For a more detailed survey on Early-Warning Systems, see Abiad (2003) and for a test, see Knedlik & Scheufele (2008).

³ Examples include Berg & Pattillo (1999), Kamin, Schindler & Samuel (2001), and Kumar, Moorthy & Perraudin (2002).

⁴ These are methods that do not depend on specific assumptions about probability distribution and do not include the fitting of parameters.

⁵ See Brüggemann & Linne (2002). Other examples include Berg & Pattillo (1999b), and Edison (2000).

⁶ E.g. Nag & Mitra (1999) Peltonen (2006).

⁷ E.g. Blejer & Schumacher (1999).

⁸ E.g. Krkoska (2001).

¹⁰ Abiad (2003: 3). For the statistical significance of the signals approach see El-Shagi et al. (2013).

makes countries default on their debt is that refinancing becomes too expensive, owing to increased risk premiums on government bonds or loans. Thus the spread between government bond yields and a riskless reference rate is used to identify crises in this paper (see Section 3).¹¹ Since large government bond spread do not necessarily lead to default, I refer to these events as 'fiscal stress'.

The second step of the Signals Approach is to identify potential explanatory variables, which might send signals before a crisis. For the analysis in this paper the indicators of the scoreboard of the Macroeconomic Imbalances Procedure are used (see Section 3). The use of official Eurostat data also defines the data frequency (annually).

The third step is to decide on the crises window; i.e. the time prior to a crisis in which the variables are expected to send

TABLE 1 STATES OF THE INDICATORS		
	Crisis within the next 2 years	No crisis within the next 2 years
Signal issued	А	В
No signal issued	С	D

BOX 1 SETTING OPTIMAL THRESHOLDS

To solve that trade-off between too loose and too tied thresholds a utility function for politicians that implement the scoreboard is used. Following Alessi and Detken (2011) that utility function can be expressed as:

(1)
$$U(\theta) = \min(\theta, 1 - \theta) - \left(\theta \frac{C}{A+C} + (1 - \theta) \frac{B}{B+D}\right)$$

whereby A is the number of months a good signal was sent (a crisis is correctly signalled). B is the number of months a false alarm signal was sent, and in statistical terms this kind of error is called a type II error. C is the number of months in which no signal was sent but a crisis followed, and statistically speaking, this kind of error is called a type I error. D is the number of months in which no signal was sent and no crisis followed (see Table 1).

The ratio of type I errors to pre-crisis periods is expressed as $\frac{C}{A+C}$, while the ratio of type II errors to tranquil periods is expressed as $\frac{B}{B+D}$. Low thresholds result in many signals (both correct and incorrect) and may thus lead to a high probability of type II errors, while a high threshold will result in few signals, potentially missing crisis periods and thus a high type I error probability. Politicians might have different costs associated with both types of errors. They might therefore be willing to accept more of one type of error to further minimize the other type of error.¹² Thus the utility function (1) allows for weights on both error types, with θ being the weight for type I errors and $(1-\theta)$ the weight for type II errors. The expression $\left(\theta \frac{C}{A+C} + (1-\theta) \frac{B}{B+D}\right)$ in equation (1) constitutes the loss to the policymaker owing to errors of the early warning system. The other part of the right-hand side of equation (1), min $(\theta, 1 - \theta)$, defines the secure loss to the policymaker. If the weight θ is smaller than 0.5, the politicians have a relatively high preference for avoiding false alarms, and then it would always be possible to set the threshold so high that no signal would be send whatsoever. In this case $\frac{B}{B+D}$ would be equal to zero, because B would be zero, and $\frac{c}{A+C}$ would be equal to one, because A would be zero. This would result in a loss equal to θ . If θ is larger than 0.5, the politicians put a higher weight on not missing a crisis, so it would always be possible to set the threshold so low that signals are sent in all of the periods. Thus, following the above logic, the resulting loss would be $(1 - \theta)$. Therefore, the politicians can always ensure a loss of min $(\theta, 1 - \theta)$ by setting extreme thresholds.

To derive optimal thresholds I take a set of economically reasonable thresholds and calculate the losses of these thresholds, owing to both types of errors. I then choose the threshold that minimizes the losses as the optimal threshold. If the loss is smaller than the secure loss – i.e. if (θ) is larger than zero – the indicator is considered as being useful for predicting crises. The larger the utility, the better the indicator.

In this paper it is assumed the politicians have same preferences for avoiding type I and type II errors ($\theta = 0.5$). This means that the utility as calculated by equation (1) can take values between -0.5 and +0.5. Only indicators with utilities above zero have a use in predicting a crisis.

¹¹ See Knedlik & Von Schweinitz (2012).

¹² A detailed analysis of political preferences in early warning systems is presented in Knedlik (2014).

their signals. The literature uses different crisis windows; most common windows in early warning systems span from 12 months to 24 months.¹³ The idea behind the scoreboard of the European Union is that once signals have been sent, politicians in member states should react accordingly, to avoid the emergence of a crisis. Because of various time lags, as a result of the fact that data is not available immediately and that politicians might need time to react, this paper chooses the longer end of that range. Thus, it is expected to receive crisis signals in the year of the outbreak of the crisis and in the two previous years.

The fourth and final step is to calculate individual crisis thresholds for each variable, which cuts tranquil periods from crisis periods. The difficulty lies in the problem that the threshold should neither be too high (and probably not detecting crises) nor too low (and probably creating a false alarm). The technical details of the optimization procedure are provided in Box 1. It shows that if the relative importance of the two potential errors of an early warning system to the involved politicians are known, then it is possible to derive a specific indicative threshold for each indicator variable. The thus derived thresholds can then be employed in the early warning system. However, the performance of the indicators using these thresholds might be different. The quality of the forecasting performance is measured in terms of utility, which can take values between -0.5 (very poor) and 0.5 (perfect forecast). Indicators with a utility of below zero should rather be ignored for forecasting purposes.

3 Data

The scoreboard consists of eleven indicators that are meant to indicate macroeconomic imbalances. The choice of the indicator variables emerged from political as well as academic debate. It has been driven by sometimes opposing targets. One example is that for reasons of transparency, the scoreboard was aimed at including as few as possible indicators. But for better results of the early warning systems it should include as many good indicators as available. This is particularly the case, because the characteristics of newly emerging crises might be different from those of past crises. For an overview of the debate and a contribution to it see Knedlik and Von Schweinitz (2013). In the present analysis I use the original annual scoreboard data provided by the European Commission. The sample period ranges from 1999 to 2013 (the latest available data for most of the indicators).

The first indicator is the current account balance. It is expressed as the three-year backward-looking moving

average of the ratio of the current account balance to GDP. The threshold defined by the European Commission is twosided. Thus, signals are sent if the realization of the current account balance to GDP ratio is below -4% or above +6% for all countries. The current account balance is probably the most obvious indicator for international macroeconomic imbalances. Continued deficits might indicate a loss of international competitiveness and therefore a risk for crises. Longer lasting surpluses do not constitute risks for the surplus country, but rather for the rest of the countries.

The second indicator is the international investment position, which accumulates current account balances over time. It indicates whether the short term current account imbalances are levelled over time or accumulate to larger foreign indebtedness. Also this indicator is expressed as ratio to GDP. The threshold is set at -35% for all countries. Thus, if the international investment position is less than -35% of GDP, the indicator is sending a signal.

The third variable is the change in the export market share. If a country loses more than 6% of its share in export markets, a signal is sent. That threshold is given by the European Commission for all countries. Also, this variable addresses issues of competitiveness. It only takes the export side of the current account and compares it to the international competitors. Thus it is focused on the balance sheet total instead of its balance.

The fourth indicator is nominal unit labour costs. The European Commission uses the percentage change of nominal unit labour costs over three years. While the above described indicators can be interpreted as results of losing or gaining competitiveness, unit labour costs can be seen as one cause of the changing competitiveness of economies. Unit labour costs do not only measure changes in wages but combine changes in wages with changes in productivity. If wages increase by more than productivity, unit labour costs increase. If wage increases are less than productivity increases unit labour costs decline. Thus, with this indicator, the threshold depends on belonging to the eurozone. For euro countries, the threshold is 9%. For non-euro countries a signal is sent if the unit labour costs increase by more than 12% over that period of time.

The fifth indicator is the real effective exchange rate. The Commission uses the percentage change of the real effective exchange rate, based on consumer prices over 3 years and a basket of 41 other currencies. A change in the real effective

¹³ See for example Brüggemann & Linne (2002: 9) and Kaminsky, Lizondo & Reinhart (1998: 17), respectively.

exchange rate therefore indicates a change in relative consumer prices. It is, as well as the unit labour costs, an indicator of a potential cause of changes in competitiveness. If domestic prices increase relative to foreign prices by more than what a change in the nominal exchange rate compensates for, a country faces a real appreciation. This means that it might face difficulties in selling domestic goods on international markets. Also with this indicator, the European Commission differentiates between euro countries and non-euro countries, and the threshold is two-sided. So the threshold for eurozone countries is -/+5%. For non-euro countries a signal is sent if the change of the real effective exchange rate is smaller than -11% or larger than +11%.

The sixth indicator is private sector debt, which is expressed as a ratio to GDP. The official threshold for all countries is 133%. If the level of private debt exceeds this threshold a signal is sent. With this sixth indicator the scoreboard turns towards domestic imbalances in the European economies. Private sector debt comprises the debt of the private sector excluding banks. The time before the crisis reveals a large increase in private debt, which indicates increased vulnerability to banking crises and might signal the potential for fuelling asset price bubbles.

The seventh indicator is the flow of credit to the private sector. Thus, it is the flow component to the stock of private sector debt (the sixth indicator). This might indicate creditfuelled asset price bubbles or vulnerabilities, and is expressed as a ratio to GDP. If credit to the private sector exceeds 15% of GDP the indicator sends a signal. The threshold is applicable for all countries.

The eighth indicator is house prices, and measures the percentage change of house prices over the previous year relative to the consumption deflator. The threshold is the same for all countries. If the relative increase in house prices is above 6%, the indicator sends a signal. The house price indicator is included in the scoreboard, because house prices have been observed to increase in some countries, namely Spain and Ireland, before the crisis. The reversal of asset price bubbles in the property sector leads to credit defaults that contributed to the banking crises.

The ninth indicator is general government sector debt. It follows the definition of the Maastricht criterion and is expressed in relation to GDP. If public debt is above 60% of GDP, a signal is sent. Again, that threshold is used for all countries. The public debt indicator is the only one

that has also been used before the debt crises in Europe, but with limited success. While the scoreboard approach aims explicitly to have a wider view of imbalances, the most important indicator of fiscal imbalances is still included.

The tenth indicator is the unemployment rate. The European Commission uses a three-year backward-looking moving average. The universal threshold for all countries is 10%. The unemployment rate is meant to reflect the efficiency and flexibility of economies to use their scarce resources in the production process. Thus, persistently high levels of unemployment might indicate a limited ability to adjust to economic developments.

The eleventh and most recently introduced indicator is that of financial sector liabilities. The financial sector was largely ignored by the original scoreboard, even though that the financial sector was at the root of the current crises in many European countries. If the financial sector expands very quickly that might indicate that the banking sector is taking excessive risks, which might accumulate the vulnerability of that sector to economic shocks. If the liabilities of the financial sector increase by more than 16.5% a signal is sent. The threshold is the same for all countries of the European Union.

To calibrate the early warning system as described above, one needs to define a binary dependent variable. To this end, I calculate government bond spreads by subtracting ten-year government bond rates for triple-A rated government bonds in the eurozone from ten-year government bond rates in the respective countries. A crisis or fiscal stress is present if the spread exceeds the mean of all spreads by more than one standard deviation. Following this definition, fiscal stress has been present in Bulgaria (1999, 2009), Estonia (1999–2002, 2008–2009), Ireland (2011–20012), Greece (2010 to present), Spain (2012), Italy (2012), Hungary (since 2004, except for 2007), Poland (2001), Portugal (2011–2013), Romania (2005–2012, except for 2007), Slovenia (2002, 2012–2013), Cyprus (2012 to present), Latvia (2009–2010), Lithuania (2009).

I construct early warning systems based on four groups of countries. First, I use the full sample including all European Union members. Second, I subdivide the countries into euro and non-euro countries, as done in the scoreboard. Finally, I look at Middle and Eastern European countries (MEEC, including Bulgaria, Czech Republic, Estonia (up to 2010), Latvia, Lithuania, Hungary, Poland, Romania, Slovenia (up to 2006), and Slovakia (up to 2008)) individually.

4 Results

The results for the individual indicators are presented in Figures 1-11 below. Figures 12-16 compare the performance of indicators in the different country groups. All figures report the utility of indicators. As mentioned above, a positive utility shows that the indicator could provide some use for forecasting purposes. The higher the utility (the maximum value is 0.5), the better the forecasting performance. It can be seen that some indicators perform relatively well over all country groups, while others perform relatively poorly. It can also be seen that some indicators are more suitable for certain country groups but less so for others. The figures also provide information about whether an adjustment of thresholds (labelled 'at optimum'), using the above described optimization technique, can improve the forecasting performance, or whether the thresholds (labelled 'at official') used by the European Commission already lead to maximum utility. If an adjustment of thresholds would increase utility the optimal level of thresholds is provided in the text above the respective figures.

Figure 1 shows that the two-sided current account balance indicator yields positive utility for all country groups. Thus, it is a valuable indicator in the early warning system. However, the indicator performs best for non-euro countries. From Figure 1 it can also be read that utility could be increased for all country groups by adjusting the threshold. For all considered country groups the threshold should be relaxed to -6/+9% if, for any reason, an upper threshold for the current account is needed. In the present sample there is no single case in which a current account balance of above 6% would have signalled a crisis. Relaxing the threshold would lead to fewer false alarms of the indicator.

The second indicator, the international investment position (see Figure 2) yields even higher utilities over all country



groups as compared to the current account balance. Again, utility could be increased if the threshold is relaxed to avoid signals that are not followed by a crisis. This holds true for all country groups (EU: 40%, MEEC: 50%, non-euro: 50%) except for the eurozone where a tighter threshold of 20% would be optimal for forecasting fiscal stress.

One of the rather poor performing indicators of the scoreboard is the real effective exchange rate (see Figure 3). The utility of the indicator is negative at the official threshold for all groups of countries. Also an adjustment of thresholds does not prevent a very poor performance. It seems that real effective exchange rates are not good indicators of fiscal stress. One explanation is that the real effective exchange rate is driven largely by the nominal exchange rate of the euro and other major currencies, which move in the same direction for all of the countries considered. Thus, changes in real effective exchange rates are quite similar among all countries, independent of whether they are facing a crisis soon or not.

FIGURE 2 UTILITY OF INTERNATIONAL INVESTMENT POSITION AS EARLY WARNING INDICATOR



FIGURE 3 UTILITY OF REAL EFFECTIVE EXCHANGE RATE AS EARLY WARNING INDICATOR



The fourth indicator of the loss of export market shares is only an important early warning indicator for fiscal stress for the eurozone countries (see Figure 4), where it should be relaxed to 7% to increase utility. For all other groups its usefulness is very limited. One reason for this finding is that the emerging economies of the Middle and Eastern European countries also increased their export shares continuously before crises. Thus even slight drops in export market share (2%) already indicates a risk of crisis, but only does so rather poorly.

The nominal unit labour cost indicator (see Figure 5) is one of the better indicators for all country groups. Also the threshold for non-euro countries seems to be quite appropriate (it should be relaxed to 18% for Middle and Eastern European countries). For the eurozone the indicator is one of a few where the threshold should be tightened (to 7%), in order to increase the usefulness of the indicator. The house price indicator (see Figure 6) performs poorly over all country groups. The aim of capturing asset price developments as an early indicator seems quite appropriate when considering developments — e.g. in Spain or Ireland — before the crisis. However, the indicator sends signals if house prices increase greatly. Usually, fiscal stress follows a bursting of asset price bubbles with some delay. In the case of the current debt crises in Europe, house prices started to fall more than two years before the debt crises. This means that house price increases might be a good, *very* early indicator, but within a two-year crisis window they have very limited use. A positive utility can be reached by relaxing the threshold substantially (to 17%) for all country groups.

Private sector credit flows (see Figure 7) also perform poor as early warning indicator, particularly with the official thresholds. Some positive utility can be reached by relaxing the threshold substantially for eurozone countries or the EU



FIGURE 6 UTILITY OF HOUSE PRICES AS EARLY WARNING INDICATOR







FIGURE 7 UTILITY OF PRIVATE SECTOR CREDIT FLOWS AS EARLY WARNING INDICATOR



as such to 22%, or by tightening the threshold for non-euro countries to 10%. The different optimal thresholds indicate that different threshold levels should be used for different country groups.

The level of private sector debt (see Figure 8) provides a mixed picture regarding its forecasting performance for fiscal stress. While it has significant positive utility for specific groups (eurozone countries and Middle and Eastern European countries) with adopted thresholds (euro: 180%, MEEC: 100%) it performs poorly with heterogeneous country groups such as non-euro countries or the Union as a whole. This indicator exemplifies the need for more specific thresholds. While for the mature countries of the eurozone a level of private sector debt at the official threshold is quite normal, it would be an unsustainable level for the emerging countries of Middle and Eastern Europe.

Public sector debt (see Figure 9) has its relevance as an early indicator to signal fiscal stress in all country groups, but more







so in the eurozone. For non-euro countries, the level of debt is generally lower. The officially chosen threshold of 60% is only optimal for Middle and Eastern European countries. For all other country groups, the utility of the indicator could be increased by relaxing the threshold to 70%.

The unemployment indicator (see Figure 10) is an important indicator for the eurozone and for that reason also for the whole Union to some extent. To increase its forecasting performance, the threshold should be tightened to 7% for the eurozone countries. Thus, already moderately high unemployment rates should raise awareness of the risks of fiscal stress. The indicator performs poorly in Middle and Eastern European countries, which impacts negatively on its overall performance.

Financial sector liabilities (see Figure 11) do not contribute to proper crisis forecasts in the eurozone or the European Union, although they have some predictive power for non-euro countries. For Middle and Eastern European

FIGURE 10 UTILITY OF UNEMPLOYMENT RATE AS EARLY WARNING INDICATOR







countries the utility of the indicator could be increased substantially by relaxing the threshold substantially by 26%. The indicator illustrates that some measures of macroeconomic imbalances are more useful in some of the country groups.

A look at individual indicators reveals that some scoreboard indicators perform rather well in all country groups and some perform poorly. However, there are also indicators that perform well in one subgroup but not in another.

This finding can also be illustrated by taking a look at the indicator performance per country group, as shown in Figures 12–15. The group of good indicators for all countries comprises mainly the two foreign trade indicators: the current account balance; and the international investment position. Indicators that perform rather poorly in all of the

subgroups are home prices, real effective exchange rates, private credit flows and financial sector liabilities. The latter might be dropped from the scoreboard. Among the remaining indicators are unit labour costs that perform excellently in Middle and Eastern European countries but poorly in the eurozone; public sector debt, which is a very important indicator for the eurozone but not for the rest of the European Union; the unemployment rate, which performs rather well in the eurozone but poorly in Middle and Eastern European countries; and also export market share works well for the eurozone but not for Middle and Eastern European countries. The private sector debt indicator is a good predictor of fiscal stress in eurozone countries and in Middle and Eastern European countries, but at largely different thresholds. Thus the indicator works poorly in the heterogeneous country groups of non-euro countries or the whole European Union.











The finding that indicators work in general better if the group of countries for which the early warning system is constructed is more homogeneously is illustrated in Figure 16. The figure shows the average utility of the five best performing indicators for each country group. It becomes clear that larger groups, which include countries at very different states of economic development and industrial structure, perform worse than early warning systems tailored to more homogeneous groups.



5 Conclusions

The results of the analysis show that, as expected, more homogeneous country groups lead to better forecasts of debt crises. Being aware of political difficulties in implementing different thresholds for different groups of countries within the European Union, it has to be acknowledged that the scoreboard of the Macroeconomic Imbalances Procedure already accounts for differences, by allowing for different thresholds for two of the eleven indicators for euro and noneuro countries. While this has some use with regard to the nominal unit labour costs, it is of limited use for the real effective exchange rate, which is a poor indicator anyway. The European Commission might consider forming different country groups and introducing different thresholds for the indicators. The nomination of the currency seems to be less relevant for signalling debt crises than the general state of development and the industrial structure of the economies. It is therefore not plausible to have the same thresholds for heterogeneous countries such as the United Kingdom, Slovakia and Sweden.

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