Abstract: This note focuses on the behaviour of portfolio flows and basic financial indicators before and after the acquisition of the second “Investment Grade” (IG) by analysing all relevant cases in the period between 1990 and 2012. Results reveal that portfolio flows into bond and equity markets accelerate prior to the second IG and lose steam afterwards. However, portfolio flows into bond markets tend to reaccelerate in longer-terms. Stock markets perform well above the reference groups’ through the pre-IG period. Meanwhile, reduction in CDS premiums continues even after the second IG, albeit at a lower speed. There also exists some evidence that local bond yields portray a downward trend before and after the second IG. Domestic currency appreciates significantly with respect to the reference group before and after the second IG.


Introduction:

Turkey’s long-term foreign currency credit rating has been upgraded to “investment grade” (IG) by Fitch Ratings in November of 2012 which could be reckoned as an overdue appraisal of the impressive improvement in the Turkish economy that had already been reflected in financial
indicators. Although Turkey has been practically upgraded to IG by financial investors, official upgrade still matters since many of long-term funds such as institutional funds, sovereign wealth funds and global investment indices require at least two IGs from leading agencies to include a country in their investment territory. In that sense, analysing the dynamics related to the second IG will be useful both from the market and policy perspectives. This note aims at shedding some light on the patterns of capital flows and some prominent financial indicators before and after the acquisition of the second IG for all cases in the period between 1990 and 2012.

A recent companion paper by Kanlı and Barlas (2011) analyses how selected financial and macroeconomic indicators behave before and after the first IG upgrade. Reader is recommended to go through this paper as a complement to this note since most of the findings of Kanlı and Barlas (2011) on long-term patterns for selected macro variables apply to the second IG as well which is the natural consequence of relatively short span of time between the first and second IGs in most of the cases. As seen in Figure 1, time period between first and second upgrades has a mean of 10.9 months. Since Kanlı and Barlas (2011) already present an analysis on how the second IG is transmitted to the economy, this note focuses solely on financial markets and intends to contribute to answering following questions:

1- How do portfolio flows into bond and equity markets evolve in periods before and after the second IG grade both in “absolute” and “relative” terms?

2- How do financial variables, such as currency, stock indices, risk premiums, local rates perform and implied volatility of currency, in the same period again in “absolute” and “relative” terms?

Results reveal that portfolio flows into bond and equity markets accelerate prior to the second IG, being followed by loss of steam after the announcement of the second IG. The slowdown is more pronounced in flows into bond markets. A striking finding is the statistically significant reacceleration of “absolute” and “relative” flows into bond market in longer-terms. Strong flows are accompanied by “relative” overperformance in stock exchange indices through the pre-IG...
period; however, markedly favourable performances disappear gradually afterwards. Meanwhile, consistent and statistically significant reduction in CDS premiums is observed spanning in two years before the upgrade. More interestingly, this pattern in risk premiums continues for some time after the upgrade, albeit at a much lower speed. Although two-year local yields are found to be declining before and after the upgrade in four of the five countries with available data, limited number of cases prevents us from making certain inferences regarding local rates. In line with these findings, domestic currencies overperform their peers significantly. Relative appreciation trend prior to the upgrade prevails also in the aftermath of the upgrade.

The stimulating impact of the second IG both on portfolio flows and financial prices is deemed to wane in the long run. However, the reduction in sensitivity to shocks and volatility of financial markets is expected to be permanent since those funds that become able to invest in the country with the second IG are presumed to make longer-term investments that are relatively insensitive to transitory shocks. Results reveal that the declines in "relative" implied volatilities of currencies starting before the second IG do prevail afterwards. Additionally, analysis present some evidence that, for recent cases, peer group elasticity of the currency and stock index is lower in the period after the second IG than the previous five years.

1. Credit Ratings and Cases Included in the Analysis:

There are 43 cases of "having the second IG" in the period between 1990 and 2012, 32 of which are listed in Table 1 and used in the analysis. Please note that the phrase "having the second IG" is used consciously instead of "having the second upgrade to IG". A country might attain the second IG either by being upgraded from a lower rating or being taken under coverage with an initial rating of IG by a rating agency. Both types of cases where a country is either upgraded to IG or taken under coverage by an agency with the initial rating in the Lower Medium Grade (BBB+, BBB or BBB- for S&P and Fitch; Baa3, Baa2 or Baa1 for Moody's) are included in this note.

The motivation behind such a selection of cases is that the main impact of the second IG would be by means of expansion of the investor base, which in turn could put countries on the radar of additional long-term funds. Additionally, features of countries such as exchange rate regime, depth of financial markets, and degree of financial liberalization are taken into account in the construction of samples for analysis.

1 Cases of Egypt (August, 1997), Qatar (September, 1999), Oman (July, 1999), Tunisia (April, 1997), Bahrain (July, 2002), Morocco (March 2010), Aruba (May, 2008), Trinidad and Tobago (April, 2000), Barbados (February, 2000) and Namibia (September, 2011) are neither listed in Table 2 nor included in the analysis due to unavailability of data or qualifications of their financial markets. Additionally, upgrades of countries classified as "developed" are not included in any part of the analysis, either.

2 Please see Kanik and Barlas (2012) for a detailed exposition of the scaling of the leading rating agencies.
### Methodology:

In this note, a two-stage methodology is adopted in order to analyse trends in selected financial indicators before and after having the second IG. First, the aggregated courses for selected indicators are presented. Second, the significance of trends and shifts in trends of aggregated data is tested by means of non-parametric Wilcoxon Signed Rank test. Above said, statistical test results regarding “relative” trends are presented in Table A in the Appendix, while tests regarding “absolute” trends are addressed in the essay occasionally. At this point, it is crucial to emphasize that aggregate patterns of the variables and results of statistical tests regarding the significance of trends should be interpreted jointly.

The analysis focuses both on “absolute” and “relative” trends with respect to a reference group of countries. The reference group is selected according to geographic region for each case. Criteria such as size and financial openness of economies and exchange rate regime are also taken into account for the choice of reference countries. Focusing on “relative” patterns allows extracting the impact of global risk appetite, a dominant driver of financial markets, from patterns

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2 The Wilcoxon signed-rank test is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample in cases where sample size is limited or the distribution can not be assumed to be normal. See Wilcoxon (1945) and Siegel (1956) for the detail description.

3 Emerging markets in America, Central and Eastern Europe (plus Russia and South Africa), Asia and Middle East constitute the four reference groups.
of the financial variables of upgraded countries. Aggregated “relative” patterns of financial indicators could be depicted with the notation below:

\[ X_t = \frac{\sum_{i=1}^{N} (x_i^t - G_i^t)}{N} \]  \hspace{1cm} (1)

Here, \( X_t \) represents the aggregate value of the financial variable under scope, \( x_i^t \) the value of the variable for country \( i \) and \( G_i^t \) is the average of countries in the reference group of country \( i \) at time \( t \). \( N \) is the number of upgrade cases used in the calculation of the variable \( X_t \). While the expression in the numerator of equation (1) shows how much a financial variable of a country diverges from the average of the reference group, \( X_t \) is the average of divergences of countries which attained the second to IG.\(^5\)

Unlike “price-type” financial variables (e.g. exchange rate, CDS rate, stock index), “relative” portfolio flows is a quantity-type variable which could be affected by country or market specific features such as depth of financial markets, capitalization volume of stock and bond markets etc. For example, “relative” portfolio flows into the bond market of a country with very low sovereign debt to GDP ratio would be limited regardless of whether it obtained the second IG or not, since total volume of its bond market would be low. As another example, a country with a negative “relative” portfolio flow at time \( t \) does not necessarily mean that it is underperforming in terms of attracting portfolios if her relative performance is consistently negative.\(^6\)

To account for the fact mentioned above, “relative” portfolio flows into a country at a specific time should be compared with its historical tendency. Subtracting a constant, long-term mean, from “relative” portfolio inflows would enable us to assess the probable impact of the second IG on the trend of “relative” inflows. In this context, aggregated “relative” pattern of a financial variable with respect to its long-term average turns out to be as below:

\[ X_t = \frac{\sum_{i=1}^{N} (x_i^t - G_i^t) - \sum_{q=1}^{T} (x_q^t - G_q^t))}{N} \]  \hspace{1cm} (2)

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\(^5\) For example, Brazil reached the second IG just a couple of months before the onset of the global financial crisis in 2008. Massive portfolio outflows followed the upgrade in nominal terms. However, portfolio flows out of Brazil were markedly limited in that period with respect to other emerging markets in Latin America (“relative” portfolio performance”).

\(^6\) Israel is a perfect-fit for this case. Portfolio flows into bond markets in Israel as a percentage of GDP used to hover consistently and remarkably below the average of its peer countries. However, prior to the second IG, relative inflows accelerated drastically, climbing to a level just above zero.
The expression in the first parenthesis in the numerator of equation (2) represents the relative performance of country \(i\) for the variable \(X_i\) and the expression in the second parenthesis depicts the ten year average of the relative performance of that country.

2. Results

Second IG is expected to have a boosting effect on portfolio flows, dominantly into bond and equity markets. However, reflections of the second IG on these markets could differ significantly. For this reason, the analysis for the portfolio flows into bond and equity markets are conducted separately.

Figure 2a and 2b depict patterns of average quarterly “absolute” and “relative” portfolio flows into bond market (as percentage of GDP) for fourteen quarters before and after the quarter second IG is attained, respectively. Note that “relative” portfolio flows are adjusted for their long-term average. As exhibited in figures, “absolute” and “relative” flows accelerate on average and statistically significantly prior to the IG as presented in Table A in the Appendix. Overperformance before the IG might be reflecting market expectations of the second IG. At this point, one might argue that pre-upgrade inflows might also be a result of all factors which eventually led to the upgrade. However, as mentioned previously, this note does not explicitly assert a causality relationship between trends and upgrades.

Before going further, a crucial issue to emphasize is that the period before the second IG includes the acquisition of the first IG in many of the cases, implying that the patterns before the second IG could in part be affected by the first IG. In other words, the impact of the second IG might be coinciding with that of the first IG as we go further back in the pre-upgrade period.

Strong pre-upgrade pattern is followed by loss of steam in portfolio flows into bond markets. Although capital outflows are observed in significant portion of the cases in this period, mean-adjusted “relative” portfolio flows into bond markets do not statistically differ from zero. Such a deceleration might result from a decline in local rates giving rise to loss of foreigners’ appetite for local bonds in the short term. A striking finding is the statistically significant (with a p-value of 0.07) reacceleration of both “absolute” and “relative” flows in longer-terms. This observation is important in the sense that it could be pointing to an alteration in demand for local bonds by long-term funds such as institutional funds (like pension funds), sovereign wealth funds and global investment indices. The persistence of strong flows into bond markets through the long-term horizon reinforces this argument.

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7 The period is intended to be taken as long as possible. However sample size declines considerably for periods more than fourteen quarters before and after the upgrade. That’s why, the analysis period is taken as fourteen quarters before and after the upgrade.

8 The analysis is also conducted by including countries’ data only for the period between the first and second IGs. However, the patterns and statistical analysis becomes highly unreliable as number of observations reduces dramatically. Anecdotally, results do not change with limited sample size.
As for bond markets, strong and statistically significant portfolio flows into equity markets start way before the second IG and diminish thereafter as seen in Figures 3a and 3b. Figure 3b depicts that for longer terms in the post upgrade period, “relative” portfolio flows remain below their long-term average, mainly stemming from strong “relative” portfolio flows which increase the long-term averages of these flows. On the other hand, this pattern found to be statistically insignificant (See Table A in the Appendix for statistical test results).
Strong flows into equity markets through the pre-upgrade period take their tolls on stock exchange indices and stock indices of upgraded countries perform well above the reference groups’ (Figure 4). However, markedly favourable performances of stock indices statistically disappear with the second IG.

In line with equity performance, consistent and statistically significant reduction in CDS premiums is observed spanning in two years before the upgrade. This could actually be taken as an indication of the pricing of the improvement in risk perceptions that eventually lead to the upgrades. More interestingly, stable and statistically significant improvement in risk premiums continues in the four quarters after the upgrade, albeit at a much lower speed.

Expansion of the investor base and reduced riskiness as a result of the second IG are expected to be reflected in local treasury yields as well. However, unavailability of data for government bond yields at fixed terms prevents us from making strong inferences on the impact of the second IG on local yields. Bloomberg provides generic government rates for a number of countries. Figure 6a and 6b designate changes in 2 year government generic bond rates in the
periods between the eighth quarter before the upgrade, the quarter second IG is obtained and the
eighth quarter after the upgrade. As seen in figures, local yields decline in both periods except for
India. However, one must refrain from deducting certain conclusions as figures cover only five
cases.

Finally, in line with the results presented above, currencies overperform their peers
significantly. Relative appreciation prior to the second IG continues also in the aftermath of the
upgrade (Figure 7). Findings are also consistent with the ones obtained by the econometric
method which is presented in section A1 in the Appendix. At this point, it is worth to mention that
capital flows not only in the form of portfolio investment but also in the form of credit exert upside
pressure on domestic currencies as explained in detail by Kanlı and Barlas (2011).

As mentioned above, past experiences suggest that being a “real” IG country facilitates capital
inflows in the form of portfolio investments and this in turn reflects in financial variables. However,
in the long-run, IG would be beneficial for a country only if it contributes to the stability and
resilience of financial markets. In this sense, the second IG could reduce volatility of financial
variables and sensitivity of financial markets to shocks as those funds that become able to invest in the upgraded country are deemed to make longer-term investments that are relatively insensitive to transitory shocks.

In this respect, exchange rate could be used for examining whether the upgrade is effective on “relative” stability of the domestic currency with respect to its peers. Figure 8a shows average two-year relative implied volatilities of currencies of upgraded countries before and after the second IG. On the other side, Figure 8b represents the patterns that “relative” implied volatilities pursue through time. As seen in both of the figures, implied volatilities of currencies decline remarkably with respect to other emerging market currencies except for Indian Rupee. Downward trend starts before the upgrade but prevails afterwards as well. Unfortunately, data unavailability constrains the analysis only to countries the below figures contain.

![Figure 8a](image1)

**Figure 8a.** “Relative” Two Year Implied Volatilities* of Currencies of Selected Countries (percentage points)**

* Average of the difference between two years implied volatilities of currencies of upgraded countries and the average of implied volatilities of other emerging currencies.
** Obtained from options written on currencies against US dollar.
Source: Bloomberg, author’s calculations

![Figure 8b](image2)

**Figure 8b.** Trends Two Year “Relative” Implied Volatilities Follow (percentage points)

Finally, Figure 9a and 9b depict peer group elasticities of currencies and stock indices of countries that obtained the second IG in the last five years. Elasticities are estimated to be lower in the period after the second IG with respect to the previous five years which provides some suggestive evidence regarding the impact of the second IG on the stability of financial variables.

![Figure 9a](image3)

**Figure 9a.** Peer Group Elasticities of Currencies*

* Estimated values of βs in the equation ln(yt) = α + β * ln(xt) + εt, where yt is the currency under scope and xt is the average of currencies in the peer group.
Source: Bloomberg, author’s calculations

![Figure 9b](image4)

**Figure 9b.** Peer Group Elasticities of Stock Indices **

** Estimated values of βs in the equation ln(yt) = α + β * ln(xt) + εt, where yt is the stock index under scope and xt is the average of stock indices in the peer group.
Source: Bloomberg, author’s calculations
3. Conclusions

This note focuses on the behaviour of portfolio flows and basic financial indicators before and after the acquisition of the second IG by analysing all relevant cases in the period between 1990 and 2012. Results reveal that portfolio flows into bond and equity markets accelerate prior to the second IG, being followed by loss of steam after the acquisition of the second IG. A striking finding is the statistically significant reacceleration of “absolute” and “relative” inflows in longer-terms. Strong flows are accompanied by “relative” overperformance in stock exchange indices through the pre-IG period; however, markedly favourable performances disappear gradually afterwards. Meanwhile, consistent and statistically significant reduction in CDS premiums is observed spanning in two years before the upgrade. More interestingly, this pattern in risk premiums continues for some time after the upgrade, albeit at a much lower speed. In line with these findings, domestic currencies overperform their peers significantly. Relative appreciation trend prior to the upgrade prevails also in the aftermath of the upgrade.

Results also present some evidence that implied volatilities of currencies decline with respect to other emerging market currencies. Downward trend starts before the upgrade but prevails afterwards as well. Finally, sensitivity of currencies and stock indices to their peer groups is estimated to be lower in the period after the second IG with respect to the previous five years, which lends some suggestive evidence to the view that the second IG contributes to the stability of financial variables.

References:


Appendix

A1. An Alternative Approach To Obtain “Risk Appetite Adjusted” Performances:

An econometric approach to adjust changes in financial indicators is to estimate the regression below and compare $\varepsilon_1$'s obtained from regressions for countries:

$$pchX_i = c + \alpha vix_i + \beta pchvix_i + \varepsilon_i$$

Here, $pchX_i$ represents the quarterly percentage change in the financial variable $X_i$ (currency, risk premium or stock index) for country $i$, $vix_i$ is the average level of VIX index, which is a popular indicator for global risk appetite, in quarter $t$ and $pchvix_i$ is the percentage change in VIX index. The equation assumes that both level of and change in global risk appetite is impactful on emerging economies' financial variables. In this context, $\varepsilon_i$ in the equation gives the risk appetite adjusted part of the quarterly percentage change in the variable under scope. Figures A, B and C depict the trends $\varepsilon_1$'s follow before and after the second IG, for stock indices, risk premiums and currencies, respectively.

* Average of $\varepsilon_1$s in equation (3) estimated for stock indices.
  Source: Bloomberg, author’s calculations

* Average of $\varepsilon_1$s in equation (2) estimated for CDS premiums.
  Source: Bloomberg, author’s calculations
Table A. Results of Hypothesis Testing Using Wilcoxon Signed-Rank Tests

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Number of observations</th>
<th>Number of obs.</th>
<th>Ho does not hold</th>
<th>P value</th>
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<tr>
<td>H0: Relative quarterly portfolio investment in bond market/GDP ratio of in the eight quarters prior to the upgrade is equal to the historical average</td>
<td>22</td>
<td>15</td>
<td>0.05</td>
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<tr>
<td>H1: Relative quarterly portfolio investment in bond market/GDP ratio of in the eight quarters prior to the upgrade is greater than the historical average</td>
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<tr>
<td>H0: Relative quarterly portfolio investment in bond market/GDP ratio of in the four quarters after the upgrade is equal to the historical average</td>
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<td>9</td>
<td>0.27</td>
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<td>H1: Relative quarterly portfolio investment in bond market/GDP ratio of in the eight quarters prior to the upgrade is greater than the historical average</td>
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<tr>
<td>H0: Relative quarterly portfolio investment in bond market/GDP ratio of in the period between q+5 and q+16 is equal to the historical average</td>
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<td>17</td>
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<td>H1: Relative quarterly portfolio investment in bond market/GDP ratio of in the period between q+5 and q+16 is greater than the historical average</td>
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<td>H0: Relative quarterly portfolio investment in equity market/GDP ratio of in the eight quarters prior to the upgrade is equal to the historical average</td>
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<td>H0: Relative quarterly portfolio investment in equity market/GDP ratio of in the four quarters after the upgrade is equal to the historical average</td>
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<td>H0: Relative quarterly portfolio investment in equity market/GDP ratio of in the period between q+5 and q+16 is equal to the historical average</td>
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<td>H0: Relative CDS premium change of in the period between q-8 and q-5 is equal to zero</td>
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<td>H1: Relative CDS premium change of in the four quarters prior to the upgrade is less than zero</td>
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<td>H0: Relative appreciation in the currency of in the eight quarters prior to the upgrade is equal to zero</td>
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