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Basel II and Emerging Markets: The Case for Incorporating the Benefits of International Diversification¹

Introduction

The expressed purpose of the proposed new Basel Capital Accord is to accurately align regulatory capital with the risks that international banks face. However, as we demonstrate here, the failure of the Basel Committee to take account of the benefits of international diversification in their work to date suggests that, in this instance at least, risk will not be correctly measured. This suggests that the capital requirements associated with lending to emerging market borrowers, in the context of an internationally diversified portfolio, may overestimate the risks inherent in such lending.

The route that the Committee have chosen to follow is to largely rely on banks' assessment and categorisation of borrowers into various risk bands, with capital requirements varying significantly depending on the band to which the borrower is assigned. In consequence, the effect of the new Accord should be – at least in theory – to bring regulatory capital into line with existing best practice, thereby removing the distorting incentives that have come to be recognised in the existing Accord.

Two issues seem pertinent here. First, will the proposals contained in the new Accord genuinely align regulatory capital with the current best practice of the major banks? Secondly, are these banks accurately measuring risk anyway? This second question remains open, but grave reservations have been expressed on this point – particularly in relation to pro-cyclicality - from a variety of viewpoints. (See Goodhart, [2001], Persaud [2002] and Griffith-Jones, Spratt and Segoviano [2001], for example). These reservations have been acknowledged by the Basel Committee, but it remains to be seen if these concerns will be adequately addressed in the final proposals.

Whilst we clearly share these concerns, the evidence we present here deals with the first question, and it is on this important issue that we concentrate here.

I. International Diversification

It has long been argued that one of the major benefits of investing in developing and emerging economies is their relatively low correlation with mature markets. As we show below this is clearly the case and, consequently, clear benefits – at the portfolio level – would accrue to banks with well-diversified international portfolios. That is, a bank with a loan portfolio that is distributed widely across a range of relatively uncorrelated markets, is less likely to face simultaneous problems in all of those markets, than a bank with loans concentrated in a smaller number of relatively correlated markets. Therefore, in order to accurately align regulatory capital with the

¹ A longer version of this paper is available at <http://www.ids.ac.uk/intfinance/>

actual risks a bank might face, the Accord should take account of this portfolio level effect: the capital requirements for a bank with a well diversified international loan portfolio should reflect the lower total risk than a more concentrated portfolio. At present the proposals contain no such considerations, suggesting that, in this area at least, capital requirements may not accurately reflect actual risk.

The argument that asset correlation is variable is self-evident. Furthermore, the suggestion that this variability impacts upon the level of risk in an overall portfolio, and should therefore be reflected in capital requirements, would also seem to have force. Indeed, the Committee has recognised this fact with the modifications they have already made with respect to SME lending. Following the release of the original consultative document in January 2001, there was widespread concern that lending to SMEs would be adversely affected by a large increase in the capital requirements associated with such lending. After intensive lobbying the Basel Committee reconsidered the issue, and agreed that the treatment of SMEs should be separated from other corporate lending, with borrowers with less and Euro 50 million in annual sales receiving an average reduction in capital requirements of about ten percent relative to larger corporates. The rationale for this modification is that the chance of a large number of SMEs defaulting simultaneously is lower than for a smaller group of large borrowers. That is, the correlation between probability of default is lower. Consequently, a loan portfolio that is well diversified across a large number of SMEs, will face lower overall risk at the portfolio level, than one focused on a few, larger borrowers.

The results of our empirical work suggest strongly that a similar modification is justified with respect to international diversification.

II. The Case for Diversification Benefits

We have tested the argument of differential correlations between developed and developing markets, first with specific regard to international bank lending and profitability and, secondly, in a more general macroeconomic sense. All of our results offer significant support for the validity of this position, and all are statistically significant (see Annex 1 for details of the variables used and Annex 2 for details of the tests performed). The fact that the tests we have performed - using a variety of variables, over a range of time periods - all provide strong evidence in support of the diversification hypothesis, represents a compelling case.

In the case of spreads on syndicated bank loans, and adopting the reasonable assumption that they are indicative of the risk associated with such loans - and therefore a proxy for probability of default - it is clear that risks, as measured in this way, have had a greater tendency to rise and fall together *within* the developed regions than has been the case for the developed and developing regions. Over the sample period of 1993 to 2002, a bank with a loan portfolio that was well diversified across the major developed and developing regions, would have enjoyed diversification benefits at the portfolio level: the correlation between the risks associated with loans to each of these regions would have been lower than was the case for a bank with a loan portfolio which focused only on developed markets.

Similarly, the fact that the profitability of banks in developed markets are negatively correlated with those in developing markets, whilst the profitability of banks within developed markets are positively correlated, provides further support for the benefits of diversification. (Sample period, 1988-2001) Although there may be many factors affecting the level of profitability of a country's domestic banking system, it seems reasonable to assume that one of the more significant would be the incidence of non-performing loans (NPLs) in the domestic economy. More generally, the health and consequent profitability of the country's domestic economy must plausibly impact strongly upon the profitability of its banking sector.

The results from the macro variables, whilst more general, give some indication of the extent to which developed economies have tended to move in step with each other to a far greater extent than have developed and developing economies. If we plausibly assume that the incidence of NPLs in an economy is, at least partially, inversely related to the rate of GDP growth, then banks with an internationally diversified portfolio would be less likely to experience sharp increases in the incidence of NPLs in these markets simultaneously. Conversely, a bank that focused entirely on the – more highly correlated – mature markets would have a greater chance of experiencing such an outcome. Similar implications can be drawn if we take movements in short-term interest rates as a proxy for the business cycle – rising rates indicating the close of an upturn and vice versa. As with GDP growth, the fact that business cycles – and therefore movements in short-term interest rates – are more correlated between developed countries than between developed and developing countries, suggests that the incidence of NPLs and defaults are likely to be more correlated in the former than the latter.

For many market practitioners, movement in government bond prices and yields are seen as a strong indicator of both economic fundamentals and market views on the economic prospects of each country. The fact that developed country bond prices move in step to a far greater extent than do developed and developing country prices, suggests a closer correlation between both economic fundamentals in developed countries *and* market sentiment towards them. The evidence of lower correlation between developed and developing stock markets also supports this view.

III. Further Evidence

The results above clearly support the view that a bank's loan portfolio that is diversified internationally between developed *and* developing country borrowers would benefit in terms of lower overall portfolio risk, relative to one that focused exclusively on lending to developed countries. In order to test this more directly, a simulation exercise has been undertaken to assess the potential unexpected loss resulting from a portfolio diversified within developed countries, and one diversified across developed and developing regions. This exercise involves the construction of two simulated loan portfolios, with the purpose being to assess the probable level of unexpected loss in each portfolio. Thus, we can directly compare the simulated behaviour of the two portfolios.

The results of our simulation show that the unexpected losses for the portfolio focused on developed country borrowers are, on average, almost twenty-three percent higher than for the portfolio diversified across developed and developing countries.

Given that capital requirements are intended to deal with unexpected loss, the fact that the level of unexpected loss in our simulation is lower for a diversified than for an undiversified portfolio, suggests that – *in order to accurately reflect the actual risks that banks may face* – Basel II should take account of this effect. Taken together with the statistical work on correlations, this evidence suggests that, so as to not penalise emerging and developing economies by incorrectly measuring the risk associated with lending to such countries, the Basel Committee should closely examine the practicalities of incorporating the benefits of international diversification into the forthcoming final consultative paper.

V. Conclusion

The expressed purpose of the proposed new Basel Capital Accord is to better align regulatory capital with actual risk. This process, it is argued, will put bank lending on a sounder regulatory footing and remove the many distortions in the existing accord

However, as we have clearly demonstrated here, the failure of the proposals to date to take account of the benefits of international diversification suggests that, in this instance at least, risk is not being accurately measured. That is, by excluding the possibility that banks' capital requirements should take account of diversification effects, the proposals effectively impose an inaccurate measure of risk, at the portfolio level. At present, the most sophisticated banks often *do* take account of the benefits of diversification in their international lending decisions. The fact that the proposals under Basel II would not allow these diversification benefits to be taken into account, suggests that the regulatory capital associated with lending to developing and emerging countries would be *higher* than that which the banks would – and currently are – choosing to put aside on the basis of their own models.

The Basel Committee has already made a number of modifications to the Accord, in recognition of the impact that differential asset correlation can have on portfolio level risk. Our results strongly suggest that a similar modification is justified with respect to internationally diversified lending. The specific manner that the Committee might want to incorporate these findings is best left to them. However, given the changes already made to the proposals with respect to corporates and SME lending, as well as the fact that the changes we propose would seem to have at least as solid an empirical basis, there are no theoretical, empirical or practical reasons why changes should not be made to incorporate the benefits of international diversification.

Given the Committee's technical expertise and fair-mindedness, the fact that developing countries have no representation on the Committee itself, should surely not be a bar to this important change. A modification would not only be technically correct, but also supportive of the stated aims of G-7 governments to increase the role of private capital flows to developing and emerging economies, as an engine of growth and development.

Annex 1 - Data and Sources

Countries analysed:

Developing Countries: Argentina, Brazil, Chile, Ecuador, Mexico, Panama, Peru, Venezuela, Philippines, Korea, Malaysia, Thailand, Indonesia, Bulgaria, Poland, Russia, Nigeria, South Africa

Developed Countries: U.S. Japan, Germany, Spain, France, U.K. Italy, Canada

Others: Singapore, Ireland, Greece, Portugal, Finland

Variables analysed:

Table 1.

Grouping	Code	Description	Time Period	Freq	Source
Financial Sector	ROA	Return on Assets (banks)	1988-2001	Annual	<i>The Banker</i>
Financial Sector	ROC	Return on tier one capital (banks)	1988-2001	Annual	<i>The Banker</i>
Financial Sector	Syndicated	Syndicated Loans Spreads	93-02	Monthly	BIS
Bonds	GBI ²	Global Bond Index	87-02	Daily	JP Morgan/Reuters
Bonds	EMBI ³	Emerging Market Bond Index	87-02	Daily	JP Morgan/Reuters
Bonds	EMBI+ ⁴	Emerging Market Bond Index Plus.	87-02	Daily	JP Morgan/Reuters
Stocks	IFC G ⁵	S&P International Finance Corporation (Global)	90-02	Daily	IFC/S&P
Stocks	IFC I ⁶	S&P International Finance Corporation (Investable)	90-02	Daily	IFC/S&P
Stocks	COMP	Developed countries listed above: composite stock indexes	90-02	Daily	Reuters
Macro	GDP	GDP Growth Rate	85-00	Six-Monthly	IMF, World Bank (Author's own calculations)
Macro	GDP HP	Hodrick-Prescott decomposition of GDP	50-98	Annual	National Data (Author's own calculations)
Macro	STIR	Short term nominal interest rate	85-00	Six-Monthly	National data (BIS) or IMF, IFS
Macro	STIRR	Short term real interest rate	85-00	Six-Monthly	National data (BIS) or IMF, IFS

² The GBI consists of regularly traded, fixed-rate, domestic government bonds. The countries covered have liquid government debt markets, which are freely accessible to foreign investors. GBI excludes: floating rate notes, perps, bonds with less than one year maturity, bonds targeted at the domestic markets for tax reasons and bonds with callable, puttable or convertible features.

³ Included in the EMBI are US dollar denominated Brady bonds, Eurobonds, traded loans and local debt market instruments issued by sovereign and quasi-sovereign entities.

⁴ EMBI+ is an extension of the EMBI. The index tracks all of the external currency denominated debt markets of the emerging markets.

⁵ IFC G (Global) is an emerging equity market index produced in conjunction with S&P. The index does not take into account restrictions on foreign ownership that limit the accessibility of certain markets and individual stocks.

⁶ IFC I (Investable) is adjusted to reflect restrictions on foreign investments in emerging markets. Consequently, it represents a more accurate picture of the actual universe available to investors.

Annex 2 – Statistical Results

Table1.

Variable	Time-Period	Frequency	Developed/ Developed Mean Correlation Coefficient	Developed/ Developing Mean Correlation Coefficient	Test Statistic (H0: Mx=My) Critical Value of 0.05% one-tailed test in parentheses
Syndicated	1993-2002	Monthly	0.37	0.14	3.33 (3.29)
ROA	1988-2001	Annual	0.10	-0.08	4.40 (3.29)
ROC	1988-2001	Annual	0.14	-0.11	6.92 (3.29)
GDP	1985-2000	Six-monthly	0.44	0.02	9.08 (3.29)
GDP HP	1950-1998	Annual	0.35	0.02	9.41 (3.29)
STIR	1985-2000	Six-monthly	0.72	0.23	11.09 (3.29)
STIRR	1985-2000	Six-monthly	0.66	0.22	10.93 (3.29)
GBI-EMBI	1991-2002	Daily	0.78	0.53	5.45 (3.29)
GBI-EMBI	1991-1997	Daily	0.90	0.74	4.64 (3.29)
GBI-EMBI	1998-2002	Daily	0.42	0.09	5.87 (3.29)
IFCI-COMP	1990-2000	Daily	0.58	-0.15	7.83 (3.29)
IFCG-COMP	1990-2000	Daily	0.58	-0.17	8.06 (3.29)