

**GLOBAL FINANCIAL CRISIS TO REAL SECTOR CONTRACTION:
EXPLORING TRANSMISSION MECHANISMS IN A SMALL OPEN ECONOMY –
BUSINESS COPING STRATEGIES IN JAMAICA**

David Tennant, Ph.D.
Department of Economics, University of the West Indies, Mona Campus¹

Abstract: This paper examines the Jamaican experience in the aftermath of the US crisis, to highlight the impact of contagion and types of transmission mechanisms in effect in a small open economy. A micro-level approach is adopted, focusing on the post-crisis coping strategies being utilized by businesses. Coping strategies were categorized according to their expected impact on socio-economic outcomes, with distinctions being made between strategies with direct adverse, indirect delayed and minimal domestic socio-economic impacts. The study utilized primary data from a comprehensive survey of Jamaican businesses in the immediate post-crisis period, which captured the experiences, expectations and plans of critical decision-makers in the business community. Statistical tests of association were used to highlight the transmission mechanisms most highly associated with each type of coping strategy. The extent to which businesses' choice of coping strategies was impacted by basic business characteristics and the Government of Jamaica's policy response to the US crisis was also assessed. The information and analysis presented in this study are useful in the discourse on crisis transmission mechanisms, particularly where countries exhibit atypical tendencies.

1. Introduction

The epoch of globalization has led to increased financial integration – with the associated benefit of greater access to financing by emerging and developing economies, but with also the contingent costs related to financial market failures and cross-border contagion. The current crisis, spawned in the USA, but now of global proportions, is an evolving but critical case study of the contagion effects of financial crises and the transmission mechanisms through which such effects are transferred. If there is enhanced understanding of the manner through which contagion spreads in a variety of different circumstances, policymakers will be better able to develop effective firewalls, which do not simultaneously stymie creative economic activity.

¹ This paper was written while on a visiting academic fellowship with the Institute of Development Policy and Management at the University of Manchester. The assistance of the Faculty Social Sciences (UWI Mona) and the UWI Mona Campus Research and Publications Fund are acknowledged.

The fact that a crisis occurred in America is not surprising, as Demirguc-Kunt and Detragiache (1998:35) noted over a decade ago that since the increased popularity of financial liberalization, ‘the frequency of systemic banking problems has increased markedly all over the world.’ The discourse as to the causes of this crisis is also not novel. Inappropriate macroeconomic signals, lax regulatory and supervisory oversight of a liberalized financial market, institutional inadequacies, and the bursting of an asset-price bubble are a few of the oft-repeated causes of financial crises which are now being applied.² Similarly, the magnitude of the crisis and its socio-economic impacts within America, though devastating, are not unique, as recovery from financial crises in East Asia and Jamaica, for example, were also tremendously costly, both in terms of monetary value and social upheaval.³

What is, however, particularly noteworthy about this crisis is the speed and the extent to which its effects have spread all across the world. A contagious crisis is defined as an ‘event in a particular country that has a significant and immediate impact on markets in other countries... Transmission, therefore, is fast and furious’ (Boshoff 2006: 62). By this definition, the current crisis is clearly contagious, and may be one of the most contagious crises in recent history. Whereas numerous recent financial crises have been classified as contagious (for example Mexico – 1994, East Asia – 1997 and Russia – 1998), none of these have been as pervasive as the current crisis. Very few economies have been left unscathed by the current crisis, and many of these economies have been impacted in different ways and/or through different channels.

² See for example: Nanto et al (2008); Bernanke (2007); Mohamed (2009) and Charles and Maloney (2008).

³ See for example: Kirkpatrick and Tennant (2002); Tennant (2006); and Tennant and Kirton (2006).

This paper examines the Jamaican case study, to highlight the nature of contagion and types of transmission mechanisms in effect in a small open economy, heavily dependent on trade with the USA. This case study is particularly interesting, as unlike many other studies in this area, it adopts a micro-level approach to the analysis, focusing on the post-crisis coping strategies being adopted by a randomly-selected, stratified sample of 284 Jamaican businesses.⁴ Rather than using proxies computed from secondary data, this study takes advantage of a timely and comprehensive survey of Jamaican businesses in the immediate post-crisis period, to capture the experiences, expectations and plans of critical decision-makers in the business community. This approach has been adopted, because the ultimate socio-economic impact of the global crisis in any country is dependent on the ability of businesses of all sizes, whether formal or informal, to cope with and/or adjust to crisis and post-crisis conditions. The coping strategies adopted by businesses, ranging from own-account workers to large multinational corporations, will determine the extent to which major socio-economic dislocation can be avoided.

The results thus highlight and categorize the most prevalent coping strategies identified by Jamaican businesses, according to their expected impact on socio-economic indicators. A number of statistical tests are then utilized to analyse the transmission mechanisms most likely to precipitate the respective categories of coping strategies. The mechanisms to be analysed include traditional financial and trade linkages typically discussed in the literature, as well as psychological linkages alluded to but not frequently assessed. The proclivity of different types of business to utilize different strategies will also be explored, as will be the impact of the Government of Jamaica's policy response to the US crisis.

⁴ Whereas Forbes (2000) and Boshoff (2006) also use firm-level data, this study is unique in that it utilizes primary rather than secondary data, collected specifically for the purpose of estimating the impact of the US crisis on Jamaican businesses.

The remainder of the paper is organized as follows. Section 2 very briefly highlights the most salient points about the Jamaican case to provide context. Section 3, summarily reviews the literature to highlight the theorized effect of financial instability on real sector outcomes, and the international transmission of such outcomes. Section 4 outlines the model being used in this study, and section 5 describes the data, methodology and variables utilized. The final two sections present the results, analysis and conclusions.

2. The Jamaican Case Study

Economic Conditions in Pre-US Crisis Jamaica

Guided by a number of World Bank structural adjustment programmes, successive Jamaican governments have implemented privatization and trade and financial liberalization policies aimed at fostering private sector led growth. Economic growth and unemployment rates have, however, not significantly improved in the recent past. The World Bank (2003) notes that, ‘...Jamaica’s recent GDP growth has been negligible, as it was over most of the last 20 years and was actually negative in 1996-1999... During the 1990s, Jamaica’s per capita GDP growth was in the lowest quartile of countries.’ Furthermore, as indicated in Table 1, even though GDP growth became positive as of 2000, this growth has barely offset the decline over the previous four years.

Table 1 - Selected Indicators of Economic Performance				
Year	Economic Growth (%)	Real GDP (J\$m)	Real Per Capita GDP (J\$)	Unemployment Rate (%)
1992			8,052.0	15.80
1993	1.97	216,571.8	89,095.0	16.20
1994	0.89	218,737.8	89,289.0	15.40
1995	1.03	223,681.8	90,441.0	16.20
1996	-1.06	225,129.1	89,696.0	16.00
1997	-1.72	227,706.8	87,877.0	16.50
1998	-0.34	220,172.4	89,106.0	15.50
1999	-0.44	222,082.5	86,262.0	16.00
2000	0.67	223,770.1	86,414.0	15.50

Table 1 - Selected Indicators of Economic Performance				
Year	Economic Growth (%)	Real GDP (J\$m)	Real Per Capita GDP (J\$)	Unemployment Rate (%)
2001	1.73	227,069.8	87,334.0	15.00
2002	1.10	229,536.3	87,884.0	14.20
2003	2.30	235,190.4	89,474.0	11.40
2004	0.90	237,475.2	89,885.0	11.70
2005	1.40	240,863.7	90,738.0	11.20
2006				10.30

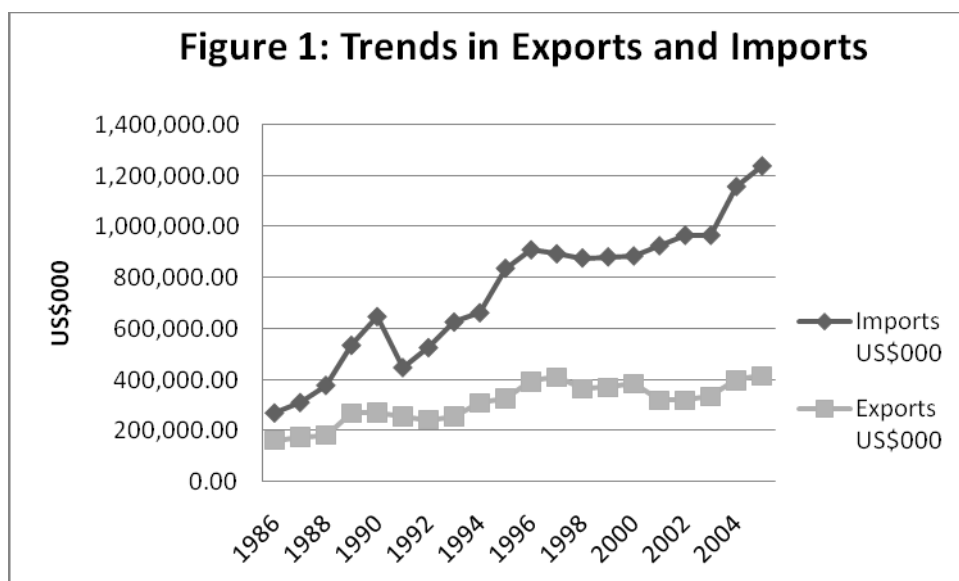
Sources: Bank of Jamaica, *Statistical Digest*, various issues
CARICOM Secretariat, *Caribbean Trade and Investment Report*, 2000

Factors contributing to the country's poor economic growth performance during the 1990s and the first half of this decade include: adverse weather conditions affecting the agricultural sector; difficulties experienced in the financial and insurance services sector; the government's anti-inflationary tight monetary policies; the poor external climate; the increase in real wages; the cost of crime; and increasing government consumption (World Bank 2003 and Deutsche Bank 2000).

Prominent in this list is the poor external climate. External factors have had a major impact on the Jamaican economy, as it is a small open economy, heavily dependent on: agricultural exports (including sugar and bananas); the export of bauxite and alumina; and tourism (World Bank 2003). Remittances from North America and the United Kingdom have also played an increasingly significant role in the economy. The country's dependence on foreign foods and the impending removal of preferential trade arrangements for major traditional exports has negatively affected the agricultural sector. The tourism industry has traditionally suffered from shocks to the USA and UK economies, visitors' perceptions of the country's crime rate, and travel advisories issued by foreign authorities.⁵ Similarly, the bauxite industry is heavily influenced by developments in the global economy and by developments within the world bauxite, alumina and aluminium industry. In light of these factors, it is not

⁵ Deutsche Bank (2000)

surprising that the country's exports have grown at a significantly smaller rate than imports, with the gap between exports and imports increasingly considerably over time (see figure 1).



Source: Bank of Jamaica, *Statistical Digest*, various issues

The negative economic growth in the late 1990s was also precipitated by a crisis in the financial sector. Following a dramatic expansionary post-liberalization period in the early 1990s, the fortunes of the Jamaican financial sector had changed rapidly and dramatically by the mid-1990s. The problems in the financial sector reached crisis proportions when a downturn in the equity and real estate markets precipitated illiquidity in the life insurance industry, which quickly spread to affiliated commercial banks.⁶ There was a ‘flight to quality’ within the domestic financial system, with depositors withdrawing their savings from the perceived weak indigenous institutions, and depositing them with the branches of foreign banks. The government then placed 12 financial institutions under temporary management, and otherwise intervened in 10 financial institution groups so as to facilitate resuscitation and restructuring of the financial sector.⁷ Whereas the World Bank (2003:88) notes that the

⁶ Kirkpatrick and Tennant (2002)

⁷ Tennant and Kirton (2006)

resolution of the crisis was one of the world's fastest, the cost to the country was large, with the crisis-related debt being approximately two-thirds of GDP (Chen-Young, 1998).

The cost of servicing the expanding public debt (135.8% of GDP in 2006) poses significant fiscal challenges for the Jamaican government. It has, however, repeatedly re-stated its commitment to the maintenance of a stable macroeconomic climate, and has made progress in stabilizing the economy since the mid-1990s. Expenditure cuts and strong revenue measures have been used to reduce the large fiscal deficit, and tight fiscal and monetary policies and careful management of the Net International Reserves (NIR) have led to a reduction in the rate of inflation, and relative stability being maintained in the foreign exchange market (see Table 2).

Table 2 - Selected Macroeconomic Indicators				
Year	Inflation Rate (%)	Average Annual Exchange Rate J\$ per US\$	Adjusted Central Government Balance ⁸	
			Fiscal Year	% of GDP
1990	29.8	7.18		
1991	80.2	12.85		
1992	40.2	23.01	92/93	3.7
1993	30.1	25.68	93/94	3.0
1994	26.7	33.35	94/95	3.1
1995	25.6	35.54	95/96	1.8
1996	15.8	37.02	96/97	-6.3
1997	9.2	35.58	97/98	-8.7
1998	7.9	36.68	98/99	-12.3
1999	6.8	39.33	99/00	-8.3
2000	6.1	43.32	00/01	-5.5
2001	8.8	46.09	01/02	-5.7
2002	7.1	48.54	02/03	-8.0
2003	13.8	57.93	03/04	-9.9
2004	13.7	61.34	04/05	-8.6
2005	12.6	62.50	05/06	-4.8
2006	5.7	65.88		

Sources: Bank of Jamaica, *Statistical Digest*, various issues; IMF, *International Financial Statistics*, various issues; World Bank (2006); www.pioj.gov.jm/statistics

⁸ Includes FINSAC interest payments on a full year basis. Extracted from World Bank (2003)

Economic Conditions in Jamaica since 2008

The Jamaican economy has not been spared the effects of the US crisis. Remittances, along with the number of barrels imported into the country has fallen, Government of Jamaica Treasury Bills face the risk of being sold at fire-sale prices in the global market,⁹ and a few financial institutions were exposed by virtue of investments in distressed American institutions.¹⁰ Downward revisions of Jamaica's economic outlook by the rating agencies were the harbingers of economic downturns in late 2007 and 2008. The country's economic outlook was revised from stable to negative by Standard and Poors, which was followed by Moody's downgrade of the country's debt rating from B1 to B2.¹¹

The Jamaican economy experienced negative growth of -0.4% at the end of 2008.¹² Correspondingly, the unemployment rate increased from 9.3 percent in October 2007 to 10.3 percent in October 2008, and the rate of job-seeking also increased from 5.9 percent to 6.3 percent.¹³ Most sectors were affected by this economic downturn, as between January and September 2008 there was a reduction in output from three sectors,¹⁴ while output remained flat in five sectors.¹⁵ Only four sectors recorded modest growth,¹⁶ including, interestingly, the financial sector.¹⁷ While finance houses and building societies exhibited a reduction in loans and advances and the number of new mortgages offered, respectively, commercial

⁹ This occurred as foreign entities became generally more risk averse and tried to increase their holdings of very liquid assets by reducing holdings of emerging market debt.

¹⁰ CaPRI (2009)

¹¹ CaPRI (2009)

¹² See: <http://www.pioj.gov.jm/Documents/Articles/70.pdf>

¹³ <http://www.statinja.com/stats.html#3>.

¹⁴ Agriculture, forestry & fishing, construction, and transport, storage & communication

¹⁵ Manufacturing, wholesale & retail trade, repairs & installation, producers of government services, and other services

¹⁶ Electricity & water supply, hotels & restaurants, finance & insurance services, and real estate, renting & business activities

¹⁷ CaPRI (2009)

banks increased loans and advances to all sectors, while total loans outstanding by credit unions also increased slightly.

Macroeconomic deterioration was, however, evident in 2008. The annual inflation rate was 16.8 percent, with projections of between 15%-17% for the 2008/2009 fiscal year.¹⁸ There was also modest real exchange rate volatility throughout the year, with an appreciation of 3.3% in the first quarter, followed by further appreciations of 2.7% and 3.7% in the second and third quarters respectively, and a 1.9% depreciation in the last quarter.¹⁹

Jamaica's economic performance prior to the US crisis was not stellar, having been impacted by numerous external and internal factors. The openness of the economy and the heavy reliance on sectors such as tourism, bauxite and remittances for foreign exchange earnings expose the economy to external shocks. It is therefore not surprising that the small advances made since recovery from the Jamaican financial crisis of the mid to late 1990s have been virtually overturned with the onset of the US crisis. The Jamaican experience is, however, not completely typical, as in spite of the global credit crunch, one of the few growth sectors in 2008 was the financial sector, which was, on average, issuing increasing amounts of credit. This suggests that while there may have been contagion, the transmission mechanisms require further investigation. Subsequent sections explore this in depth. This is, however, preceded by a review of the theoretical literature examining the relationship between financial sector instability and economic performance, and the transmission of such instability across countries.

¹⁸ BOJ, Statistical Digest December 2008, available at: http://www.boj.org.jm/uploads/pdf/stats_digest/stats_digest_dec2008.pdf

¹⁹ (PIOJ, Press Release 2008 (<http://www.pioj.gov.jm/Documents/Articles/59.ppt>.)

3. Literature Review – Financial Instability, Real Sector Outcomes and International Transmission Mechanisms

Financial Instability and Real Sector Outcomes

Whereas numerous authors have cogently argued that the financial sector can create economic growth by fulfilling its various functions and by operating in an efficient manner, it cannot be denied that the ability of the sector to function effectively and efficiently is heavily dependent upon the stability of the financial system. The implication of this is highlighted by Stiglitz (1993:23) who notes that:

‘Financial markets essentially involve the allocation of resources. They can be thought of as the brain of the entire economic system... if they fail, not only will the sector’s profits be lower than they would otherwise have been, but the performance of the entire economic system may be impaired.’

Financial instability can therefore undermine the intermediation process by leading to the inefficient allocation of investments, and by reducing the funds available for investment. These will in turn precipitate sub-optimal real-sector outcomes.

The Allocation of Investments

While it is theorized that financial intermediaries can foster the efficient allocation of resources, it is widely acknowledged that financial instability can lead to undesirable outcomes. A source of instability frequently identified in the literature is the volatility of stock markets. Arestis et al (2001:19) note that excessive volatility in stock markets ‘is likely to result in an inefficient allocation of resources, (and) upward pressures on interest rates in view of the higher uncertainty, (thus) hampering both the volume and the productivity of investment and, therefore, reducing growth.’ They further warn that speculation and excessive trading on stock markets may ‘induce noise into the market to the detriment of efficient resource allocation.’

Stiglitz (1993) however, asserts that the problem of financial instability is not limited to stock markets, but is fundamentally caused by asymmetric information. He (1993:24) asserts that because information in financial markets is asymmetric and incomplete, ‘... market failure will be particularly endemic in financial markets.’ Such failures occur in crucial areas such as the monitoring of the solvency and prudent management of financial institutions. Because monitoring is a form of information, it is a public good and is undersupplied, as everyone expects that someone else is doing it. As a result, managers, knowing that they are not being adequately monitored, may take inappropriate risks or attempt to divert funds to their own use, thus putting the individual financial institution at risk and impairing the intermediation process.

Minsky (1977 & 1982) in his ‘financial instability’ hypothesis also argues that financial fragility is endemic, as the desire to increase profits leads banks to continuously increase their holdings of speculative finance. As such financing increases, there is a rise in the demand for (and the price of) capital assets. More investment is demanded and financed, and profits increase. Minsky (1982:26) therefore asserts that, ‘stability is destabilizing, not initially to a recession but first to an expansion of investment.’ Llewellyn (1998:257) highlights the consequences of this ‘expansion of investment’ by noting that, ‘when... fast growth strategies are pursued by all banks simultaneously, borrowers become over-indebted and more risky...’ This then leads to irrational borrowing, wherein firms/individuals service their debt by borrowing from other sources. Gavin and Hausmann (1996) argue that this irrational borrowing has the effect of ‘depriving lenders of the information that they need in order to discriminate between sound and risky borrowers,’²⁰ thus preventing the financial

²⁰ Williamson and Mahar (1998:56)

intermediaries from being able to allocate funds to the borrowers most likely to be productive.

The Mobilization of Funds for Investment

Once financial instability precipitates a financial crisis, the savings mobilization role of the financial sector is also drastically impeded. Diamond and Dybvig (1983:403) note that the role of banks is to facilitate risk sharing by transforming illiquid assets into liquid liabilities. However, in performing this role, banks open themselves to two possible equilibrium results. In the first, ‘if confidence is maintained, there can be efficient risk sharing, because in that equilibrium a withdrawal will indicate that a depositor should withdraw under optimal risk sharing.’ However, ‘if agents panic, there is a bank run and incentives are distorted. In that equilibrium, everyone rushes in to withdraw their deposits before the bank gives out all of its assets,’ thus causing liquidity problems and possibly the failure of the institution.

Stiglitz (1993:26) however notes that because of the ‘externalities of financial disruption’, the failure of just one financial institution can have significant effects. One such effect is that when a bank goes bankrupt, its ‘information capital’ is largely dissipated, thus causing a disruption to the flow of credit to particular borrowers. Even more significant are the signalling effects of a bank failure, as ‘even if a bankruptcy does not trigger a financial panic, some depositors will withdraw funds from other financial institutions because of a perceived risk of default. These withdrawals may have an adverse effect on other financial institutions by leading investors to question their viability.’²¹ The typical response of financial institutions to such pervasive withdrawals of funds is a drastic contraction of credit. Therefore, instead of mobilizing funds for investment, financial instability can actually cause

²¹ Stiglitz (1993:26-27)

the opposite effect, with even profitable and productive businesses being unable to obtain the requisite capital.²²

Bernanke (1983) similarly argues that the fear of bank runs associated with financial instability sets in motion a chain of events that ultimately lead to a protracted contraction of aggregate output. He (1983:264) notes that typically such instability leads to large withdrawals of deposits, precautionary increases in reserve-deposit ratios, and an increased demand by banks for very liquid assets. These factors, combined with the actual failure of some banks, tend to force ‘a contraction of the banking system’s role in the intermediation of credit’, as only a few safe borrowers are able to easily access credit. Bernanke (1983:257) explains that this is because financial instability reduces the effectiveness with which the financial sector is able to alleviate the information asymmetries existing between borrowers and lenders. This leads to an increase in the real cost of intermediation, which eventually becomes too expensive for some borrowers, who are now unable to access credit. This contraction of credit in turn limits the economy’s productive capacity, as worthwhile investments are starved of funds.²³

Financial instability and crisis within a country can thus have adverse impacts on real sector output through, *inter alia*, credit crunches and/or heightened inefficiencies in the allocation of resources. As, however, is now being evidenced, such effects of financial instability and

²² Nixon and Walters (1999:498) note that in South East Asia, because of the contraction of credit following the financial crisis, a large number of businesses went bankrupt and there was a sharp contraction in output.

²³ Bernanke (1983:257) also notes that Friedman and Schwartz (1963) posit that bank failures can worsen economic contraction by reducing the wealth of bank shareholders, and, more importantly, by leading to a rapid fall in the supply of money. However, while agreeing with both of these channels, Bernanke (1983:257) argues that they cannot fully explain the link between the financial sector and aggregate output in the American economy in the 1930s, as ‘the reductions of the money supply in this period seems quantitatively insufficient to explain the subsequent falls in output.’

crises can cross international borders. The transmission of such effects has been heavily researched, the results of which are briefly summarized in the paragraphs that follow.

International Transmission Mechanisms

Making reference to the ‘Asian Flu’, ‘Russian Virus’, and the ‘Tequila Effect’, Forbes (2000:1) notes that there is little agreement on exactly why crises are transmitted internationally. She identifies five different channels through which a crisis in one country could be transmitted to firms in other countries: ‘product competitiveness; an income effect; a credit crunch; a forced portfolio re-composition; or a wake-up call’ (Forbes 2000:3). These channels are, however, ‘not mutually exclusive and could overlap in important ways.’²⁴ Boshoff (2006:63) thus organizes them into three broad categories to reflect these associations – financial linkages, trade linkages and linkages based on investor behavior (psychological linkages).

Financial Linkages

Boshoff (2006:64-65) includes Forbes’ (2000) credit crunch and portfolio re-composition linkages in this category. The first he explains by noting that ‘financial institutions when adversely affected by deposit withdrawals during a crisis, may liquidate loans to foreigners in order to maintain sufficient liquidity.’ This creates a credit crunch or loan rationing, with international implications. Forbes (2000:8) however notes that empirical tests of transmission through the credit linkage yield mixed results.

‘Peek and Rosengreen (1997) find evidence of reduced lending by Japanese banks in the US after the 1990 Japanese stock market crash... (However) Kim (1999) and Ghosh and Ghosh (1999) both estimate disequilibrium models of bank loans during the Asian crisis. The first... concludes that there was evidence of a quantity rationing causing a credit crunch, while the second... concludes that there was not’ (Forbes 2000:8).

²⁴ Forbes (2000:6)

Forced portfolio re-composition also forms part of Boshoff's (2006) financial transmission channel. He notes that in the crisis country, leveraged investors suffering adverse price movements in a particular asset will be faced by margin calls from clearinghouses. 'In order for them to pay the maintenance margin, the investors will be forced to sell some asset holdings. The strategy, however, will be to sell assets other than those whose prices have already collapsed. If the assets to be sold are from countries other than the one in crisis, information asymmetries will cause markets to be unable to distinguish between countries in crisis and those not in crisis' (Boshoff 2006:65). Forbes (2000:8), however, argues that the empirical evidence relating to this channel is also ambiguous. She notes that while authors such as Valdes (1996), Frankel and Schmukler (1998) and Kaminsky et al (1999) found evidence of a 'forced portfolio re-composition from individual portfolios during the Mexican, East Asian and Russian crises', others such as Rea (1996) and Froot et al (1998) argued that 'recent crises did not spread through this channel, since net redemptions and capital outflows by mutual fund investors were small during the Mexican and East Asian crises' (Forbes 2000:8).

Trade Linkages

Boshoff (2006:63-64) also decomposes the trade linkages into two sub-channels: the competition linkage and the domestic demand linkage. The trade effect brought about by the competition linkage occurs when 'a crisis country, following domestic financial problems, experiences either currency depreciation... or opts for devaluation of its currency... The devaluation or depreciation reduces the export competitiveness of the countries with which it competes... This (also) puts pressure on prices internationally – if the crisis country's exports... are large enough.' The domestic demand linkage comes into play

when a domestic financial crisis affects local demand for imported goods, which further affects nations exporting to the crisis country (Boshoff 2006:64).

Tests of these two sub-linkages are often combined as tests of trade. Forbes (2000:7-8) highlights the empirical inconsistencies in these studies by noting that ‘papers by Eichengreen, Rose and Wyplosz (1996) and Glick and Rose (1999) argue that currency crises are spread across countries mainly through international trade linkages... (While) papers by Masson (1999) and Baig and Goldfajn (1998)... argue that trade linkages were not significant transmission mechanisms during recent crises...’ In a subsequent study, Forbes (2001), however found that trade linkages are statistically significant and economically important transmission mechanisms, but also noted that they only explained about one-quarter of international variability experienced during recent crises, suggesting that ‘other cross-country linkages, such as financial channels, may also be important.’

Psychological Linkages

Boshoff (2006:63) explains this transmission mechanism as the ‘propagation of crises by reference to investor behavior.’ Forbes (2000:6) refers to it as the ‘wake-up call effect’. The concept is that ‘a crisis in one country (or investor behavior in one country) can provide information about other countries (or how investors will behave in other countries).’ Therefore, ‘investor behavior and information asymmetries... can lead to herding or informational cascades.’ The impact on individual firms through this channel is thus straightforward – ‘if a shock is transmitted to a second country through this channel, then all firms in the second country should be affected, and firm characteristics should not be significant’ (Forbes 2000:6). Although Boshoff (2006:63) highlights the difficulties in testing the psychological phenomena associated with this channel, Forbes (2000:9) notes that

studies by Baig and Goldfajn (1998) and Kaminsky and Schmukler (1999) provide evidence of herding effects acting as transmission mechanisms.

4. The Model

The model adopted in this paper seeks to explain how the transmission mechanisms described in the literature impact on socio-economic outcomes through the coping strategies adopted by businesses. Olukoshi (1996), in examining how Nigerian businesses in the Kano industrial area coped with economic crisis and structural adjustment measures, noted that the coping strategies of different types of entrepreneurs are varied and complex. He, however, categorized these strategies under four broad headings: rationalization of production and input use; changing managerial strategies and relations; economic diversification and export promotion; and changing marketing, procurement and financial arrangements (Olukoshi 1996:23-33).

Rationalization of production and input use is noted to be the most important and dramatic element of change in the post-crisis adjustment process, as it often relates to the use of large-scale retrenchment. The closure of operations, laying-off of workers and reduced usage of inputs are included in this category of coping strategies, as business capacity utilization levels decline. Closely related to staff retrenchment are the frequently forced changes in managerial strategies and employer-employee relations. Reduced wages and benefits to staff are often accompanied by decentralization of decision-making in order to improve flexibility and heighten employees' commitment to the business. Economic diversification and export promotion is viewed as one of the most advantageous and proactive coping strategies, as new sources of income are sought through the introduction of new product lines and the sourcing of alternative markets. Finally, as economic and financial crises frequently precipitate the

collapse (or weakening) of traditional marketing and financing channels, numerous businesses are also coerced to seek alternate sources of finance and adopt revised marketing and procurement arrangements as part of their coping strategy. In the wake of a financial crisis and credit crunch, seeking alternative financing is particularly important.

Each of these business coping strategies (BUScope) is expected to have different impacts on socio-economic outcomes, with some variation even within Olukoshi's (1996) categories. This paper distinguishes between coping strategies which are reasonably expected to have:

- (1) Direct and virtually immediate domestic socio-economic impacts, which are relatively dramatic (DIRimp);
- (2) Indirect, delayed domestic impacts, wherein the ultimate socio-economic effects are often filtered through a third party with which the business interacts (INDIRimp); and
- (3) Minimal domestic socio-economic impacts, as coping strategies frequently lead to efficiency and/or diversification gains (MINimp).

The closure of businesses, laying-off of workers, and reduction in wages and benefits to staff are all expected to have direct, almost immediate and relatively dramatic domestic socio-economic impacts, as households' livelihoods are instantaneously and adversely affected. The socio-economic effects of reduced non-staff expenses and usage of local inputs, while also expected to be considerable, will be delayed and indirect, as the suppliers which are thus impacted take time to adjust to the reduction in their market share. Depending on the coping strategies they adopt, the eventual socio-economic impact may be relatively large (if they choose to shut down operations or lay-off workers, for example), or relatively small (if, for example, alternative markets can be found). Finally, if businesses adjust to the crisis by reducing the use of imported inputs, sourcing alternative markets or accessing new sources of

finance, then the domestic socio-economic impact will be minimal, with efficiency and diversification gains being possible.

With these assumptions, the first segment of the model is expressed as follows:

$$\Delta Y_s = f(\text{BUScope}) \quad (1)$$

$$\text{BUScope} = \Sigma(\text{DIRimp}, \text{INDIRimp}, \text{MINimp}) \quad (2)$$

Where ΔY_s represents the post-crisis change in socio-economic outcomes that accrue as a result of the business coping strategies that are adopted.

The transmission mechanisms discussed in the preceding section (i.e. financial, trade and psychological linkages) enter the model as factors which impact the type of coping strategy chosen by businesses.

$$\text{BUScope} = f(\text{FINlin}, \text{TRADElin}, \text{PSYlin}, \text{BUSchar}, \text{GOVres}) \quad (3)$$

In equation (3) it is theorized that the business coping strategy utilized is dependent on the transmission mechanisms (FINlin, TRADElin and PSYlin), as well as on a number of basic characteristics of the businesses (BUSchar), and on the expected impact of the government's response to the crisis (GOVres).

Finally, in accordance with the literature, each of the transmission mechanism variables are broken down into its component parts, reflecting the credit (CREDlin), portfolio re-composition (PORTlin), competition (COMPlin) and domestic demand (DEMLin) linkages associated with the financial and trade transmission mechanisms, respectively. The psychological transmission mechanism, which relates primarily to the effect of herding

behavior by investors, is assumed to be a function of businesses' expectations with regards to both financial and trading conditions (ExFINlin and ExTRADElin).

$$\text{FINlin} = f(\text{CREDlin}, \text{PORTlin}) \quad (4)$$

$$\text{TRADElin} = f(\text{COMPlin}, \text{DEMLin}) \quad (5)$$

$$\text{PSYlin} = f(\text{ExFINlin}, \text{ExTRADElin}) \quad (6)$$

5. Data, Methodology and Variables

Primary data, collected by the Caribbean Policy Research Institute (CaPRI), were used to estimate the above model. A survey of Jamaican businesses was conducted in the immediate post-US-crisis period, from January to March 2009. The target population was all businesses operating in Jamaica, stratified by size, sector and location (county). The sampling frame used was a database of all companies that are serviced by the sole provider of electricity in the country. This had the advantage of including both formal and informal businesses. A sample size of 400 businesses was targeted; a random sample of 284 firms completed the survey.

Sample selection across the three strata was generally based on a principle of equal allocation. However, in any stratum where there were too few firms to support equal allocation, a census was conducted. The remainder of the sample was then allocated equally across the rest of the strata. This thus necessitated the weighting of the data prior to analysis, to ensure proportionality. Weighting by sector and county was, however, not possible, as reliable population percentages are not available. Weighting by the size of the businesses (measured by the number of employees), was conducted.

The data were analyzed using the Statistical Package for Social Scientists. Cross-tabulations and various statistical tests were used to highlight statistically significant associations and differences between key variables. The variables used are derived from the questions asked in the survey instrument, which focused on measuring businesses' degree of direct and indirect exposure to the US crisis through a number of different channels, most of which closely correspond with the transmission mechanisms outlined in the literature. Many of the questions were Likert-Scale questions, and as such, most of the variables used in the analysis are ordinal, while a few are nominal.

The Dependent Variable – Business Coping Strategies

Respondents were asked to rank the likelihood of their undertaking various coping strategies in response to the US-crisis. The strategies on which they were queried correspond very closely with those outlined in section 4. The strategies were thus categorized according to the broad classification of direct, indirect and minimal impacts, and re-coded variables were created using simple rounded arithmetic means. For DIRimp, INDIRimp and MINimp, 1 represents very likely, 2 – likely, and 3 – not likely to undertake such measures. The differences between the means of these variables were tested using the Wilcoxon Signed Ranks test, and associations were tested using Spearman's rho.

The Independent Variables

Financial Transmission Mechanisms (FINlin)

The first financial transmission mechanism, credit linkage (CREDlin), examines international transmission of financial crises through credit crunches. This is captured through a number of questions which: queried whether or not businesses had lines of credit with foreign and local financial institutions and suppliers; required a ranking of the importance of these lines

of credit to the survival of the businesses; and necessitated a tiered description of changes experienced with the maturity, cost, availability and size of these lines of credit since the US crisis. The detailed information derived from this questionnaire allows for a comprehensive analysis of this transmission mechanism for all lines of credit available to businesses.

Measurement of the second financial linkage transmission mechanism was not as straightforward, as the effect of forced portfolio re-composition was not directly measured in the survey instrument. The starting point of this transmission mechanism is, however, that leveraged investors suffering adverse price movements in a particular asset will be faced by margin calls from clearinghouses. This will force the sale of asset holdings, and because of information asymmetries, markets experiencing financial crises and those not in crisis will be indistinguishable. The best proxies available for this variable relate to the degree of leverage of Jamaican businesses to risky overseas investments. If the degree of leverage is high, market signals will indicate no difference between the Jamaican market and the crisis economies, and investors will respond accordingly. This indirect proxy for the forced portfolio re-composition linkage (PORTlin) is thus captured through variables which reflect the percentage of total deposits and investments held by Jamaican businesses outside of Jamaica, and whether or not funds are held with distressed foreign institutions.

Trade Transmission Mechanisms (TRADElin)

As is common in most studies of this nature, the sub-components of the trade transmission mechanisms, competition linkages (COMPlin) and domestic demand linkages (DEMLin) are lumped together as tests of trade, due to the difficulties in reliably differentiating between the two in empirical studies.²⁵ Trade linkages are measured in this study by examining the

²⁵ Forbes (2000:7-8)

changes experienced in prices and quantities of goods sold and services provided by Jamaican businesses in export and domestic markets since the US crisis.²⁶ The import dependence of the Jamaican economy also necessitates an examination of changes in the cost and availability of key foreign and local inputs since the crisis. Although not emphasized in the literature, this is an important trade-related transmission mechanism for a small open economy, as if credit crunches and declining output in the overseas crisis economies cause input prices to increase and availability to decrease, adverse real sector outcomes through this channel are likely.²⁷

Psychological Transmission Mechanisms (PSYlin)

The psychological transmission mechanism is assumed to be a function of businesses' expectations with regards to both financial and trading conditions (ExFINlin and ExTRADELin). These variables are similar to the ones described above, except that instead of describing businesses' experiences with lines of credit and in output and input markets since the crisis, they measure businesses' expectations of further changes in the medium to long run, as the global economy adjusts to the US financial crisis. These variables are important, because whereas the literature focuses on the expectations and herding behavior of foreign investors, very little emphasis is placed on the expectations of local businesses and investors, and how these expectations will impact on the coping strategies utilized. The impact of expectations of future business conditions on investment decisions is well established in the literature, and in this vein, such expectations are examined in this study as part of the psychological channel through which the effects of financial crises are transmitted across international borders.

²⁶ Changes in domestic markets are also measured, as the American economy dominates the Jamaican economy to such a large extent that they are price takers locally.

²⁷ The availability and cost of local inputs can also be impacted by the US crisis, as many intermediate goods are also import dependent.

Basic Business Characteristics

The basic business characteristics examined in this study include: the size of the business (classified by number of employees); the value of assets owned by the business; the sector within which it operates; type of business ownership; years of operation; location of primary markets; skill level of employees; and primary product line. These are all essential characteristics of a business, and it is imperative to ascertain whether such basic attributes have an impact on the crisis coping strategies used by firms. The role of basic business characteristics is under-emphasized in the literature on transmission mechanisms, but they are nonetheless included in this study as independent variables worthy of analysis.

Expected Impact of the Jamaican Government's Stimulus Package

In December 2008, the Government of Jamaica announced 15 policy initiatives in response to the US crisis, intended to stimulate and provide relief to Jamaican workers and businesses. CaPRI (2009:50) broadly classifies these initiatives as providing: 'tax relief on income and expenditure to individuals and local businesses; relief from other statutory fees; direct government spending to targeted areas; and special provisions and arrangements.' They note that '12 of the initiatives were specifically designed to stimulate business performance in five main sectors of the economy, while the other three are sector-neutral.'

The businesses surveyed were asked to rank how they expect each measure included in the GOJ's stimulus package to impact on their business. The possible responses ranged from very beneficial to disadvantageous. The rounded arithmetic mean of the responses for all the initiatives was calculated to derive a recoded variable – GOVres, which reflects the overall expectations of the business community toward the stimulus package. This variable is

included in the analysis, to ascertain whether business perceptions of the government's response to the crisis have had an impact on the coping strategy chosen.

For all the independent variables, statistically significant relationships with the dependent variables are highlighted using the Spearman's rho, Cramer's V and Pearson's chi-square statistical tests, as appropriate. The strength and nature of these relationships will be assessed. Cross-tabulations will be used to provide additional insight where necessary. This study does not examine causality, however, in many instances the direction of causality is clearly predicted by theory.

6. Results and Analysis

This study assesses whether the transmission mechanisms described in the literature, along with a set of basic business characteristics and the expected impact of the government's response to the US crisis, have an effect on socio-economic outcomes through the types of coping strategies adopted by Jamaican businesses. This section first analyses the dependent variables, and then examines the statistically significant relationships between the dependent and independent variables.

The Dependent Variables – Business Coping Strategies

Tables 3 and 4 provide basic descriptive statistics and frequencies for each of the dependent variables. There are clear indications that Jamaican businesses are least likely to choose post US-crisis coping strategies classified as DIRimp, as with the largest mean²⁸ and lowest standard deviation, there is relative uniformity in the unpopularity of such coping strategies. Notwithstanding this, the proportion of businesses likely to undertake DIRimp coping strategies that will have direct and immediate adverse socio-economic effects is not

²⁸ Please recall that: 1 = Very Likely; 2 = Likely; and 3 = Not Likely

negligible at approximately 11%. The factors impacting this variable thus remain important for further consideration.

Almost a third (30.4%) of the businesses indicated a proclivity towards coping strategies classified as INDIRimp, and just under a half (45.4%) noted that they were very likely or likely to undertake coping strategies that would have minimal domestic socio-economic impacts (MINimp). The coping strategies with indirect and minimal domestic socio-economic impacts are thus more popular than DIRimp. There is, however, more divergence in the views of the respondents with respect to these two categories of coping strategies, with standard deviations of 0.544 and 0.602, respectively. These reasons for this divergence will be elucidated as relationships with the independent variables are explored in the next subsection.

Table 3: Dependent Variables – Descriptives

Statistics	DIRimp	INDIRimp	MINimp
Mean	2.89	2.66	2.49
Standard Deviation	0.324	0.544	0.602
Skewness	-2.560	-1.335	-0.734
SE of Skewness	0.140	0.140	0.140
Kurtosis	5.094	0.830	-0.427
SE of Kurtosis	0.278	0.278	0.278

Source: All tables in the results and analysis section present statistics computed by the author from the primary data collected.

Table 4: Dependent Variables – Frequencies

Variable	Very Likely		Likely		Not Likely	
	#	%	#	%	#	%
DIRimp	0	0.0	34	11.3	271	88.7
INDIRimp	11	3.6	82	26.8	213	69.6
MINimp	17	5.5	122	39.9	167	54.6

Tables 5 and 6 present the results of the Wilcoxon Signed Ranks and Spearman's rho statistical tests. The former indicates that the paired means of all the dependent variables are statistically different, and thus merit independent investigation. The latter highlights the expected statistically significant, positive relationships between all the dependent variables, and indicates that the strength of these relationships is low or very low.²⁹

Table 5: Dependent Variables – Difference of Means: Wilcoxon Signed Ranks Test

Variables	Z	Sig (2-tailed)
DIRimp & INDIRimp	-6.708	0.000
DIRimp & MINimp	-8.632	0.000
INDIRimp & MINimp	-4.246	0.000

Table 6: Dependent Variables – Testing Association: Spearman's rho

Variables	Spearman's rho	Sig (2-tailed)
DIRimp & INDIRimp	0.350	0.000
DIRimp & MINimp	0.132	0.000
INDIRimp & MINimp	0.288	0.000

Relationships between Dependent and Independent Variables

The relationships between the dependent and independent variables are assessed below. Only variables with statistically significant relationships with the dependent variables are highlighted.³⁰ The direction, strength and implications of associations are discussed. Comparisons are also made across different types of coping strategies and transmission mechanisms.

Financial Transmission Mechanisms (FINlin)

As previously discussed, the literature highlights two types of financial transmission mechanisms. Statistically significant variables which represent the first such sub-category,

²⁹ Tables A.1 to A.3 in the Appendix provide the cross-tabulation results for the dependent variables. Table A.4 disaggregates each dependent variable into its component parts and provides the frequencies for the sub-components.

³⁰ Variables which are statistically significant at the 5% level are presented.

Credit Linkage (*CREDlin*), are presented in table 7. Lines of credit with foreign and local financial institutions and suppliers are each examined independently.

Table 7: Statistically Significant Relationships between the Dependent Variables & *CREDlin*

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Lines of Credit with Foreign Suppliers (FS)			0.249 ^b	0.000	0.325 ^b	0.000
Importance of credit from FS	0.338 ^a	0.043	-0.353 ^a	0.037		
Δ in Cost/Interest Rates of loans from FS			-0.528 ^a	0.002		
Δ in Size of loans from FS			-0.412 ^a	0.029		
Lines of Credit with Local Fin. Insts. (LFIs)	0.168 ^b	0.013			0.229 ^b	0.000
Importance of credit from LFIs					0.206 ^a	0.016
Δ in Availability of credit from LFIs	0.410 ^a	0.000				
Δ in Size of loans from LFIs	0.418 ^a	0.000	0.383 ^a	0.000		
Lines of Credit with Local Suppliers (LS)			0.184 ^b	0.006		
Δ in Maturity of loans from LS					0.218 ^a	0.013
Δ in Cost/Interest Rates of loans from LS			-0.247 ^a	0.005		
Δ in Availability of credit from LS			-0.194 ^a	0.025		
Δ in Size of loans from LS	-0.239 ^a	0.011	-0.275 ^a	0.003		

a. In this and all subsequent tables indicates usage of Spearman's rho

b. In this and all subsequent tables indicates usage of Cramer's V and Pearson's chi-square

It is important to first note that none of the variables relating to lines of credit from foreign financial institutions are statistically significant. This is because only approximately 1% (3) of the businesses surveyed had such credit lines. A considerably larger proportion of businesses (11.6%) indicated that they had lines of credit from foreign suppliers. The positive statistically significant relationships highlighted in the first row of Table 7 indicate that those businesses with lines of credit from foreign suppliers are more likely to undertake coping strategies which have indirect and minimal domestic socio-economic impacts, with MINimp having a slightly stronger relationship (0.325). Whereas the relationship between the existence of such lines of credit and DIRimp is not statistically significant, there is a positive and significant relationship (0.338) between this variable and the importance of credit from foreign suppliers to the survival of the businesses. This suggests that businesses which rely more heavily on credit from foreign suppliers will in times of crisis be more likely

to undertake coping strategies with direct, immediate adverse socio-economic impacts. The converse is true for INDIRimp, as the negative statistically significant relationship (-0.353) suggests that businesses which rely more heavily on such credit will be less likely to undertake coping strategies with indirect, delayed socio-economic outcomes. It is therefore clear that whereas businesses with lines of credit from foreign suppliers are more likely to undertake INDIRimp coping strategies, as the dependence on these lines of credit increase, the likelihood of indirect, delayed coping strategies declines, while the probability of direct immediate adverse impacts increase. Although the strengths of these relationships are weak, they should not be overlooked. In a study of this nature, with dependent variables that are the averaged grouped responses to multiple questions, a general weakening of the strength of relationships is expected, as the smoothing effect results in a loss in some of the variability in the responses.

INDIRimp is the only variable with which businesses' post-crisis experiences with credit from foreign suppliers has statistically significant relationships. The modest negative relationship (-0.412) with changes in the size of the loans suggests that as foreign suppliers issue smaller loans in crisis and post-crisis periods, businesses will be more likely to undertake coping strategies which have indirect delayed socio-economic outcomes. There is also a modest negative relationship between post-crisis changes in cost of loans from foreign suppliers and INDIRimp (-0.528), suggesting that as the cost of these loans increase, businesses are less likely to pursue indirect, delayed coping strategies. Because the relationships between this variable and DIRimp and MINimp are statistically insignificant, no conclusions can be made about the most likely alternate responses.

Just under half (44.2%) of the businesses surveyed had lines of credit with local financial institutions. The positive statistically significant relationships in the fifth row in Table 7 indicate that those businesses with lines of credit from local financial institutions are more likely to undertake coping strategies which have either direct adverse or minimal domestic socio-economic impacts. Both relationships are, however, weaker than the relationships between credit from foreign suppliers and INDIRimp and MINimp, with the relationship with DIRimp being very weak (0.168). This suggests that credit from foreign suppliers has a larger impact on determining the coping strategies used by businesses than credit from local financial institutions. This is supported by the fact that the relationship between DIRimp and the importance of credit from local financial institutions is statistically insignificant, whereas it was significant and positive for credit from foreign suppliers. There is instead a positive relationship with MINimp (0.206), suggesting that greater reliance on credit from local financial institutions will also increase the likelihood of minimal domestic impacts.

As rows 7 and 8 in the above table indicate, only changes in the availability and size of loans from local financial institutions have statistically significant relationships with the dependent variables. There are modest relationships between both of these variables and DIRimp (0.410 for changes in availability and 0.418 for changes in size). There is also a weaker relationship (0.383) between changes experienced in the size of these loans and INDIRimp. All of these relationships are positive, suggesting that as conditions worsen, businesses are less likely to adopt coping strategies with direct adverse and indirect delayed socio-economic impacts. As no other dependent variables are statistically significant, no conclusions can be made about the most likely alternate responses.

Approximately half (48.6%) of the Jamaican businesses surveyed had lines of credit with local suppliers, making this the most popular source of financing among respondents. However, as indicated in row 9 of table 7, access to such lines of credit has only a very weak relationship (0.184) with INDIRimp. There are also no statistically significant relationships between any of the dependent variables and the importance of credit from local suppliers to business survival. Notwithstanding this, crisis and post-crisis changes in the conditions of these loans exhibit statistically significant relationships with the dependent variables. The negative relationship between changes in the cost of loans issued by local suppliers and INDIRimp (-0.247), indicates that increases in costs of borrowing from local suppliers will lessen the likelihood of businesses' utilizing coping strategies that will have indirect delayed socio-economic impacts. Conversely, the negative relationships between changes in the size of loans issued by local suppliers and DIRimp (-0.239) and INDIRimp (-0.275), suggest that as local suppliers issue smaller lines of credit in response to the crisis, businesses are more likely to adopt coping strategies that will have direct adverse and indirect delayed socio-economic effects. A similar negative (but weaker) relationship exists between INDIRimp and changes in the availability of credit from local suppliers (-0.194). The only variable which has a statistically significant relationship with MINimp is the change in the maturity of loans from local suppliers. The relationship is, however, positive (0.218), suggesting that a decline in the maturity of such loans will lessen the likelihood of businesses adopting coping strategies with minimal domestic socio-economic impacts.

The wide range of statistically significant variables outlined above indicates that the credit linkage transmission mechanism (CREDlin) is one that cannot be overlooked in the Jamaican context. The analysis, however, suggests that nuanced statements must be made, because whereas reliance on and changes in the conditions of lines of credit from foreign suppliers are

most influential in determining the coping strategies utilized by businesses, lines of credit from local financial institutions and suppliers also exhibit noteworthy relationships with the dependent variables.

The same, however, cannot be said of the proxies used to represent the forced portfolio re-composition linkage (*PORTlin*). Two variables – the percentage of total deposits and investments held by Jamaican businesses outside of Jamaica, and whether or not funds are held with distressed foreign institutions – were used to reflect the degree of exposure of Jamaican businesses to risky overseas investments. As indicated in Table 8, only the former had a statistically significant relationship with one of the dependent variables – *MINimp*. This positive relationship suggests that businesses with a larger proportion of total deposits and investments held overseas are less likely to adopt coping strategies with minimal domestic impacts. The relationship was, however, very weak (0.116), and because the relationships between this variable and *DIRimp* and *INDIRimp* are statistically insignificant, no conclusions can be made about the most likely alternate responses.³¹

Table 8: Statistically Significant Relationships between the Dependent Variables & *PORTlin*

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
% of Total Deposits & Inv Held outside Jamaica					0.116 ^a	0.044

Trade Transmission Mechanisms (*TRADELin*)

As outlined in section 5, trade transmission mechanisms, whether through competition or domestic demand linkages, will manifest in small open economies in changed conditions in the output and input markets of local businesses. Table 9 highlights the statistically significant relationships between such changes and business coping strategies.

³¹ Only 2.1% (6) of the respondents had deposits and/or investments outside of Jamaica, all of which had funds in distressed foreign institutions.

Table 9: Statistically Significant Relationships between the Dependent Variables & TRADElin

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Δ Quantity of Goods/Services Exported			0.196 ^a	0.006		
Δ Prices of Goods/Services Exported					-0.292 ^a	0.000
Δ Quantity of Goods/Services Sold Locally	-0.215 ^a	0.000	-0.135 ^a	0.020		
Δ Prices of Goods/Services Sold Locally	-0.166 ^a	0.004				
Δ Availability of Foreign Inputs	-0.143 ^a	0.048	-0.215 ^a	0.003	-0.306 ^a	0.000
Δ Cost of Local Inputs	-0.186 ^a	0.005				

Immediately evident is the fact that there are no statistically significant relationships between DIRimp and changes in conditions in the export market, while there are negative relationships with changes in both the quantities (-0.215) and prices (-0.166) of goods/services sold locally.³² This suggests that whereas decreases in the quantities and prices of goods sold locally will increase the likelihood of businesses adopting coping strategies that have direct adverse socio-economic impacts, the much touted crisis and post-crisis deterioration in export markets do not have such impacts. This is primarily because despite being a very open economy, most Jamaican businesses do not export.³³ The strong trade linkage is caused by, *inter alia*, the country's high import dependence. The only statistically significant relationships with conditions in the export market are a positive but very weak relationship between changes in quantities and INDIRimp (0.196) and a negative and slightly stronger relationship between changes in prices and MINimp (-0.292). The former suggests that as the quantity of goods exported decrease, businesses are less likely to adopt coping strategies with indirect delayed impacts. The latter suggests that as there is a decrease in the prices of goods exported, businesses are more likely to utilize coping strategies such as seeking alternative markets, which will have minimal domestic socio-economic impacts.

³² There is also a statistically significant but very weak negative relationship between changes in the quantity of goods sold locally and INDIRimp (-0.135), suggesting that as quantities sold locally decrease, businesses are more likely to adopt coping strategies with indirect delayed socio-economic outcomes.

³³ 88.9% of the businesses surveyed do not export goods or services.

The high import dependence of Jamaican businesses is reflected by the fact that changes in the availability of foreign inputs have statistically significant negative relationships with all the dependent variables. This indicates that as the availability of such inputs decrease, businesses are more likely to adopt all of the respective coping strategies. MINimp, however, has the largest correlation coefficient, suggesting that coping strategies with minimal domestic socio-economic impacts are most likely. This implies that although the Jamaican businesses are import dependent, they are optimistic about finding alternative input sources if shortages in particular markets arise.

Also highlighting the import dependence of Jamaican businesses is the fact that there are no statistically significant relationships between any of the dependent variables and changes in the availability of local inputs, and only one such relationship with changes in the cost of local inputs. The negative but very weak relationship between DIRimp and changes in the cost of local inputs (-0.186), suggests that as costs of local inputs increase, businesses will be less likely to undertake coping strategies with direct adverse socio-economic impacts.

Psychological Transmission Mechanisms (PSYlin)

The psychological transmission mechanism is assumed to be a function of businesses' expectations with regards to both financial and trading conditions (ExFINlin and ExTRADELin). Table 10 presents the results relating to the former.

Table 10: Statistically Significant Relationships between the Dependent Variables & ExFINlin

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Expected Δ in Cost/Interest Rates of loans from FS			-0.495 ^a	0.007		
Expected Δ in Availability of credit from FS			0.617 ^a	0.001		
Expected Δ in Maturity of loans from LFIs	-0.318 ^a	0.000				
Expected Δ in Cost/Interest Rates of loans from LFIs					-0.429 ^a	0.000
Expected Δ in Size of loans from LFIs	0.346 ^a	0.000	0.409 ^a	0.000		
Expected Δ in Availability of loans from LS					-0.247 ^a	0.004

The only statistically significant relationships between expected changes in the conditions of loans from foreign suppliers and the dependent variables are with INDIRimp. There is a modest negative relationship between this variable and expected changes in the cost of borrowing from foreign suppliers (-0.495), indicating that businesses which expect the cost of borrowing to increase, are less likely to adopt coping strategies with indirect delayed socio-economic impacts. The modest positive relationship (0.617) with expected changes in the availability of credit from foreign suppliers has similar implications, as expectations of worsening conditions reduce the likelihood of coping strategies with indirect delayed socio-economic impacts.

There are no statistically significant relationships between expected changes in the availability of credit from local financial institutions and any of the dependent variables. Expected changes in the maturity of such loans however have a negative relationship with DIRimp (-0.318), suggesting that businesses which expect maturities to decrease are more likely to utilize coping strategies with direct adverse socio-economic impacts. The opposite is true for expected changes in the size of loans from local financial institutions, as a positive relationship with DIRimp (0.346) suggests that expectations of decreased loans sizes will lessen the likelihood of coping strategies with direct adverse socio-economic impacts. This variable is also positively and modestly related to INDIRimp (0.409), thus also lessening the likelihood of coping strategies with indirect delayed socio-economic impacts. The likelihood of coping strategies with minimal domestic socio-economic impacts is similarly lessened by expected increases in the cost of loans from local financial institutions, as indicated by the modest negative relationship with MINimp (-0.429).

Table 11 presents the results relating to businesses' expectations of future conditions in their output and input markets (ExTRADELin).

Table 11: Statistically Significant Relationships between the Dependent Variables & ExTRADELin

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Expected Δ Quantity of Goods/Services Exported					0.289 ^a	0.000
Expected Δ Quantity of Goods/Services Sold Locally	-0.139 ^a	0.026			-0.160 ^a	0.010
Expected Δ Prices of Goods/Services Sold Locally	-0.161 ^a	0.007	-0.131 ^a	0.028		
Expected Δ Availability of Foreign Inputs	-0.165 ^a	0.034			-0.216 ^a	0.005
Expected Δ Availability of Local Inputs	-0.273 ^a	0.000	-0.197 ^a	0.006		

As in table 7, there are no statistically significant relationships between DIRimp and expected changes in conditions in the export market, while there are negative (but very weak) relationships with expected changes in both the quantities (-0.139) and prices (-0.161) of goods/services sold locally. This suggests that businesses which expect decreases in the quantities and prices of goods sold locally are more likely to adopt coping strategies that have direct adverse socio-economic impacts. There is also a statistically significant but very weak negative relationship between expected changes in the prices of goods sold locally and INDIRimp (-0.131), suggesting that businesses which expect the prices of goods sold in the local market to decline, are also more likely to adopt coping strategies with indirect delayed socio-economic outcomes. Similarly, a very weak negative relationship between MINimp and expected changes in the quantity of goods sold locally (-0.160), indicates that expectations of reduced sales locally increase the likelihood of coping strategies with minimal domestic socio-economic outcomes. The only statistically significant relationship with conditions in the export market is a positive relationship between expected changes in quantities to be exported and MINimp (0.289), suggesting that expectations of decreased exports lessen the likelihood of businesses adopting coping strategies with minimal domestic impacts.

In the input markets, there are no statistically significant relationships between any of the dependent variables and expectations as to the cost of local and foreign inputs. There are, however, negative relationships between DIRimp and expected changes in the availability of both foreign (-0.165) and local inputs (-0.273), suggesting that businesses which expect availability of such inputs to decrease are more likely to utilize coping strategies with direct adverse socio-economic impacts. Expected changes in the availability of foreign inputs also has a negative relationship with MINimp (-0.216), while expected changes in the availability of local inputs has a negative relationship with INDIRimp (-0.197), suggesting that in each instance, expectations of decreased availability will increase the likelihood of coping strategies with minimal domestic and indirect delayed socio-economic outcomes, respectively.

Basic Business Characteristics

As outlined in section 5, the relationships between the dependent variables and eight basic business characteristics were examined. Table 12 presents the four variables that had a statistically significant relationship with at least one of the dependent variables. For the three nominal variables, cross-tabulations are presented in the appendix to aid interpretation of the results.

Table 12: Statistically Significant Relationships between the Dependent Variables & BUSchar

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Value of Assets	0.148 ^a	0.018				
Sector	0.234 ^b	0.032	0.396 ^b	0.000	0.392 ^b	0.000
Primary Product Line			0.175 ^b	0.045	0.290 ^b	0.000
Type of Business Ownership			0.255 ^b	0.000	0.166 ^b	0.002

The value of the assets owned by the businesses had a positive but very weak relationship (0.148) with DIRimp, indicating that businesses with larger asset bases are less likely to adopt coping strategies with direct adverse socio-economic impacts, while businesses with smaller asset bases are more likely to do so.

The sectors within which the businesses operate have stronger relationships with all the dependent variables. The cross-tabulations provided in tables A.5, A.6 and A.7 elucidate. Only two sectors (finance – 45.5% and manufacturing – 35.3%) have considerable proportions (over one-third) of respondents indicating a likelihood of undertaking coping strategies with direct adverse socio-economic impacts, reflecting their relatively high degree of exposure to the US crisis. These sectors are also heavily represented among the businesses that are likely or very likely to adopt coping strategies with indirect delayed impacts. With over a third of the total number of businesses within the respective sectors indicating such a likelihood, construction and installation (75%), tourism (58.8%), the financial sector (45.5%) and manufacturing (43.8%) were heavily represented. Finally, coping strategies with minimal domestic impacts was highlighted as being likely or very likely by 88.9% of all businesses in tourism, 85.7% of businesses in construction and installation, 81.3% in manufacturing, 48.9% in trade and distribution, and 45.6% in real estate or business services. The larger number of sectors represented and higher percentages of total respondents highlight the greater popularity of coping strategies with minimal domestic impact. The fact that sectors such as finance and manufacturing are heavily represented across all three types of coping strategies, however, also indicates that various combinations of all three strategies are likely to be attempted by the sectors at greatest risk. In this regard it is surprising that no businesses from the tourism sector indicated a likelihood of adopting coping strategies with

direct adverse impacts. There is clearly great optimism in that sector regarding the possibilities for market diversification.

The primary product line of the businesses was classified as being either: basic necessities; intermediate goods (or inputs to production); medium-cost non-essential goods and services; consumer durables; and luxury goods and services. This variable has a very weak relationship (0.175) with INDIRimp. Table A.8 highlights the fact that nearly half (48.5%) of the businesses with consumer durables as their primary product line are likely to utilize coping strategies which have indirect delayed socio-economic impacts. By contrast, less than a third of the businesses with other types of primary product lines are likely to adopt such strategies. The slightly stronger (0.290) statistically significant relationship between MINimp and this variable is elucidated in Table A.9. Over half of the businesses with luxury goods (55.6%) and intermediate goods (55.3%) as their primary product line are likely to adopt coping strategies with minimal domestic socio-economic impacts, as will over a third of the businesses which primarily produce basic necessities (44%) and consumer durables (33.4%). By contrast, only 16.2% of businesses producing medium-cost non-essential goods and services are likely to adopt such strategies.

The type of ownership of the businesses had statistically significant relationships with both INDIRimp (0.255) and MINimp (0.166). Although these relationships are relatively weak, tables A.10 and A.11 highlight clear tendencies. A significantly greater proportion of limited liability companies (44.8%) than partnerships (29.7%) and sole proprietorships (10.5%) are likely or very likely to adopt coping strategies with indirect delayed socio-economic outcomes. Similarly, over a half of the limited liability companies (52.9%) and the partnerships (54.1%) are likely or very likely to utilize coping strategies with minimal

domestic socio-economic outcomes, while less than a third of the sole proprietorships (31.8%) are likely to do the same. This highlights the limited options available to sole proprietorships to seek alternative markets and/or financing.

Expected Impact of the Jamaican Government’s Stimulus Package

The result in table 13 indicates that the index of businesses’ expectations regarding the potential impact of the Government of Jamaica’s stimulus package only has a statistically significant relationship with DIRimp. This relationship is positive (0.217), suggesting that businesses which view the package as beneficial are less likely to adopt coping strategies with direct adverse socio-economic outcomes.

Table 13: Statistically Significant Relationships between the Dependent Variables & GOVres

Variables	DIRimp		INDIRimp		MINimp	
	Strength	Sig	Strength	Sig	Strength	Sig
Expected Impact of the GOJ’s Stimulus Package	0.217 ^a	0.000				

7. Summary and Conclusions

The current US/global crisis provides an opportunity for a large-scale examination of the contagion effects of financial crises and the transmission mechanisms through which such effects are transferred across countries. This is important, because if policymakers better understand the manner through which contagion spreads, they will be more equipped to respond effectively. The model adopted in this paper has sought to explain how the transmission mechanisms described in the literature impact on socio-economic outcomes through the coping strategies adopted by businesses.

The study utilized primary data from a comprehensive survey of Jamaican businesses in the immediate post-crisis period, which captured the experiences, expectations and plans of critical decision-makers in the business community. The coping strategies identified by Jamaican businesses were categorized according to their expected impact on socio-economic outcomes, with distinctions being made between coping strategies with direct adverse, indirect delayed and minimal domestic socio-economic impacts. Statistical tests of association were used to analyse the transmission mechanisms most likely to precipitate each type of coping strategy. The extent to which businesses' choice of coping strategies was impacted by basic business characteristics and the Government of Jamaica's policy response to the US crisis was also assessed.

The results of the study are summarized in Tables 14, 15 and 16, which rank the variables representing each transmission mechanism by strength of correlation with each of the coping strategies. This highlights the factors with the greatest association with whether or not businesses will adopt a particular coping strategy.

Table 14: Statistically Significant Relationships with DIRimp

FINlin	TRADLin	PSYlin	BUSchar & GOVres
Δ in Size of loans from LFIs (0.418)	Δ Quantity of Goods/Services Sold Locally (-0.215)	Expected Δ in Size of loans from LFIs (0.346)	Sector (0.234)
Δ in Availability of credit from LFIs (0.410)	Δ Cost of Local Inputs (-0.186)	Expected Δ in Maturity of loans from LFIs (-0.318)	Value of Assets (0.148)
Importance of credit from FS (0.338)	Δ Prices of Goods/Services Sold Locally (-0.166)	Expected Δ Availability of Local Inputs (-0.273)	Expected Impact of the GOJ's Stimulus Package (0.217)
Δ in Size of loans from LS (-0.239)	Δ Availability of Foreign Inputs (-0.143)	Expected Δ Availability of Foreign Inputs (-0.165)	
Lines of Credit with LFIs (0.168)		Expected Δ Prices of Goods/Services Sold Locally (-0.161)	
% of Total Deposits & Inv Held outside Jamaica (0.116)		Expected Δ Quantity of Goods/Services Sold Locally (-0.139)	

Coping strategies with direct adverse socio-economic outcomes are most highly correlated with indicators of the financial linkage transmission mechanism. Because a negligible proportion of Jamaican businesses have credit with foreign financial institutions, the traditional credit crunch explanation of the financial transmission of crises is, however, not applicable. Rather, the importance of, and changes in the terms and conditions of loans from local financial institutions, local suppliers and foreign suppliers are shown to have greater relevance. In crisis conditions, reductions in the size and availability of credit from local financial institutions were shown to reduce the likelihood of businesses adopting coping strategies with direct adverse impacts, while greater reliance on credit from foreign suppliers will heighten the likelihood of such strategies being employed. A decrease in the size of loans from local suppliers will also increase the likelihood of coping strategies with direct, adverse socio-economic impacts.

Many of the indicators of the trade linkage transmission mechanism did not have statistically significant correlations with coping strategies classified as having direct adverse socio-economic outcomes. The traditional trade linkages through deterioration in export markets were not exhibited. This is primarily because despite being a very open economy, most Jamaican businesses do not export, but rather rely heavily on local output markets. Post-crisis decreases in the quantities and prices of goods sold locally were therefore shown to increase the likelihood of utilization of coping strategies with direct adverse outcomes. These relationships were, however weak or very weak. There was little support for the importance of deteriorating conditions in input markets as a trade transmission mechanism. An increase in the cost of local inputs was shown to have a weak association with a reduction in the likelihood of coping strategies with direct adverse outcomes, while a reduction in the availability of foreign inputs weakly increased the likelihood.

Psychological transmission mechanisms based on expectations of future financial conditions and trading conditions in output markets were few and less strongly correlated with the coping strategy than the actual experiences. The opposite is however true for expectations of future conditions in local and foreign input markets. Whereas changes in the availability of local inputs did not have a statistically significant relationship with the coping strategies having direct adverse impacts, expectations of future shortages of local inputs increases the likelihood of such coping strategies being adopted. There was also a slightly larger (but still very weak) correlation between this coping strategy and expected (as opposed to actual) changes in the availability of foreign inputs.

As regards the basic business characteristics, only the sector within which the business operates and the value of the business' assets had statistically significant but weak relationships with this category of coping strategies. Businesses in the financial and manufacturing sectors, as well as those with smaller asset bases were shown to be more strongly inclined to adopt coping strategies with direct adverse outcomes, thus highlighting their greater vulnerability. Also, the government's stimulus package seems to have had the desired impact, as businesses which view the package as beneficial are less likely to adopt coping strategies with direct adverse socio-economic outcomes.

Table 15: Statistically Significant Relationships with INDIRimp

FINlin	TRADLin	PSYlin	BUSchar & GOVres
Δ in Cost/Interest Rates of loans from FS (-0.528)	Δ Availability of Foreign Inputs (-0.215)	Expected Δ in Availability of credit from FS (0.617)	Sector (0.396)
Δ in Size of loans from FS (-0.412)	Δ Quantity of Goods/Services Exported (0.196)	Expected Δ in Cost/Interest Rates of loans from FS (-0.495)	Type of Business Ownership (0.255)
Δ in Size of loans from LFI's (0.383)	Δ Quantity of Goods/Services Sold Locally (-0.135)	Expected Δ in Size of loans from LFI's (0.409)	Primary Product Line (0.175)
Importance of credit from FS (-0.353)		Expected Δ Availability of Local Inputs (-0.197)	
Δ in Size of loans from LS (-0.275)		Expected Δ Prices of Goods/Services Sold Locally (-0.131)	

FINlin	TRADLin	PSYlin	BUSchar & GOVres
Lines of Credit with FS (0.249)			
Δ in Cost/Interest Rates of loans from LS (-0.247)			
Δ in Availability of credit from LS (-0.194)			
Lines of Credit with LS (0.184)			

Coping strategies with indirect delayed socio-economic outcomes are most highly correlated with indicators of the financial and psychological transmission mechanisms. The strongest correlations are with experienced and expected changes in the conditions associated with credit issued by foreign suppliers. Increased cost of such loans in the immediate aftermath of the crisis and if expected in the future have the effect of decreasing the likelihood that coping strategies will have indirect delayed socio-economic outcomes. Expectations of decreased availability of such credit also have a similar effect.

The relationship between this category of coping strategies and credit from foreign suppliers is, however, multi-dimensional. The results also indicate that whereas businesses with lines of credit from foreign suppliers are more likely to undertake coping strategies with indirect delayed socio-economic outcomes, as the dependence on these lines of credit increase, the likelihood of such outcomes declines, while the probability of direct immediate adverse impacts increase. These relationships are however not as strong as those with experienced and expected changes in the conditions of such credit sources.

Experiences and expectations with credit from local sources are also correlated with this category of coping strategy. If the crisis results in the decreased size of loans issued by local financial institutions, or expectations of such, or in the increased cost of borrowing from local suppliers, coping strategies with indirect delayed outcomes are less likely. Conversely, smaller lines of credit from local suppliers and reduced availability of such credit sources

increase the likelihood of businesses adopting coping strategies with indirect delayed socio-economic impacts. These relationships are, however, very weak.

Also very weak are the relationships with indicators of the trade transmission mechanism. As with DIRimp, many of the indicators of this transmission mechanism did not have statistically significant correlations with coping strategies that have indirect delayed socio-economic outcomes. Those indicators which were statistically significant had only very weak relationships with this type of coping strategy. The same can also be said of the psychological transmission mechanisms related to expected changes in output and input market conditions.

As regards business characteristics, the sector within which the business operates is more highly correlated with coping strategies which have indirect delayed outcomes than those which have direct adverse outcomes, as a higher proportion of businesses from more sectors are likely to adopt the former. Very weak correlations with type of business ownership and the primary product line of the business were recorded, highlighting the diminished ability of sole proprietorships to adopt strategies which delay adverse outcomes, and, by contrast, the heightened ability of sellers of consumer durables to do so.

Table 16: Statistically Significant Relationships with MINimp

FINlin	TRADlin	PSYlin	BUSchar & GOVres
Lines of Credit with FS (0.325)	Δ Availability of Foreign Inputs (-0.306)	Expected Δ in Cost/Interest Rates of loans from LFIs (-0.429)	Sector (0.392)
Lines of Credit with LFIs (0.229)	Δ Prices of Goods/Services Exported (-0.292)	Expected Δ Quantity of Goods/Services Exported (0.289)	Primary Product Line (0.290)
Δ in Maturity of loans from LS (0.218)		Expected Δ in Availability of loans from LS (-0.247)	Type of Business Ownership (0.166)
Importance of credit from LFIs (0.206)		Expected Δ Availability of Foreign Inputs (-0.216)	
% of Total Deposits & Inv Held outside Jamaica (0.116)		Expected Δ Quantity of Goods/Services Sold Locally (-0.160)	

Fewer of the financial transmission mechanism indicators have statistically significant relationships with coping strategies categorized as having minimal domestic impacts, than with the other types of coping strategies. Additionally, most of these indicators are weakly correlated with this set of coping strategies. The strongest of these relationships indicate that businesses with lines of credit from foreign suppliers and local financial institutions are more likely to undertake coping strategies with minimal domestic impacts. Similar, albeit slightly weaker, relationships were, however, exhibited for the other types of coping strategy, thus calling into question their explanatory relevance. More important is the result which indicates that greater reliance on credit from local financial institutions will heighten the likelihood of adoption of strategies with minimal domestic impacts. While logical, as most local financial institutions were not adversely impacted by the crisis, this relationship is relatively weak.

Also expected is the fact that none of the crisis and post-crisis changes in financial conditions increased the likelihood of coping strategies with minimal domestic impacts. The only statistically significant relationship in that regard reduced the likelihood of such outcomes. The same can be said of the psychological transmission mechanisms through expected changes in financial conditions, as the strongest relationship in this category (expected changes in interest rates from local financial institutions) decreases the likelihood of coping strategies with minimal domestic impacts if worsened conditions occur. Only expected reductions in the availability of credit from local suppliers increases the probability of coping strategies with minimal domestic impacts, possibly as Jamaican businesses are confident of acquiring alternative sources of finance.

The relationship between the indicators of the trade transmission mechanism and this set of coping strategies also confirms the fact that the adverse effects of the US crisis are not likely to be transmitted to Jamaica through trade linkages. This is because if worsened conditions occur, the two statistically significant relationships indicate an increased likelihood of adoption of coping strategies with minimal impacts.

The indicators of the psychological transmission mechanism through expected changes in trade conditions exhibited varying results. Expected reductions in the quantity of goods and services exported lessen the likelihood of minimal domestic impacts, while expected reductions in the availability of foreign inputs and in the quantity of goods sold locally, increase the likelihood of adoption of coping strategies with minimal domestic impacts. These relationships are all, however, relatively weak, and are not among the strongest with this category of coping strategy.

The sector within which a business operates has a stronger relationship, as a larger proportion of businesses in a greater number of sectors are likely to adopt strategies with minimal domestic impacts. While this highlights the greater popularity of such coping strategies, the fact that sectors such as finance and manufacturing are heavily represented across all three types of coping strategies, however, also indicates that various combinations of all three strategies are likely to be attempted by the sectors at greatest risk. The relationships with primary product line and type of business ownership highlight the fact that businesses producing medium-cost non-essential goods and services, and those which operate as sole proprietorships are less likely to adopt strategies with minimal domestic socio-economic impacts, as the options available for seeking alternative markets and/or financing are limited.

The information and analysis presented in this study are useful in the discourse on crisis transmission mechanisms, particularly where countries exhibit atypical tendencies. The stylized facts about the Jamaican experience which affect traditional financial and trade transmission mechanisms include: the relatively low dependence of the business community on credit from foreign financial institutions; the relatively low degree of exposure of the domestic financial sector to the adverse effects of the international crisis; and an open economy which is nonetheless dominated by businesses which do not export. Although such conditions would suggest that natural firewalls exist, transmission of the adverse effects of the crisis through non-traditional mechanisms were exhibited. Smaller loans from local suppliers and expectations of deteriorating terms and conditions of loans from local financial institutions and suppliers are the non-traditional ways in which financial and psychological transmission mechanisms were exhibited. Further, while trade transmission mechanisms were minimized by the low dependence on export markets, post-crisis deterioration in input markets were shown to increase the likelihood of businesses adopting coping strategies with immediate adverse socio-economic impacts.

Bibliography

- Arestis, Philip, Demetriades, Pancios O. and Luintel, Kul B. (2001) 'Financial Development and Economic Growth: The role of stock markets', *Journal of Money, Credit and Banking*, 33(1), pp. 16-40
- Bank of Jamaica, *Statistical Digest*, Bank of Jamaica: Kingston
- Bernanke, Ben S. (1983) 'Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression', *American Economic Review*, 73(3), pp. 257-276
- Boshoff, Willem H. (2006) 'The Transmission of Foreign Financial Crises to South Africa: A Firm-Level Study', *Studies in Economic and Econometrics*, 30(2):61-85
- CaPRI (2009) 'The Effect of the Global Economic Crisis on Jamaican Businesses: An Analysis of Exposure and Responses', Report Prepared for the Department for International Development
- Caricom (2000) *Caribbean Trade and Investment Report*, Caribbean Community Secretariat: Georgetown
- Chen-Young, Paul (1998). 'With all good intentions: The collapse of Jamaica's domestic financial sector'. *Policy Papers on the Americas* 9(12): 1-22.
- Demirguc-Kunt, Asli and Detragiache, Enrica (1998) 'The determinants of banking crises in developing and developed countries', *IMF Staff Papers*, 45(1), pp. 81-105
- Deutsche Bank (2000) 'Jamaica – Offering Circular', Mimeo, Deutsche Bank
- Diamond, Douglas W. and Dybvig, Philip H. (1983) 'Bank runs, deposit insurance and liquidity', *Journal of Political Economy*, 91(3), pp. 401-419
- Forbes, Kristin (2000) 'The Asian Flu and Russian Virus: Firm-Level Evidence on how Crises are Transmitted International', National Bureau of Economic Research Working Paper 7807
- Forbes, Kristin (2001) 'Are trade Linkages Important Determinants of Country Vulnerability to Crises', National Bureau of Economic Research Working Paper 8194
- International Monetary Fund *International Financial Statistics*, International Monetary Fund: Washington D.C.
- Kirkpatrick, Colin and Tennant, David. 2002. Responding to Financial Crisis: The Case of Jamaica. *World Development* 30(11): 1933-1950.
- Llewellyn, David T. (1998) 'Lessons from Recent Banking Crises'. *Journal of Financial Regulation and Compliance* 6(3): 253 – 261.

- Minsky, Hyman P. (1977) 'A theory of systematic fragility' in Edward I. Altman and Arnold W. Sametz eds. *Financial Crises: Institutions and Markets in a Fragile Environment*, John Wiley & Sons: New York
- Minsky, Hyman P. (1982) 'The financial-instability hypothesis: Capitalist processes and the behaviour of the economy' in Charles P. Kindleberger and Jean-Pierre Laffargue eds. *Financial Crises: Theory, History, and Policy*, Cambridge University Press: Cambridge
- Olukoshi, Adebayo (1996) 'Economic Crisis, Structural Adjustment and the Coping Strategies of Manufacturers in Kano, Nigeria', United Nations Research Institute for Social Development, Discussion Paper 77
- Stiglitz, Joseph E. (1993) 'The role of the state in financial markets', *Proceedings of the World Bank Annual Conference on Development Economics*, World Bank: Washington D.C.
- Tennant, David and Kirton, Claremont. 2006. Assessing the Impact of Financial Instability: The Jamaican Case Study. *Iberoamericana Nordic Journal of Latin American and Caribbean Studies*. 36(1):9-36.
- Tennant, David. 2006. Lessons Learnt by the Survivors of Jamaica's Financial Sector Crisis. *Savings and Development* 30(1): 5-22.
- Williamson, John and Mahar, Molly (1998) 'A survey of financial liberalization', *Essays in International Finance*, No. 211, Princeton University
- World Bank (2003) 'Jamaica: The road to sustained growth – Country Economic Memorandum', World Bank: Washington D.C.

Appendices

The Dependent Variables – Business Coping Strategies

Table A.1: Crosstabs - DIRimp * INDIRimp

			INDIRimp			Total
			Very likely	Likely	Not likely	
DIRimp	Very likely	#	0	0	0	0
		%	.0%	.0%	.0%	.0%
	Likely	#	10	13	10	33
		%	100.0%	15.9%	4.7%	10.9%
	Not likely	#	0	69	202	271
		%	.0%	84.1%	95.3%	89.1%
Total		#	10	82	212	304
		%	100.0%	100.0%	100.0%	100.0%

Table A.2: Crosstabs – DIRimp * MINimp

			MINimp			Total
			Very likely	Likely	Not likely	
DIRimp	Very likely	#	0	0	0	0
		%	.0%	.0%	.0%	.0%
	Likely	#	0	23	11	34
		%	.0%	18.9%	6.6%	11.1%
	Not likely	#	16	99	156	271
		%	100.0%	81.1%	93.4%	88.9%
Total		#	16	122	167	305
		%	100.0%	100.0%	100.0%	100.0%

Table A.3 Crosstabs – INDIRimp * MINimp

			MINimp			Total
			Very likely	Likely	Not likely	
INDIRimp	Very likely	#	0	11	0	11
		%	.0%	9.0%	.0%	3.6%
	Likely	#	7	46	29	82
		%	41.2%	37.7%	17.5%	26.9%
	Not likely	#	10	65	137	212
		%	58.8%	53.3%	82.5%	69.5%
Total		#	17	122	166	305
		%	100.0%	100.0%	100.0%	100.0%

Table A.4: Disaggregating the Dependent Variables – Frequencies

Variables	Very Likely		Likely		Not Likely	
	#	%	#	%	#	%
DIRimp						
Closure of Business	16	5.1	26	8.4	264	86.5
Laying-off Employees	28	9.2	10	3.4	267	87.4
Reduced Wages	11	3.7	35	11.3	259	85.0
Reduced Benefits to Staff	17	5.5	82	26.8	207	67.8
INDIRimp						
Reduced Non-Staff Expenses	42	13.6	110	36.2	153	50.2
Reduced Use of Local Inputs	11	3.8	72	24.0	216	72.3
MINimp						
Reduced use of Foreign Inputs	6	2.2	40	14.6	231	83.2
Seek Alternative Markets	87	28.6	58	19.0	160	52.4
Seek Alternative Financing	40	13.0	68	22.3	198	64.7

Cross-tabulations – Dependent Variables with Selected Basic Business Characteristics

Table A.5: Crosstabs - DIRimp * Sector

		Sector											Tot	
		Agri	Trade/ Dist	Min	Manuf.	Constr'n & Install'n	Social/ Pers S'rvs	Fin. Sect.	Trans. Storage & Com.	Tourism	Real Est/ Bus S'rvs	Gas, Elec, Wat		
DIR imp	Very likely	#	0	0	0	0	0	0	0	0	0	0	0	0
		%	.0%	.0%	.	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.	.0%
	Likely	#	0	16	0	6	1	0	5	0	0	5	0	33
		%	.0%	11.5%	.	35.3%	12.5%	.0%	45.5%	.0%	.0%	8.8%	.	10.9%
	Not likely	#	6	123	0	11	7	36	6	12	18	52	0	271
		%	100.0%	88.5%	.	64.7%	87.5%	100.0%	54.5%	100.0%	100.0%	91.2%	.	89.1%
Total		#	6	139	0	17	8	36	11	12	18	57	0	304
		%	100.0%	100.0%	.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	.	100.0%

Table A.6: Crosstabs - INDIRimp * Sector

		Sector											Tot	
		Agri	Trade/ Dist	Min	Manuf.	Constr'n & Install'n	Social/ Pers S'rvs	Fin. Sect.	Trans. Storage & Com.	Tourism	Real Est/ Bus S'rvs	Gas, Elec, Wat		
INDIR imp	Very likely	#	0	5	0	0	0	5	0	0	0	0	0	10
		%	.0%	3.6%	.	.0%	.0%	.0%	45.5%	.0%	.0%	.0%	.	3.3%
	Likely	#	1	39	0	7	6	6	0	1	10	11	0	81
		%	14.3%	28.1%	.	43.8%	75.0%	16.7%	.0%	8.3%	58.8%	19.6%	.	26.8%
	Not likely	#	6	95	0	9	2	30	6	11	7	45	0	211
		%	85.7%	68.3%	.	56.3%	25.0%	83.3%	54.5%	91.7%	41.2%	80.4%	.	69.9%
Total		#	7	139	0	16	8	36	11	12	17	56	0	302
		%	100.0%	100.0%	.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	.	100.0%

Table A.7: Crosstabs - MINimp * Sector

		Sector											Total	
		Agri	Trade/ Dist	Min	Manuf.	Constr'n & Install'n	Social/ Pers S'rvs	Fin. Sect.	Trans. Storage & Com.	Tourism	Real Est/ Bus S'rvs	Gas, Elec, Wat		
MIN imp	Very likely	#	0	5	0	0	0	0	0	0	10	0	0	15
		%	.0%	3.6%	.	.0%	.0%	.0%	.0%	.0%	17.5%	.	.	5.0%
	Likely	#	1	63	0	13	6	1	5	1	16	16	0	122
		%	14.3%	45.3%	.	81.3%	85.7%	2.8%	45.5%	8.3%	88.9%	28.1%	.	40.3%
	Not likely	#	6	71	0	3	1	35	6	11	2	31	0	166
		%	85.7%	51.1%	.	18.8%	14.3%	97.2%	54.5%	91.7%	11.1%	54.4%	.	54.8%
Total		#	7	139	0	16	7	36	11	12	18	57	0	303
		%	100.0%	100.0%	.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	.	100.0%

Table A.8: Crosstabs - INDIRimp * Primary Product Line

			Primary Product Line					Total	
			Basic necessities	Inputs to production	Medium cost non-essential goods/s'rvs	Consumer durables	Luxury goods/s'rvs		No Response
INDIRimp	Very likely	#	6	5	0	0	0	11	
		%	6.0%	5.3%	.0%	.0%	.0%	3.6%	
	Likely	#	19	26	11	16	10	82	
		%	19.0%	27.7%	29.7%	48.5%	27.8%	26.9%	
	Not likely	#	75	63	26	17	26	212	
		%	75.0%	67.0%	70.3%	51.5%	72.2%	69.5%	
Total		#	100	94	37	33	36	5	305
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table A.9: Crosstabs - MINImp * Primary Product Line

			Primary Product Line					Total	
			Basic necessities	Inputs to production	Medium cost non-essential goods/s'rvs	Consumer durables	Luxury goods/s'rvs		No Response
MINImp	Very likely	#	0	11	0	5	0	16	
		%	.0%	11.7%	.0%	15.2%	.0%	5.2%	
	Likely	#	44	41	6	6	20	122	
		%	44.0%	43.6%	16.2%	18.2%	55.6%	40.0%	
	Not likely	#	56	42	31	22	16	167	
		%	56.0%	44.7%	83.8%	66.7%	44.4%	54.8%	
Total		#	100	94	37	33	36	5	305
		%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table A.10: Crosstabs - INDIRimp * Type of Business Ownership

			Type of Business Ownership			Total
			Limited Liability Company	Partnership	Sole Proprietorship	
INDIRimp	Very likely	#	10	0	0	10
		%	6.5%	.0%	.0%	3.3%
	Likely	#	59	11	12	82
		%	38.3%	29.7%	10.5%	26.9%
	Not likely	#	85	26	102	213
		%	55.2%	70.3%	89.5%	69.8%
Total		#	154	37	114	305
		%	100.0%	100.0%	100.0%	100.0%

Table A.11: Crosstabs - MINImp * Type of Business Ownership

			Type of Business Ownership			Total
			Limited Liability Company	Partnership	Sole Proprietorship	
MINImp	Very likely	#	12	0	5	17
		%	7.7%	.0%	4.4%	5.6%
	Likely	#	70	20	31	121
		%	45.2%	54.1%	27.4%	39.7%
	Not likely	#	73	17	77	167
		%	47.1%	45.9%	68.1%	54.8%
Total		#	155	37	113	305
		%	100.0%	100.0%	100.0%	100.0%