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## APPENDIX A: COUNTRY SELECTION PROCESS

The process for selecting countries for the modeling started off global in nature and refined itself one step at a time. Country population statistics from the International Monetary Fund (IMF), the World Bank, and the Central Intelligence Agency (CIA) were placed into tables and compared. All nations with a population under 10,500,000 citizens anytime between the years 1986-2006 were kept and examined while the rest were discarded. A series of internet queries were performed for each nation on the list to investigate if they had a stock exchange. This information was then compared to the data available on stock exchanges from the International Finance Corporation, World Federation of Exchanges, Federation of Iberoamericana Stock Exchanges, South Asian Federation of Exchanges, Federation of Euro-Asian Stock Exchanges, and the African Stock Exchange Association. For simplification, data used in the analysis came from the International Finance Corporation, the World Federation of Exchanges, or the stock exchange itself.

Economic data for each country came from the IMF database or published reports when possible. The African Development Bank Group, Asian Development Bank, and Caribbean Development Bank reports along with the Statistical Economic and Social Research and Training Centre for Islamic Countries database or the national governments statistics office were also reviewed when IMF data was either incomplete or questionable in its accuracy.

The final list of countries and years used for the modeling are listed below.

**A.1.1 Table 1**

Countries and Time Range Used			
Armenia	2001-2006	Latvia	1995-2006
Austria	1986-2006	Lebanon	1996-2006
Bahamas, the	2001-2006	Lithuania	1994-2006
Bahrain	1989-2006	Macedonia	2002-2006
Barbados	1989-2006	Malawi	1996-2006

Belgium	1986-2006	Maldives	2002-2006
Bermuda	1998-2006	Malta	1992-2006
Bolivia	1994-2006	Mauritius	1989-2006
Bosnia & Herzegovina	2002-2006	Moldova	1995-2006
Botswana	1989-2006	Mongolia	1995-2006
Bulgaria	1998-2006	Namibia	1992-2006
Costa Rica	1989-2006	New Zealand	1986-2006
Cote d'Ivoire	1987-2006	Norway	1986-2006
Croatia	1994-2006	Oman	1989-2006
Cyprus	1995-2006	Palestine	1997-2006
Czech Republic	1994-2006	Panama	1992-2006
Denmark	1986-2006	Papua New Guinea	1999-2006
Dominica	2003-2006	Paraguay	1993-2006
Ecuador	1993-2006	Portugal	1986-2006
El Salvador	1995-2006	Qatar	1997-2006
Estonia	1996-2006	Singapore	1990-2006
Fiji	1997-2006	Slovak Republic	1993-2006
Finland	1986-2006	Slovenia	1992-2006
Georgia	2000-2006	St. Kitts and Nevis	2001-2006
Greece	1986-2006	St. Lucia	2001-2006
Guyana	2003-2006	Swaziland	1990-2006
Hong Kong	1986-2004	Sweden	1986-2006
Hungary	1990-2006	Switzerland	1986-2006
Iceland	1992-2006	Trinidad & Tobago	1986-2006
Ireland	1994-2006	Tunisia	1990-2006
Israel	1986-2006	United Arab Emirates	2001-2006
Jamaica	1986-2006	Uruguay	1986-2006
Jordan	1986-2006	Zambia	1995-2006
Kuwait*	1986-2006	Zimbabwe	1986-2000

Unfortunately many of the nations examined were not usable. The reasons for excluding them vary for each one, but their general reason for exclusion is listed to the far right of each grouping. While this reduced the size of the sample it also removed some of the least active stock exchanges from the analysis. It is likely that full inclusion of the operating exchanges below would have a significant impact upon the models however the extent of that impact remains unknown.

A.1.2 Table 2

Other Countries Examined and Excluded				
Albania	1996-2006	Mali	1998-2006	Bonds Only
Anguilla	2001-2006	Montserrat	2001-2006	
Antigua and Barbuda	2001-2006	Niger	1998-2006	
Burkina Faso	1998-2006	St. Vincent & Grenadines	2001-2006	
Grenada	2001-2006	Togo	1998-2006	
Guinea-Bissau	1998-2006	Turkmenistan	1994-2006	
Benin	1998-2006	Senegal	1998-2006	
Cayman Islands	1997-2006	Luxembourg	1987-2006	
Azerbaijan	1996-2006	Kyrgyz Republic	1995-2006	Incomplete Data
Belarus	1998-2006	Nicaragua	1994-2006	
Belize	2003-2006	Guatemala	1987-2006	
Bhutan	1996-2006	Honduras	1991-2006	
Brunei Darussalam	2002-2006	Serbia	1999-2006	
Channel Islands	1998-2006	Suriname	1994-2006	
Dominican Republic	1991-2006			
Cape Verde	2005-2006	Haiti	2005-2006	Not Enough Years
Andorra		Liechtenstein		No Stock Exchange Found
Angola		Macau		
Burundi		Madagascar		
Cambodia		Marshall Islands		
Cameroon		Mauritania		
Central African Republic		Micronesia		
Chad		Monaco		
Comoros		Nauru		
Congo, Republic of		Paulu		
Cuba		Rwanda		
Djibouti		Samoa		
Equatorial Guinea		San Marino		
Eritrea		São Tomé and Príncipe		
Gabon		Seychelles		
Gambia, The		Solomon Islands		
Guinea		Somalia		
Kiribati		Tajikistan		
Lao People's Democratic Republic		Timor-Leste, Dem. Rep. of		
Lesotho		Tonga		
Liberia		Tuvalu		
Libya		Vanuatu		

After organizing the data for the countries that remained further corrections were needed to remove unusual events. While it was often difficult to get data for the earliest

years of operation at many exchanges many corrections were taken to remove questionable or incomplete data during these years. There were five unusual events that were also corrected in the modeling and highlighted in the table below.

**A.1.3 Table 3**

<b>Data Corrections</b>				
Bahamas	2000	Fiji	1986-1997	Unable to obtain all required data so these years were removed
Barbados	1987-1988	Ireland	1986-1994	
Bermuda	1995-1998	Kuwait <sup>1</sup>	1990-1992	
Costa Rica	1986-1988	Lithuania	1993	
Cote d'Ivoire	1986	Paraguay	1989-1991	
Croatia	1992-1993	Slovenia	1990-1991	
Czech Republic	1993	Tunisia	1986-1990	
Ecuador	1986-1993	United Arab Emirates	2000	
El Salvador	1992-1996	Zambia	1994	
Armenia	1994-2001	Luxembourg <sup>3</sup>	1986-2006	
Cyprus	1991-1995	Mongolia	1992-1995	
Georgia	1994-2000	Singapore <sup>4</sup>	1986-1989	
Hong Kong <sup>2</sup>	2005-2006	Zimbabwe <sup>5</sup>	2000-2006	
Kyrgyz Republic	1995-2006			
1. Country was invaded by Iraq. No Data is available for these years 2. The P.R. China listed four of their largest banks in Hong Kong these years distorting results 3. Data was removed due to an abnormally high money supply to GDP ratio conflicted with the model 4. Data sources for earlier years didn't match with data used for later years. Earlier data was dropped 5. Hyperinflation begins and data accuracy becomes more questionable due to reporting in US dollars				

Information gathered through the Internet played a vital role in this research. Efforts to collect, compare, and evaluate data took time however it helped ensure data accuracy. The table below highlights important websites used in the collection and evaluation of data. They are the sources of comparison used in addition to the sources used for the study.

**A.1.4 Table 4 Important Information Websites Used**

<b>State</b>	<b>Stock Exchange</b>	<b>Government Statistics</b>
Armenia	<a href="http://www.armex.am/en/index.htm">www.armex.am/en/index.htm</a>	<a href="http://www.armstat.am/en/">www.armstat.am/en/</a>
Austria	<a href="http://en.wienerborse.at/">en.wienerborse.at/</a>	<a href="http://www.statistik.at/">www.statistik.at/</a>
Bahamas, the	<a href="http://www.bisxbahamas.com/">www.bisxbahamas.com/</a>	<a href="http://www.bahamas.gov.bs/statistics">www.bahamas.gov.bs/statistics</a>
Bahrain	<a href="http://www.bahrainstock.com/">www.bahrainstock.com/</a>	<a href="http://www.bahrain.gov.bh/">www.bahrain.gov.bh/</a>

Barbados	<a href="http://www.bse.com.bb/">www.bse.com.bb/</a>	<a href="http://www.barbados.gov.bb/">www.barbados.gov.bb/</a>
Belgium	<a href="http://www.euronext.com/index-2166-EN.html">www.euronext.com/index-2166-EN.html</a>	<a href="http://www.statbel.fgov.be/">www.statbel.fgov.be/</a>
Bermuda	<a href="http://www.bsx.com/">www.bsx.com/</a>	<a href="http://www.gov.bm/">www.gov.bm/</a>
Bolivia	<a href="http://www.bolsa-valores-bolivia.com/">www.bolsa-valores-bolivia.com/</a>	<a href="http://www.bolivia.gov.bo/">www.bolivia.gov.bo/</a>
Bosnia & Herzegovina	<a href="http://www.blberza.com/v2/">http://www.blberza.com/v2/</a>	<a href="http://www.bhas.ba/new/">www.bhas.ba/new/</a>
Botswana	<a href="http://www.sase.ba/">http://www.sase.ba/</a>	<a href="http://www.cso.gov.bw/">www.cso.gov.bw/</a>
Bulgaria	<a href="http://www.bse.co.bw/">www.bse.co.bw/</a>	<a href="http://www.nsi.bg/">www.nsi.bg/</a>
Costa Rica	<a href="http://www.bse-sofia.bg/">www.bse-sofia.bg/</a>	<a href="http://www.inec.go.cr/">www.inec.go.cr/</a>
Cote d'Ivoire	<a href="http://www.bolsacr.com/">www.bolsacr.com/</a>	<a href="http://www.ins.ci/">www.ins.ci/</a>
Croatia	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.dzs.hr/">www.dzs.hr/</a>
Cyprus	<a href="http://www.zse.hr/?languageld=EN">www.zse.hr/?languageld=EN</a>	<a href="http://www.mof.gov.cy/">www.mof.gov.cy/</a>
Czech Republic	<a href="http://www.cse.com.cy/en/default.asp">www.cse.com.cy/en/default.asp</a>	<a href="http://www.czso.cz/">www.czso.cz/</a>
Denmark	<a href="http://www.pse.cz/">www.pse.cz/</a>	<a href="http://www.dst.dk/">www.dst.dk/</a>
Dominica	<a href="http://www.omxnordicexchange.com/">http://www.omxnordicexchange.com/</a>	<a href="http://www.inec.gov.ec/">www.inec.gov.ec/</a>
Ecuador	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	
El Salvador	<a href="http://www.mundobvg.com/">www.mundobvg.com/</a>	<a href="http://www.servicios.gob.sv/">www.servicios.gob.sv/</a>
Estonia	<a href="http://www.ccbvq.com/">www.ccbvq.com/</a>	<a href="http://www.stat.ee/">www.stat.ee/</a>
Fiji	<a href="http://www.bves.com.sv/">www.bves.com.sv/</a>	<a href="http://www.statsfiji.gov.fj/">www.statsfiji.gov.fj/</a>
Finland	<a href="http://www.baltic.omxnordicexchange.com/">http://www.baltic.omxnordicexchange.com/</a>	<a href="http://www.stat.fi/">www.stat.fi/</a>
Georgia	<a href="http://www.spse.com.fj/publish/home.shtml">www.spse.com.fj/publish/home.shtml</a>	<a href="http://www.statistics.ge/">www.statistics.ge/</a>
Greece	<a href="http://www.omxnordicexchange.com/">http://www.omxnordicexchange.com/</a>	<a href="http://www.statistics.gr/">www.statistics.gr/</a>
Guyana	<a href="http://www.gse.ge/">www.gse.ge/</a>	<a href="http://www.gina.gov.gy/">www.gina.gov.gy/</a>
Hong Kong	<a href="http://www.ase.gr/default_en.asp">www.ase.gr/default_en.asp</a>	<a href="http://www.censtatd.gov.hk/">www.censtatd.gov.hk/</a>
Hungary	<a href="http://www.gasci.com/">www.gasci.com/</a>	<a href="http://portal.ksh.hu/">portal.ksh.hu/</a>
Iceland	<a href="http://www.hkex.com.hk/index.htm">www.hkex.com.hk/index.htm</a>	<a href="http://www.statice.is/">www.statice.is/</a>
Ireland	<a href="http://www.bse.hu/">www.bse.hu/</a>	<a href="http://www.cso.ie/">www.cso.ie/</a>
Israel	<a href="http://www.omxnordicexchange.com/">http://www.omxnordicexchange.com/</a>	<a href="http://www.cbs.gov.il/">www.cbs.gov.il/</a>
Jamaica	<a href="http://www.ise.ie/">www.ise.ie/</a>	<a href="http://www.statinja.com/">www.statinja.com/</a>
Jordan	<a href="http://www.tase.co.il/TASEEng/Homepage.htm">www.tase.co.il/TASEEng/Homepage.htm</a>	<a href="http://www.nic.gov.jo/">www.nic.gov.jo/</a>
Kuwait*	<a href="http://www.jamstockex.com/">www.jamstockex.com/</a>	<a href="http://www.mop.gov.kw/">www.mop.gov.kw/</a>
Kyrgyz Republic	<a href="http://www.exchange.jo/">www.exchange.jo/</a>	<a href="http://www.stat.kg/">www.stat.kg/</a>
Latvia	<a href="http://www.kuwaitse.com/">www.kuwaitse.com/</a>	<a href="http://www.csb.gov.lv/">www.csb.gov.lv/</a>
Lebanon	<a href="http://www.kse.kg/#">www.kse.kg/#</a>	<a href="http://www.cas.gov.lb/">www.cas.gov.lb/</a>
Lithuania	<a href="http://www.baltic.omxnordicexchange.com/">http://www.baltic.omxnordicexchange.com/</a>	<a href="http://www.stat.gov.lt/lt/">www.stat.gov.lt/lt/</a>
Luxembourg	<a href="http://www.bourse.lu/Accueil.jsp">www.bourse.lu/Accueil.jsp</a>	<a href="http://www.statec.public.lu/">www.statec.public.lu/</a>
Macedonia	<a href="http://www.mse.org.mk/">www.mse.org.mk/</a>	<a href="http://www.stat.gov.mk/">www.stat.gov.mk/</a>
Malawi	<a href="http://www.mse.co.mw/">www.mse.co.mw/</a>	<a href="http://www.nso.malawi.net/">www.nso.malawi.net/</a>
Maldives	<a href="http://www.maldivesstockexchange.com.mv/">www.maldivesstockexchange.com.mv/</a>	<a href="http://www.planning.gov.mv/en/">www.planning.gov.mv/en/</a>
Malta	<a href="http://www.borzamalta.com.mt/">www.borzamalta.com.mt/</a>	<a href="http://www.nso.gov.mt/">www.nso.gov.mt/</a>
Mauritius	<a href="http://www.stockexchangeofmauritius.com/">www.stockexchangeofmauritius.com/</a>	<a href="http://www.gov.mu/">www.gov.mu/</a>
Moldova	<a href="http://www.moldse.md/default.htm">www.moldse.md/default.htm</a>	<a href="http://www.statistica.md/">www.statistica.md/</a>
Mongolia	<a href="http://www.mse.mn/">www.mse.mn/</a>	<a href="http://www.nso.mn/v1/index.php">www.nso.mn/v1/index.php</a>
Namibia	<a href="http://www.nsx.com.na/">http://www.nsx.com.na/</a>	<a href="http://www.npc.gov.na">www.npc.gov.na</a>
New Zealand	<a href="http://www.nzx.com/">www.nzx.com/</a>	<a href="http://www.stats.govt.nz/">www.stats.govt.nz/</a>
Norway	<a href="http://www.oslobors.no/ob">http://www.oslobors.no/ob</a>	<a href="http://www.ssb.no/">www.ssb.no/</a>
Oman	<a href="http://www.msm.gov.om/">www.msm.gov.om/</a>	<a href="http://www.moneoman.gov.om/">www.moneoman.gov.om/</a>
Palestine	<a href="http://www.p-s-e.com/">www.p-s-e.com/</a>	
Panama	<a href="http://www.panabolsa.com/">www.panabolsa.com/</a>	<a href="http://www.contraloria.gob.pa/dec/">www.contraloria.gob.pa/dec/</a>

Papua New Guinea	<a href="http://www.pomsox.com.pg/">www.pomsox.com.pg/</a>	<a href="http://www.nso.gov.pg/">www.nso.gov.pg/</a>
Paraguay	<a href="http://www.bvpasa.com.py/">www.bvpasa.com.py/</a>	<a href="http://www.dgeec.gov.py/">www.dgeec.gov.py/</a>
Portugal	<a href="http://www.euronext.com/index-2166-EN.html">www.euronext.com/index-2166-EN.html</a>	<a href="http://www.ine.pt/">www.ine.pt/</a>
Qatar	<a href="http://www2.dsm.com.qa/dsm/DSM_Home">www2.dsm.com.qa/dsm/DSM_Home</a>	<a href="http://portal.www.gov.qa/">portal.www.gov.qa/</a>
Singapore	<a href="http://www.sgx.com/">www.sgx.com/</a>	<a href="http://www.singstat.gov.sg/">www.singstat.gov.sg/</a>
Slovak Republic	<a href="http://www.bsse.sk/index.aspx?LANG=EN">www.bsse.sk/index.aspx?LANG=EN</a>	<a href="http://portal.statistics.sk/">portal.statistics.sk/</a>
Slovenia	<a href="http://www.ljse.si/">www.ljse.si/</a>	<a href="http://www.stat.si/">www.stat.si/</a>
St. Kitts and Nevis	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	
St. Lucia	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	<a href="http://www.stats.gov.lc/">www.stats.gov.lc/</a>
Swaziland	<a href="http://www.ssx.org.sz/">www.ssx.org.sz/</a>	<a href="http://www.gov.sz/">www.gov.sz/</a>
Sweden	<a href="http://www.omxnordicexchange.com/">http://www.omxnordicexchange.com/</a>	<a href="http://www.scb.se/">www.scb.se/</a>
Switzerland	<a href="http://www.swx.com/index.html">www.swx.com/index.html</a>	<a href="http://www.bfs.admin.ch/">www.bfs.admin.ch/</a>
Trinidad & Tobago	<a href="http://www.stockex.co.tt/">www.stockex.co.tt/</a>	<a href="http://www.cso.gov.tt/">www.cso.gov.tt/</a>
Tunisia	<a href="http://www.bvmt.com.tn/">www.bvmt.com.tn/</a>	<a href="http://www.ins.nat.tn/">www.ins.nat.tn/</a>
United Arab Emirates	<a href="http://www.adx.ae/English/Pages/default.aspx">www.adx.ae/English/Pages/default.aspx</a> <a href="http://www.difx.ae/Public/home/home.htm">www.difx.ae/Public/home/home.htm</a>	
Uruguay	<a href="http://www.bvm.com.uy/bolsa/index.php">www.bvm.com.uy/bolsa/index.php</a>	<a href="http://www.ine.gub.uy/">www.ine.gub.uy/</a>
Zambia	<a href="http://www.luse.co.zm/">www.luse.co.zm/</a>	<a href="http://www.zamstats.gov.zm/">www.zamstats.gov.zm/</a>
Zimbabwe	<a href="http://www.zse.co.zw/">www.zse.co.zw/</a>	<a href="http://www.gta.gov.zw/">www.gta.gov.zw/</a>
<b>Countries Examined but not included</b>		
Benin	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.insae-bj.org/">www.insae-bj.org/</a>
Cayman Islands	<a href="http://www.csx.com.ky/">www.csx.com.ky/</a>	<a href="http://www.gov.ky/">www.gov.ky/</a>
Senegal	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	
Cape Verde	<a href="http://www.bvc.cv/index.php?lang=en">www.bvc.cv/index.php?lang=en</a>	<a href="http://www.ine.cv/">www.ine.cv/</a>
Albania	<a href="http://www.tse.com.al/english/">www.tse.com.al/english/</a>	<a href="http://www.instat.gov.al/">www.instat.gov.al/</a>
Anguilla	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	<a href="http://www.gov.ai/statistics/">www.gov.ai/statistics/</a>
Antigua and Barbuda	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	<a href="http://www.antiguagov.com/">www.antiguagov.com/</a>
Burkina Faso	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.insd.bf/">www.insd.bf/</a>
Grenada	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	
Guinea-Bissau	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.stat-guineebissau.com/">www.stat-guineebissau.com/</a>
Mali	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.dnsi.gov.ml/">www.dnsi.gov.ml/</a>
Montserrat	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	
Niger	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	<a href="http://www.stat-niger.org/">www.stat-niger.org/</a>
St. Vincent/Grenadines	<a href="http://www.ecseonline.com/">www.ecseonline.com/</a>	
Togo	<a href="http://www.brvm.org/en/index.htm">www.brvm.org/en/index.htm</a>	
Azerbaijan	<a href="http://www.bbyb.org/">www.bbyb.org/</a>	<a href="http://www.azstat.org/indexen.php">www.azstat.org/indexen.php</a>
Belarus	<a href="http://www.bcse.by/eng/Stock.php">www.bcse.by/eng/Stock.php</a>	<a href="http://belstat.gov.by/">belstat.gov.by/</a>
Channel Islands	<a href="http://www.cisx.com/">www.cisx.com/</a>	
Dominican Republic	<a href="http://www.bolsard.com/">www.bolsard.com/</a>	<a href="http://www.one.gob.do/">www.one.gob.do/</a>
Nicaragua	<a href="http://www.bolsanic.com/">www.bolsanic.com/</a>	<a href="http://www.inec.gob.ni/">www.inec.gob.ni/</a>
Guatemala	<a href="http://www.bvnsa.com.gt/nuevositio/index.php">www.bvnsa.com.gt/nuevositio/index.php</a>	<a href="http://www.ine.gob.gt/">www.ine.gob.gt/</a>
Honduras	<a href="http://www.bcv.hn/">www.bcv.hn/</a>	<a href="http://www.ine-hn.org/">www.ine-hn.org/</a>
Serbia	<a href="http://www.belex.co.yu/index-e.php">www.belex.co.yu/index-e.php</a> <a href="http://www.montenegroberza.com/">www.montenegroberza.com/</a>	<a href="http://www.srbija.sr.gov.yu/">www.srbija.sr.gov.yu/</a> <a href="http://www.monstat.cg.yu/">www.monstat.cg.yu/</a>
Google Translate was used for translation with some websites		<a href="http://translate.google.com">translate.google.com</a>
Currency conversions were calculated with data from OANDA		<a href="http://www.oanda.com">www.oanda.com</a>

## APPENDIX B: TESTING STEP BY STEP

After selecting the dependent and independent variables most likely to be usable, based upon the works of other authors, the collected data needed to be tested to ensure reliable results. The first tests done were Unit Root tests, to ensure that the variables were stationary for OLS modeling. They were tested for both individual effects and linear trends using Schwarz Information Criterion to automatically select the number of lags along with the Bartlett kernel and Newey-West to automatically select the bandwidth. The results, looking at the Augmented Dickie-Fuller Tests, were as follows:

### B.1.1 Unit Root Test Results

**Table 5**

	Statistic	Prob.	Cross-Sect.	Obs.
Series: FB_GDP	184.178	0.0018	66	843
Series: FD_GDP	252.805	0.0000	66	848
Series: FDI_GDP	259.690	0.0000	66	858
Series: GDP_POP	92.4602	<b>0.9964</b>	66	834
Series: LOGGDPPPOP	123.560	<b>0.6878</b>	66	840
Series: LOGMC_L	201.116	0.0001	66	842
Series: LOGNOC	273.620	0.0000	65	832
Series: LOGYOO	725.576	0.0000	40	369
Series: MC_GDP	206.603	0.0000	66	834
Series: MQM_GDP	149.834	<b>0.1373</b>	66	856
Series: VT_MC	303.397	0.0000	66	844
Series: D(GDP_POP)	179.770	0.0001	58	730
Series: D(LOGGDPPPOP)	236.346	0.0000	58	730
Series: D(MQM_GDP)	412.076	0.0000	63	777

Two variables show some concern, the GDP per capita variables and money supply to GDP ratio. The GDP per capita was also tested in log format, the preferred format of other studies, to determine if there is much of a difference. This showed only modest improvement. Another round of testing using the first difference of both non-stationary variables was conducted and they were stationary in this format. The models were thus adjusted to using the first differential of both variables so that all the independent variable are stationary, a requirement for OLS testing.

Having established that the variables have a unit root the models are nearly ready to test if OLS or EGLS is more appropriate. Two more test that were conducted was to check if there is multi-colinearity present and to check if a fixed effects model would be appropriate. Multi-colinearity exacerbates uncertainty in regression coefficient estimates leading to unnecessary rejection of variables tested. The correlation tables below indicate that there may be some multi-colinearity with some independent variables, but nothing above  $\pm 0.70$ . The heterogeneity tests that follow show support for the use of a fixed effects model. This should lead to more efficient estimators than a normal OLS regression.

### B.1.2 Correlation Tables

Table 6: Model 1

Covariance Analysis: Ordinary  
 Sample: 1986 2006  
 Included observations: 957

Variable	FB_GDP	FD_GDP	FDI_GDP	GDP_POP	LOGASF_L	LOGMC_L	LOGNOC	LOGYOO	MNEX	MQM_GDP	RESTRICTED	UNSOE	AFR	AME	ASI	VT_MC
DP	1.000000															
DP	0.281779	1.000000														
DP	-0.087620	0.027315	1.000000													
OP	0.246051	0.332829	0.240206	1.000000												
FL	0.095667	0.086824	-0.047831	0.281729	1.000000											
FL	0.127369	0.137247	-0.045862	0.408033	0.861618	1.000000										
OC	0.115553	0.130101	-0.015052	0.371359	0.112812	0.571373	1.000000									
OO	0.116366	0.155969	-0.004415	0.536360	0.323115	0.501636	0.493054	1.000000								
EX	0.145849	0.116355	-0.022826	0.077029	0.136058	0.039245	-0.153602	0.008738	1.000000							
DP	-0.076069	-0.002919	0.072553	0.305558	0.167857	0.212509	0.159628	0.265072	0.070388	1.000000						
ED	-0.056168	0.059575	0.083102	-0.141669	-0.179973	-0.244100	-0.201448	-0.185355	-0.170290	-0.135157	1.000000					
OE	0.079183	-0.057597	-0.021015	-0.249215	-0.188550	0.019328	0.347758	-0.286803	-0.073552	-0.075279	-0.029518	1.000000				
FR	-0.012350	-0.069693	-0.058390	-0.314760	0.070557	-0.121751	-0.368625	-0.165042	-0.002579	-0.271437	0.202892	-0.170641	1.000000			
ME	-0.367389	-9.32E-05	0.126892	-0.204300	-0.139579	-0.296501	-0.373683	-0.141965	0.022150	-0.138082	0.048763	-0.218565	-0.219484	1.000000		
ASI	-0.104556	0.174362	0.000461	0.012760	0.054796	0.146137	0.192147	0.112847	-0.086574	0.224209	0.188593	-0.013709	-0.135002	-0.104394	1.000000	
MC	0.130287	0.238319	-0.040248	0.563655	0.308485	0.476650	0.460042	0.486159	0.054531	0.280258	-0.210934	-0.080022	-0.229554	-0.337905	0.022083	1.000000

Table 7: Model 2

Covariance Analysis: Ordinary  
 Sample: 1986 2006  
 Included observations: 957

Variable	FB_GDP	FD_GDP	FDI_GDP	GDP_POP	LOGASF_L	LOGMC_L	LOGNOC	LOGYOO	MC_GDP	MNEX	MQM_GDP	RESTRICTED	UNSOE	AFR	AME	ASI
DP	1.000000															
DP	0.281779	1.000000														
DP	-0.087620	0.027315	1.000000													
OP	0.246051	0.332829	0.240206	1.000000												
FL	0.095667	0.086824	-0.047831	0.281729	1.000000											
FL	0.127369	0.137247	-0.045862	0.408033	0.861618	1.000000										
OC	0.115553	0.130101	-0.015052	0.371359	0.112812	0.571373	1.000000									
OO	0.116366	0.155969	-0.004415	0.536360	0.323115	0.501636	0.493054	1.000000								
DP	-0.021693	0.299285	0.057985	0.438342	0.300328	0.429008	0.367962	0.302192	1.000000							
EX	0.145849	0.116355	-0.022826	0.077029	0.136058	0.039245	-0.153602	0.008738	0.021212	1.000000						
DP	-0.076069	-0.002919	0.072553	0.305558	0.167857	0.212509	0.159628	0.265072	0.505651	0.070388	1.000000					
ED	-0.056168	0.059575	0.083102	-0.141669	-0.179973	-0.244100	-0.201448	-0.185355	-0.068771	-0.170290	-0.135157	1.000000				
OE	0.079183	-0.057597	-0.021015	-0.249215	-0.188550	0.019328	0.347758	-0.286803	-0.106725	-0.073552	-0.075279	-0.029518	1.000000			
FR	-0.012350	-0.069693	-0.058390	-0.314760	0.070557	-0.121751	-0.368625	-0.165042	-0.190992	-0.002579	-0.271437	0.202892	-0.170641	1.000000		
ME	-0.367389	-9.32E-05	0.126892	-0.204300	-0.139579	-0.296501	-0.373683	-0.141965	-0.138679	0.022150	-0.138082	0.048763	-0.218565	-0.219484	1.000000	
ASI	-0.104556	0.174362	0.000461	0.012760	0.054796	0.146137	0.192147	0.112847	0.365269	-0.086574	0.224209	0.188593	-0.013709	-0.135002	-0.104394	1.000000

### B.1.3: Heterogeneity Test

Table 8: Model 1

Redundant Fixed Effects Tests			
Equation: EQ01			
Test period fixed effects			
Effects Test	Statistic	d.f.	Prob.
Period F	3.478797	(19,855)	0.0000



**Table 9: Model 2**

Redundant Fixed Effects Tests			
Equation: EQ02			
Test period fixed effects			
Effects Test	Statistic	d.f.	Prob.
Period F	4.257343	(19,855)	0.0000

Before any dummy variables were included, the models were tested to check their performance and to use that performance as a benchmark to compare against. The basic OLS regression model was used on model 1 with the results shown below:

### B.2.1 OLS Initial Results

**Table 10: Model 1**

Dependent Variable: VT_MC				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.390087	0.042462	-9.186767	0.0000
FB_GDP	0.000850	0.078674	0.010809	0.9914
FD_GDP	0.549015	0.163732	3.353127	0.0008
FDI_GDP	-0.050258	0.031590	-1.590933	0.1120
LOGMC_L	0.069800	0.039967	1.746426	0.0811
LOGASF_L	-0.014195	0.039528	-0.359112	0.7196
LOGYOO	0.159850	0.018252	8.758165	0.0000
LOGNOC	0.086752	0.041976	2.066707	0.0391
D(GDP_POP)	3.005874	0.550440	5.460853	0.0000
D(MQM_GDP)	0.378838	0.147030	2.576598	0.0101
R-squared	0.396687	Mean dependent var		0.263791
Adjusted R-squared	0.390510	S.D. dependent var		0.337984
S.E. of regression	0.263864	Akaike info criterion		0.184416
Sum squared resid	61.19950	Schwarz criterion		0.238298
Log likelihood	-71.97292	Hannan-Quinn criter.		0.205011
F-statistic	64.21736	Durbin-Watson stat		0.455889
Prob(F-statistic)	0.000000			

**Table 11: Model 2**

Dependent Variable: MC_GDP				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.215584	0.090667	-2.377765	0.0176
FB_GDP	-1.005765	0.167990	-5.987065	0.0000
FD_GDP	3.344605	0.349609	9.566693	0.0000
FDI_GDP	0.103384	0.067453	1.532679	0.1257

LOGMC_L	0.150087	0.085340	1.758694	0.0790
LOGASF_L	0.006759	0.084402	0.080085	0.9362
LOGYOO	0.069641	0.038972	1.786979	0.0743
LOGNOC	0.175325	0.089629	1.956126	0.0508
D(MQM_GDP)	1.823626	0.313947	5.808706	0.0000
D(GDP_POP)	0.170603	1.175329	0.145153	0.8846
R-squared	0.313301	Mean dependent var		0.505597
Adjusted R-squared	0.306270	S.D. dependent var		0.676446
S.E. of regression	0.563415	Akaike info criterion		1.701585
Sum squared resid	279.0268	Schwarz criterion		1.755467
Log likelihood	-746.3545	Hannan-Quinn criter.		1.722180
F-statistic	44.55964	Durbin-Watson stat		0.291122
Prob(F-statistic)	0.000000			

Concern about the variables in Log format arose in both models, as well as concern about serial correlation. A co-efficient test using confidence ellipses was performed to spot any irregularities. Trouble appears in the three variables Lognoc, logasf\_l and logmc\_l. Not terribly surprising since Average Size of Firms (logasf\_l) is simply MC/NOC. A test for redundant variables was taken upon all three and logasf\_l was found the most likely to be removed followed by logmc\_l and lognoc was considered the least redundant. To correct for the serial correlation the dependent variable was lagged one period and used as an autoregressor. Testing without logasf\_l but with an AR term was performed on both models to see if it cleans up the problems noticed above.

## B.2.2 OLS with Autoregressor

**Table 12: Model 1**

Dependent Variable: VT_MC				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
FB_GDP	-0.051692	0.043066	-1.200293	0.2303
FD_GDP	0.297342	0.102035	2.914103	0.0037
FDI_GDP	-0.017902	0.020275	-0.882986	0.3775
LOGMC_L	0.007072	0.005438	1.300394	0.1938
LOGYOO	0.037531	0.012061	3.111617	0.0019
LOGNOC	0.002522	0.011716	0.215273	0.8296
D(GDP_POP)	0.997593	0.358869	2.779821	0.0056
D(MQM_GDP)	0.077546	0.095241	0.814208	0.4157
VT_MC(-1)	0.780439	0.020612	37.86409	0.0000
R-squared	<b>0.748481</b>	Mean dependent var		0.263791
Adjusted R-squared	0.746195	S.D. dependent var		0.337984
S.E. of regression	0.170273	Akaike info criterion		-0.692752
Sum squared resid	25.51383	Schwarz criterion		-0.644258
Log likelihood	316.9283	Hannan-Quinn criter.		-0.674216
Durbin-Watson stat	<b>2.030973</b>			

**Table 13: Model 2**

Dependent Variable: MC_GDP				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
FB_GDP	-0.111532	0.065664	-1.698543	0.0898
FD_GDP	0.356875	0.159665	2.235149	0.0257
FDI_GDP	-0.012812	0.030210	-0.424121	0.6716
LOGMC_L	0.026625	0.008325	3.198231	0.0014
LOGYOO	-0.010495	0.017563	-0.597553	0.5503
LOGNOC	0.001283	0.017538	0.073167	0.9417
D(MQM_GDP)	0.691877	0.143120	4.834225	0.0000
D(GDP_POP)	0.070701	0.528025	0.133896	0.8935
MC_GDP(-1)	0.946754	0.016105	58.78604	0.0000
R-squared	<b>0.859721</b>	Mean dependent var		0.505597
Adjusted R-squared	0.858445	S.D. dependent var		0.676446
S.E. of regression	0.254504	Akaike info criterion		0.111075
Sum squared resid	56.99979	Schwarz criterion		0.159569
Log likelihood	-40.37278	Hannan-Quinn criter.		0.129611
Durbin-Watson stat	<b>2.183613</b>			

The addition of an AR term significantly improves the performance of both models as it corrects the autocorrelation problem highlighted by the low Durbin-Watson statistic. Now that a base model using OLS regression has been established the various dummy variables were tested to determine which ones were the most useable.

### B.2.3 OLS Final Results

**Table 14: Model 1**

Dependent Variable: VT_MC				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
FB_GDP	-0.058599	0.044772	-1.308826	0.1909
FD_GDP	0.346171	0.102869	3.365170	0.0008
FDI_GDP	-0.004284	0.020045	-0.213714	0.8308
LOGMC_L	0.019011	0.005729	3.318225	0.0009
LOGYOO	0.040079	0.013824	2.899250	0.0038
LOGNOC	0.007348	0.014399	0.510335	0.6099
D(GDP_POP)	0.611893	0.356267	1.717509	0.0862
D(MQM_GDP)	0.083219	0.094195	0.883474	0.3772
VT_MC(-1)	0.709403	0.022503	31.52478	0.0000
AFR	-0.076269	0.018644	-4.090716	0.0000
AME	-0.094613	0.015274	-6.194454	0.0000
ASI	-0.060005	0.021635	-2.773440	0.0057

UNSOE	-0.057066	0.021290	-2.680398	0.0075
RESTRICTED	0.002902	0.013255	0.218948	0.8267
R-squared	0.762107	Mean dependent var		0.263791
Adjusted R-squared	0.758572	S.D. dependent var		0.337984
S.E. of regression	0.166069	Akaike info criterion		-0.737198
Sum squared resid	24.13169	Schwarz criterion		-0.661764
Log likelihood	341.6846	Hannan-Quinn criter.		-0.708365
Durbin-Watson stat	1.981450			

**Table 15: Model 2**

Dependent Variable: MC_GDP				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
	Coefficient	Std. Error	t-Statistic	Prob.
FB_GDP	-0.081199	0.067449	-1.203856	0.2290
FD_GDP	0.325067	0.161085	2.017981	0.0439
FDI_GDP	-0.007585	0.030624	-0.247671	0.8044
LOGMC_L	0.030602	0.008800	3.477562	0.0005
LOGYOO	-0.023871	0.020719	-1.152129	0.2496
LOGNOC	0.007068	0.022091	0.319946	0.7491
D(MQM_GDP)	0.671120	0.143996	4.660688	0.0000
D(GDP_POP)	-0.084924	0.542327	-0.156592	0.8756
MC_GDP(-1)	0.933816	0.017202	54.28438	0.0000
AFR	-0.041513	0.026457	-1.569075	0.1170
AME	-0.019199	0.021145	-0.907972	0.3641
ASI	0.032644	0.032114	1.016491	0.3097
UNSOE	-0.047148	0.032887	-1.433612	0.1520
R-squared	0.860599	Mean dependent var		0.505597
Adjusted R-squared	0.858689	S.D. dependent var		0.676446
S.E. of regression	0.254285	Akaike info criterion		0.113794
Sum squared resid	56.64299	Schwarz criterion		0.183841
Log likelihood	-37.58164	Hannan-Quinn criter.		0.140568
Durbin-Watson stat	2.166692			

The various dummy variables made only modest improvements, if any at all. There is still concern about heteroskedasticity in the residuals biasing the results as well as the previously mentioned idea that a fixed effects model should produce more efficient estimators so the models are placed into a period weighted fixed and random effects generalized least squares (EGLS) regression to determine the extent of the bias as well as determine which produces the most efficient estimators.

### B.3.1 Period Weighted Fixed Effects EGLS Results

**Table 16: Model 1**

Dependent Variable: VT_MC	
Method: Panel EGLS (Period weights)	
Sample (adjusted): 1987 2006	
Periods included: 20	
Cross-sections included: 68	

Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000316	0.029668	-0.010637	0.9915
FB_GDP	-0.045038	0.042746	-1.053610	0.2924
FD_GDP	0.242507	0.088155	2.750919	0.0061
FDI_GDP	-0.002480	0.013560	-0.182863	0.8549
LOGMC_L	0.016537	0.004736	3.491588	0.0005
LOGYOO	0.035378	0.011100	3.187317	0.0015
LOGNOC	0.004163	0.012224	0.340597	0.7335
D(GDP_POP)	0.520898	0.306482	1.699604	0.0896
D(MQM_GDP)	0.044773	0.079132	0.565798	0.5717
VT_MC(-1)	0.737347	0.018859	39.09780	0.0000
AFR	-0.062868	0.016066	-3.913117	0.0001
AME	-0.079476	0.015218	-5.222602	0.0000
ASI	-0.043825	0.016642	-2.633413	0.0086
UNSOE	-0.038092	0.016849	-2.260795	0.0240
RESTRICTED	0.008726	0.010525	0.829111	0.4073
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.839433	Mean dependent var	0.306621	
Adjusted R-squared	0.833235	S.D. dependent var	0.397676	
S.E. of regression	0.159956	Sum squared resid	21.87603	
F-statistic	135.4506	Durbin-Watson stat	2.009710	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.782392	Mean dependent var	0.263791	
Sum squared resid	22.07392	Durbin-Watson stat	1.975488	

**Table 17: Model 2**

Dependent Variable: MC_GDP				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031938	0.044934	0.710784	0.4774
FB_GDP	-0.112124	0.060302	-1.859370	0.0633
FD_GDP	0.351718	0.132046	2.663602	0.0079
FDI_GDP	-0.003632	0.027009	-0.134472	0.8931
LOGMC_L	0.025079	0.006861	3.655232	0.0003
LOGYOO	-0.006265	0.014637	-0.428053	0.6687
LOGNOC	-0.000735	0.018965	-0.038760	0.9691
D(MQM_GDP)	0.283794	0.100339	2.828361	0.0048
D(GDP_POP)	-1.113393	0.480393	-2.317673	0.0207
MC_GDP(-1)	0.926893	0.013986	66.27077	0.0000
AFR	-0.034400	0.021920	-1.569381	0.1169
AME	-0.003724	0.020612	-0.180676	0.8567
ASI	-0.015795	0.024131	-0.654567	0.5129

UNSOE	-0.011187	0.025612	-0.436798	0.6624
RESTRICTED	0.015715	0.015000	1.047671	0.2951
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.905820	Mean dependent var	0.583274	
Adjusted R-squared	0.902185	S.D. dependent var	0.768168	
S.E. of regression	0.241242	Sum squared resid	49.75918	
F-statistic	249.1922	Durbin-Watson stat	1.924805	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.868251	Mean dependent var	0.505597	
Sum squared resid	53.53351	Durbin-Watson stat	2.114109	

### B.3.2 Hausman Test

**Table 18: Model 1**

Correlated Random Effects - Hausman Test			
Equation: EQ01			
Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	35.619312	14	0.0012

**Table 19: Model 2**

Correlated Random Effects - Hausman Test			
Equation: EQ02			
Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	69.643547	14	0.0000

Both models support the use of a fixed effects adjustment to produce the most efficient estimators and significantly reject the random effects model. The residuals for each model indicate that both models are working well and there appears to be no uncorrected disturbances anymore. Residuals are now normally distributed and behaving well. Before testing the MNEX variable and the selection of the best variables for each model the variables shown above are to be used as a comparison against the testing of MNEX variables below.

### B.4.1 Hypothesis Testing

**Table 20: Model 1 Pre-Merger**

Dependent Variable: VT_MC				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000245	0.029687	-0.008258	0.9934
FB_GDP	-0.044481	0.043229	-1.028974	0.3038

FD_GDP	0.241131	0.088370	2.728663	0.0065
FDI_GDP	-0.002441	0.013569	-0.179899	0.8573
LOGMC_L	0.016500	0.004741	3.480521	0.0005
LOGYOO	0.035601	0.011243	3.166495	0.0016
LOGNOC	0.004177	0.012231	0.341519	0.7328
D(GDP_POP)	0.522996	0.306792	1.704722	0.0886
D(MQM_GDP)	0.044843	0.079200	0.566201	0.5714
VT_MC(-1)	0.737458	0.018950	38.91514	0.0000
AFR	-0.063002	0.016138	-3.904029	0.0001
AME	-0.079718	0.015391	-5.179521	0.0000
ASI	-0.044048	0.016731	-2.632682	0.0086
UNSOE	-0.038185	0.016885	-2.261435	0.0240
RESTRICTED	0.008432	0.010702	0.787870	0.4310
PRE_MNEX	-0.002249	0.015357	-0.146433	0.8836
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.839569	Mean dependent var	0.306654	
Adjusted R-squared	0.833182	S.D. dependent var	0.397872	
S.E. of regression	0.160034	Sum squared resid	21.87160	
F-statistic	131.4458	Durbin-Watson stat	2.009711	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.782409	Mean dependent var	0.263791	
Sum squared resid	22.07228	Durbin-Watson stat	1.975884	

**Table 21: Model 1 Post-Merger**

Dependent Variable: VT_MC				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000419	0.029910	0.013996	0.9888
FB_GDP	-0.044770	0.042899	-1.043610	0.2970
FD_GDP	0.244433	0.088623	2.758121	0.0059
FDI_GDP	-0.002396	0.013602	-0.176148	0.8602
LOGMC_L	0.016567	0.004748	3.489537	0.0005
LOGYOO	0.035443	0.011117	3.188259	0.0015
LOGNOC	0.003802	0.012482	0.304569	0.7608
D(GDP_POP)	0.516373	0.307126	1.681308	0.0931
D(MQM_GDP)	0.045205	0.079237	0.570505	0.5685
VT_MC(-1)	0.737307	0.018914	38.98203	0.0000
AFR	-0.063069	0.016104	-3.916338	0.0001
AME	-0.079726	0.015248	-5.228582	0.0000
ASI	-0.043997	0.016679	-2.637818	0.0085
UNSOE	-0.038168	0.016861	-2.263765	0.0238
RESTRICTED	0.008516	0.010708	0.795332	0.4266
MNEX	-0.002081	0.017326	-0.120115	0.9044
Effects Specification				

Period fixed (dummy variables)			
Weighted Statistics			
R-squared	0.839424	Mean dependent var	0.306609
Adjusted R-squared	0.833031	S.D. dependent var	0.397638
S.E. of regression	0.160047	Sum squared resid	21.87520
F-statistic	131.3045	Durbin-Watson stat	2.010106
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.782397	Mean dependent var	0.263791
Sum squared resid	22.07344	Durbin-Watson stat	1.975447

**Table 22: Model 1 with 3 Caribbean Exchanges**

Dependent Variable: VT_MC				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001052	0.029719	-0.035405	0.9718
FB_GDP	-0.039545	0.043608	-0.906827	0.3648
FD_GDP	0.246246	0.088245	2.790483	0.0054
FDI_GDP	-0.002529	0.013594	-0.186006	0.8525
LOGMC_L	0.017124	0.004816	3.555688	0.0004
LOGYOO	0.035503	0.011103	3.197663	0.0014
LOGNOC	0.002708	0.012395	0.218457	0.8271
D(GDP_POP)	0.507989	0.306805	1.655737	0.0981
D(MQM_GDP)	0.048165	0.079277	0.607549	0.5436
VT_MC(-1)	0.737616	0.018880	39.06831	0.0000
AFR	-0.063329	0.016075	-3.939590	0.0001
AME	-0.077052	0.015716	-4.902732	0.0000
ASI	-0.044575	0.016672	-2.673609	0.0076
UNSOE	-0.038306	0.016850	-2.273428	0.0232
RESTRICTED	0.007974	0.010587	0.753153	0.4516
MNEX3	-0.009816	0.014441	-0.679748	0.4968
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.839559	Mean dependent var		0.306680
Adjusted R-squared	0.833171	S.D. dependent var		0.397788
S.E. of regression	0.160035	Sum squared resid		21.87194
F-statistic	131.4362	Durbin-Watson stat		2.012195
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.782423	Mean dependent var		0.263791
Sum squared resid	22.07084	Durbin-Watson stat		1.976224

**Table 23: Model 2 Pre-Merger**

Dependent Variable: MC_GDP	
Method: Panel EGLS (Period weights)	
Sample (adjusted): 1987 2006	



Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035550	0.045182	0.786818	0.4316
FB_GDP	-0.127012	0.062712	-2.025326	0.0431
FD_GDP	0.367558	0.133856	2.745927	0.0062
FDI_GDP	-0.004862	0.026966	-0.180317	0.8569
LOGMC_L	0.024992	0.006865	3.640706	0.0003
LOGYOO	-0.007853	0.014839	-0.529211	0.5968
LOGNOC	-0.000798	0.018965	-0.042086	0.9664
D(MQM_GDP)	0.292970	0.100591	2.912490	0.0037
D(GDP_POP)	-1.105793	0.481422	-2.296928	0.0219
MC_GDP(-1)	0.927022	0.013976	66.32961	0.0000
AFR	-0.034351	0.021959	-1.564302	0.1181
AME	-0.001742	0.020731	-0.084006	0.9331
ASI	-0.015010	0.024238	-0.619274	0.5359
UNSOE	-0.010175	0.025647	-0.396720	0.6917
RESTRICTED	0.018970	0.015401	1.231698	0.2184
PRE_MNEX	0.017678	0.018429	0.959228	0.3377
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.905971	Mean dependent var	0.583202	
Adjusted R-squared	0.902228	S.D. dependent var	0.768390	
S.E. of regression	0.241205	Sum squared resid	49.68550	
F-statistic	242.0097	Durbin-Watson stat	1.927440	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.868327	Mean dependent var	0.505597	
Sum squared resid	53.50288	Durbin-Watson stat	2.115147	

**Table 24: Model 2 Post-Merger**

Dependent Variable: MC_GDP				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.038304	0.045274	0.846048	0.3978
FB_GDP	-0.108262	0.060448	-1.790994	0.0736
FD_GDP	0.360998	0.132502	2.724472	0.0066
FDI_GDP	-0.003380	0.026916	-0.125562	0.9001
LOGMC_L	0.025525	0.006876	3.712270	0.0002
LOGYOO	-0.005781	0.014674	-0.393986	0.6937
LOGNOC	-0.004189	0.019161	-0.218619	0.8270
D(MQM_GDP)	0.291602	0.100632	2.897714	0.0039
D(GDP_POP)	-1.116107	0.480762	-2.321536	0.0205
MC_GDP(-1)	0.927080	0.013982	66.30486	0.0000

AFR	-0.035778	0.021977	-1.627971	0.1039
AME	-0.005094	0.020670	-0.246454	0.8054
ASI	-0.017598	0.024192	-0.727442	0.4672
UNSOE	-0.011789	0.025637	-0.459848	0.6457
RESTRICTED	0.013865	0.015133	0.916241	0.3598
MNEX	-0.039063	0.033493	-1.166305	0.2438
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.905917	Mean dependent var	0.582928	
Adjusted R-squared	0.902171	S.D. dependent var	0.767554	
S.E. of regression	0.241101	Sum squared resid	49.64257	
F-statistic	241.8550	Durbin-Watson stat	1.927755	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.868396	Mean dependent var	0.505597	
Sum squared resid	53.47466	Durbin-Watson stat	2.116219	

**Table 25: Model 2 with 3 Caribbean Exchanges**

Dependent Variable: MC_GDP				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 68				
Total panel (unbalanced) observations: 889				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.034182	0.044947	0.760493	0.4472
FB_GDP	-0.124170	0.060955	-2.037082	0.0419
FD_GDP	0.353739	0.132000	2.679831	0.0075
FDI_GDP	-0.002533	0.027010	-0.093799	0.9253
LOGMC_L	0.023507	0.006958	3.378341	0.0008
LOGYOO	-0.006496	0.014632	-0.443980	0.6572
LOGNOC	0.003120	0.019174	0.162731	0.8708
D(MQM_GDP)	0.273716	0.100582	2.721324	0.0066
D(GDP_POP)	-1.113524	0.480155	-2.319095	0.0206
MC_GDP(-1)	0.924403	0.014108	65.52240	0.0000
AFR	-0.033799	0.021915	-1.542289	0.1234
AME	-0.011084	0.021331	-0.519591	0.6035
ASI	-0.013288	0.024196	-0.549163	0.5830
UNSOE	-0.011683	0.025604	-0.456296	0.6483
RESTRICTED	0.016447	0.015004	1.096216	0.2733
MNEX3	0.034288	0.025738	1.332174	0.1832
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.906006	Mean dependent var	0.583217	
Adjusted R-squared	0.902264	S.D. dependent var	0.768062	
S.E. of regression	0.241112	Sum squared resid	49.64745	
F-statistic	242.1078	Durbin-Watson stat	1.921795	
Prob(F-statistic)	0.000000			
Unweighted Statistics				

R-squared	0.868004	Mean dependent var	0.505597
Sum squared resid	53.63399	Durbin-Watson stat	2.107573

While there was possible improvement in the MNEX variables through the progression of testing, there was not a noticeable difference supporting the concept of superior performance.

Further tests for robustness of the model were conducted by including the 'dirty data' that was removed for their outliers. This testing was conducted to determine if the variables still retain most of their significance and direction of impact. Conclusions drawn from each testing is mixed with results from 'Dirty Data' changing the direction of impact on some variables and reducing the level of significance on nearly all. The results of the testing are shown below.

### B.5.1 Extra Testing Results

**Table 26: Model 1 'Dirty Data'**

Dependent Variable: VT_MC				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 70				
Total panel (unbalanced) observations: 944				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.366243	0.162295	2.256647	0.0243
FB_GDP	-0.400746	0.198188	-2.022054	0.0435
FD_GDP	0.525756	0.443469	1.185553	0.2361
FDI_GDP	-0.008592	0.114646	-0.074943	0.9403
LOGMC_L	<b>-0.007930</b>	0.022699	-0.349370	0.7269
LOGNOC	0.034807	0.066203	0.525764	0.5992
LOGYOO	0.008770	0.053385	0.164282	0.8695
D(GDP_POP)	<b>-0.132958</b>	1.642584	-0.080945	0.9355
D(MQM_GDP)	<b>-0.004898</b>	0.016778	-0.291928	0.7704
VT_MC(-1)	0.603999	0.010948	55.16864	0.0000
AFR	-0.084627	0.076661	-1.103913	0.2699
AME	-0.082042	0.074404	-1.102651	0.2705
ASI	-0.030539	0.078017	-0.391440	0.6956
UNSOE	-0.079254	0.091961	-0.861818	0.3890
RESTRICTED	<b>-0.019808</b>	0.052329	-0.378533	0.7051
<b>MNEX</b>	<b>0.355023</b>	0.128770	2.757025	<b>0.0059</b>
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.792174	Mean dependent var	1.151213	
Adjusted R-squared	0.784401	S.D. dependent var	4.632566	
S.E. of regression	2.144500	Sum squared resid	4180.384	
F-statistic	101.9074	Durbin-Watson stat	2.198359	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.537645	Mean dependent var	0.627715	
Sum squared resid	5836.063	Durbin-Watson stat	1.276365	

**Table 27: Model 2 ‘Dirty Data’**

Dependent Variable: MC_GDP				
Method: Panel EGLS (Period weights)				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 70				
Total panel (unbalanced) observations: 944				
Linear estimation after one-step weighting matrix				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.037561	0.201104	-0.186774	0.8519
FB_GDP	-0.141684	0.275528	-0.514227	0.6072
FD_GDP	1.027175	0.611699	1.679215	0.0935
FDI_GDP	-0.020197	0.122241	-0.165225	0.8688
LOGMC_L	0.090403	0.030647	2.949774	0.0033
LOGNOC	0.029101	0.086938	0.334734	0.7379
LOGYOO	-0.035892	0.071011	-0.505441	0.6134
D(GDP_POP)	-3.956236	2.071973	-1.909405	0.0565
D(MQM_GDP)	-0.039802	0.037782	-1.053468	0.2924
MC_GDP(-1)	0.860060	0.011407	75.40060	0.0000
AFR	0.042866	0.103350	0.414767	0.6784
AME	-0.025560	0.099439	-0.257043	0.7972
ASI	-0.069103	0.108001	-0.639832	0.5224
UNSOE	-0.078454	0.115600	-0.678668	0.4975
RESTRICTED	0.070594	0.069388	1.017374	0.3092
MNEX	-0.058843	0.141725	-0.415191	0.6781
Effects Specification				
Period fixed (dummy variables)				
Weighted Statistics				
R-squared	0.883264	Mean dependent var	2.380284	
Adjusted R-squared	0.878898	S.D. dependent var	6.875226	
S.E. of regression	2.394166	Sum squared resid	5210.417	
F-statistic	202.2890	Durbin-Watson stat	1.968309	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.372905	Mean dependent var	1.176062	
Sum squared resid	10239.25	Durbin-Watson stat	2.663020	

A similar round of testing was performed using only Europe and the Middle East to verify that results were not due to a low ratio of MNEX observations that equaled 1 biasing the results. This is in contrast to the expanded data set used in the ‘dirty data’ testing and offers the only region specific round of testing. Performance remained similar to hypothesis testing observed above in section B.4 reaffirming the exclusion of outliers carried in the ‘dirty data’ results.

**Table 28: Model 1 Europe Test Pre-Merger**

Dependent Variable: VT_MC	
Method: Panel Least Squares	
Sample (adjusted): 1987 2006	
Periods included: 20	
Cross-sections included: 36	
Total panel (unbalanced) observations: 487	

	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023318	0.062190	-0.374938	0.7079
FB_GDP	-0.154054	0.095253	-1.617316	0.1065
FD_GDP	0.452036	0.185810	2.432784	0.0154
FDI_GDP	0.088955	0.145553	0.611152	0.5414
LOGMC_L	0.028578	0.010328	2.766957	0.0059
LOGNOC	0.017780	0.024223	0.734015	0.4633
LOGYOO	0.037319	0.022665	1.646544	0.1003
D(GDP_POP)	0.701718	0.582703	1.204245	0.2291
D(MQM_GDP)	0.215438	0.151943	1.417889	0.1569
VT_MC(-1)	0.709434	0.031615	22.43999	0.0000
UNSOE	-0.064416	0.029437	-2.188258	0.0292
RESTRICTED	-0.019199	0.028514	-0.673339	0.5011
PRE_MNEX	-0.006739	0.026021	-0.258980	0.7958
Effects Specification				
Period fixed (dummy variables)				
R-squared	0.745308	Mean dependent var	0.396103	
Adjusted R-squared	0.727955	S.D. dependent var	0.383864	
S.E. of regression	0.200215	Akaike info criterion	-0.315398	
Sum squared resid	18.23919	Schwarz criterion	-0.040193	
Log likelihood	108.7993	Hannan-Quinn criter.	-0.207287	
F-statistic	42.95069	Durbin-Watson stat	1.888789	
Prob(F-statistic)	0.000000			

**Table 29: Model 1 Europe Test Post-Merger**

Dependent Variable: VT_MC				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 36				
Total panel (unbalanced) observations: 487				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.024602	0.061943	-0.397170	0.6914
FB_GDP	-0.156463	0.094923	-1.648320	0.1000
FD_GDP	0.450224	0.185658	2.425019	0.0157
FDI_GDP	0.090182	0.145723	0.618860	0.5363
LOGMC_L	0.029090	0.010141	2.868412	0.0043
LOGNOC	0.017504	0.024403	0.717298	0.4736
LOGYOO	0.036236	0.022190	1.633005	0.1032
D(GDP_POP)	0.692273	0.584758	1.183863	0.2371
D(MQM_GDP)	0.219386	0.152031	1.443030	0.1497
VT_MC(-1)	0.710688	0.031502	22.56013	0.0000
UNSOE	-0.064411	0.029480	-2.184908	0.0294
RESTRICTED	-0.017440	0.027500	-0.634171	0.5263
MNEX	-0.004784	0.038223	-0.125159	0.9005
Effects Specification				
Period fixed (dummy variables)				
R-squared	0.745279	Mean dependent var	0.396103	
Adjusted R-squared	0.727925	S.D. dependent var	0.383864	
S.E. of regression	0.200227	Akaike info criterion	-0.315285	
Sum squared resid	18.24125	Schwarz criterion	-0.040080	
Log likelihood	108.7718	Hannan-Quinn criter.	-0.207174	

F-statistic	42.94418	Durbin-Watson stat	1.891132
Prob(F-statistic)	0.000000		

**Table 30: Model 2 Europe Test Pre-Merger**

Dependent Variable: MC_GDP				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 36				
Total panel (unbalanced) observations: 487				
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.007801	0.071960	-0.108412	0.9137
FB_GDP	-0.174222	0.109439	-1.591950	0.1121
FD_GDP	0.224308	0.210138	1.067432	0.2863
FDI_GDP	0.011982	0.170390	0.070319	0.9440
LOGMC_L	0.027788	0.012017	2.312430	0.0212
LOGNOC	0.023863	0.028221	0.845560	0.3982
LOGYOO	-0.012265	0.026018	-0.471404	0.6376
D(GDP_POP)	-0.858204	0.671317	-1.278388	0.2018
D(MQM_GDP)	0.722602	0.176364	4.097215	0.0000
MC_GDP(-1)	0.899676	0.027764	32.40463	0.0000
UNSOE	-0.062365	0.034237	-1.821537	0.0692
RESTRICTED	0.078646	0.034134	2.304013	0.0217
PRE_MNEX	0.063011	0.030122	2.091868	0.0370
Effects Specification				
Period fixed (dummy variables)				
R-squared	0.819351	Mean dependent var	0.530944	
Adjusted R-squared	0.807043	S.D. dependent var	0.528585	
S.E. of regression	0.232191	Akaike info criterion	-0.019063	
Sum squared resid	24.53025	Schwarz criterion	0.256141	
Log likelihood	36.64183	Hannan-Quinn criter.	0.089048	
F-statistic	66.57089	Durbin-Watson stat	1.914573	
Prob(F-statistic)	0.000000			

**Table 32: Model 2 Europe Test Post-Merger**

Dependent Variable: MC_GDP				
Method: Panel Least Squares				
Sample (adjusted): 1987 2006				
Periods included: 20				
Cross-sections included: 36				
Total panel (unbalanced) observations: 487				
	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008589	0.071999	0.119287	0.9051
FB_GDP	-0.104821	0.108111	-0.969571	0.3328
FD_GDP	0.234218	0.211084	1.109596	0.2678
FDI_GDP	0.009980	0.171070	0.058339	0.9535
LOGMC_L	0.022064	0.011748	1.878136	0.0610
LOGNOC	0.017169	0.028535	0.601680	0.5477
LOGYOO	-0.000896	0.025709	-0.034836	0.9722
D(GDP_POP)	-0.904902	0.676147	-1.338321	0.1815
D(MQM_GDP)	0.705565	0.176943	3.987527	0.0001
MC_GDP(-1)	0.908570	0.027940	32.51898	0.0000

UNSOE	-0.062989	0.034409	-1.830609	0.0678
RESTRICTED	0.054995	0.033218	1.655596	0.0985
MNEX	-0.041857	0.044687	-0.936669	0.3494
Effects Specification				
Period fixed (dummy variables)				
R-squared	0.817965	Mean dependent var	0.530944	
Adjusted R-squared	0.805562	S.D. dependent var	0.528585	
S.E. of regression	0.233080	Akaike info criterion	-0.011418	
Sum squared resid	24.71851	Schwarz criterion	0.263786	
Log likelihood	34.78026	Hannan-Quinn criter.	0.096693	
F-statistic	65.95211	Durbin-Watson stat	1.919061	
Prob(F-statistic)	0.000000			

## Biography

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