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**Economic Openness, Financial Fragility and Corporate Finance:**

**A Minskyan Perspective on Argentina's 2001 Crisis**

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*Abstract:* The paper applies Minsky's well-known trinity—the hedged, speculative and Ponzi financial positions of firms—to analyze the evolution of Argentina's corporate sector prior to the December 2001 financial breakdown. The empirical work is based on officially gathered data on balance sheet information from Argentina's largest 500 non-financial corporations.

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## **Economic Openness, Financial Fragility and Corporate Finance: A Minskyan Perspective on Argentina's 2001 Crisis**

### **Introduction<sup>1</sup>**

Financial and capital account liberalization, applied in conjunction with fixed exchange-rate regimes, tends to result in currency appreciation, as in Argentina between 1991 and 2001.<sup>2</sup> This seems to have been the case in most liberalization-cum-fixed exchange-rate regime experiments carried out in the last couple of decades across the developing world (Taylor 1998). As pointed out by Palma (2003), high liquidity in international financial markets (the “push” factor behind surges of capital inflows to the developing world) played a key role as well in financing mounting current account deficits during this period. Concurrent trade liberalization only contributed to deteriorate current accounts further. The resulting situation is in principle consistent with economic growth, so long as net capital inflows continue to finance current account deficits (“debt-led growth”). It is also consistent with increasing foreign reserves—another usual occurrence that has often predisposed institutional investors and financial authorities into a false sense of security. But it is not sustainable.

In the upswing, *euphoric* phase of the cycle (to use a Kindlebergian term) foreign borrowing normally finances consumption of durables (to an increasing extent imported, given the combined effect of trade liberalization and currency appreciation), real estate, and the expansion of relatively more profitable non-tradable sector firms.<sup>3</sup> Foreign

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<sup>2</sup> In the case of Argentina, the domestic currency was already overvalued before the parliamentary introduction of a fixed exchange-rate regime (Convertibility Law) in March 1991. Still, as of that date, it tended to appreciate *further*, as inflation did not immediately go down to manageable levels in the context of a fixed nominal exchange rate.

<sup>3</sup> In spite of their lower profitability, some firms in the tradable sector may also find such a macroeconomic context propitious to invest, particularly in the acquisition of relatively inexpensive (due to currency appreciation) imported capital goods. However, this is not an option available across the board. It is typically restricted to firms large enough to have direct access to

finance is assured by the combination of a fixed exchange rate (or any similar monetary arrangement that makes the short-term behavior of the exchange rate easy to forecast; see Neftci 2002) and significant interest rate spreads, which give way to momentous arbitrage gains (while reinforcing currency overvaluation).<sup>4</sup>

As pointed out by Taylor (1998), “[a]fter some months or years of this process, the balance sheet of the local financial system will be risky overall, short on foreign currency and long on local assets”. The servicing of escalating foreign liabilities depends on residents’ earnings, mostly denominated in domestic currency. Such is the case of durables consumption and mortgage loans, whose payments largely depend on domestically generated earnings (wages), as well as of government liabilities, since tax revenues are of course collected in domestic currency.<sup>5</sup>

Kregel (1998) and Taylor (1998) among others have expressly drawn attention to the serious risk of insolvency engendered by this type of currency mismatch in the financial sector. In a similar vein, in this paper I intend to focus on the financial position of the non-financial sector, paying special attention to non-tradable sector firms, whose ability to service foreign loans is also decidedly dependent on domestic currency revenues. Indeed, as non-tradable sector firms experience higher profitability and engage in “speculative” finance (a la Minsky), they contribute to intensify overall financial fragility, given that an increasing proportion of the country’s foreign non-financial sector debt is taken up precisely by one of the sectors that would most severely endure the deflationary impact of currency devaluation.

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international capital markets, which belong to sectors that either enjoy some natural competitive advantage (e.g. agribusiness in Argentina) and/or that benefit (or have benefited in the past) from some sort of government support or subsidy. Overall, despite certain successful examples, financial and capital account liberalization has resulted in severe de-industrialization, especially (but not necessarily) when applied in tandem with trade liberalization (Patnaik 2003).

<sup>4</sup> For an explanation of the persistence of interest rate spreads in the face of swelling capital inflows, see Frenkel (2004).

<sup>5</sup> The fact that banks may be allowed to make foreign-currency domestic loans (as was the case in Argentina during the 1990s) does not rule out the emergence of currency mismatches between banks’ assets and liabilities, since most foreign-currency debtors’ earnings (including government’s) are denominated in domestic currency.

In order to empirically assess this phenomenon for the case of Argentina prior to the 2001 crisis, I develop and seek operationalize a set of financial indicators that draw on Minsky's distinction between hedge, speculative, and Ponzi financing positions. The paper is organized as follows. In Section 1 I present an outline of Minsky's approach, concentrating on the relationship between finance, investment and financial fragility. In Section 2 I describe the empirical evidence to be analyzed and develop a criterion for the assessment of financial fragility at the level of the firm. In Section 3, following the methodology developed in Section 2, I carry out a sectoral examination of Argentina's corporate balance sheets between 1998 and 2001. Section 4 concludes.

### **1. Minsky's analytical framework**

Hyman Minsky was interested in the analysis of advanced capitalist economies, characterized by complex financial relationships. He underlined the fact that modern capitalist economies entail costly and long-lived capital assets, which in turn require financing of some sort. According to Minsky, it is in the relation between finance and investment that Keynes' notion of fundamental uncertainty develops, engendering the characteristic instability of capitalist economies (Minsky 1975a).

Counter to the Modigliani-Miller theorem—according to which it makes no difference whether positions in capital assets are financed out of earnings, equity, or debt—Minsky's analysis paid special attention to the liability structure of firms.<sup>6</sup> The current purchase of capital assets is validated (or not) by future income flows, what implies that contractual financial commitments, when incurred in order to finance positions in capital assets, may not be met. If past financial commitments are not met expectations about the future are likely to be affected (revised “downwards”) almost certainly reducing current investment, and with it current income, making past financial commitments even more difficult to meet, and so forth.

Naturally, the higher the extent to which firms resort to external finance (debt), the larger the second-round effects to be expected from the interruption in any significant financial

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<sup>6</sup> Of course, he also paid attention to liability structures of households and financial institutions (e.g. Minsky 1975b).

commitment. This is where financial institutions enter the scene. As the proportion of debt service payments increases relative to firms' cash flows, financial institutions become increasingly exposed to non-performing loans. If under such circumstances (i.e. a widespread increase in leverage ratios) financial institutions increase their liquidity preference or become more risk averse, either due to a fall in their own cash flows or just out of sheer precaution, the availability of new loans (as well as the possibility of refinancing old ones) may be frustrated, precisely in the stage in which demand for finance tends to become more inelastic to changes in interest rates.

The situation described above is likely to reduce investment, bringing profits down with it—as Kalecki, who maintained that capitalists “earn what they spend”, would have predicted. Given financial commitments, falling profits tend to increase the demand for finance, exerting upward pressure on interest rates, worsening the financial situation of firms even more. If at some point in this sequence firms resort to selling assets in order to meet debt payments (“sell position to make position”, as Minsky would have put it) a Fisher-type debt deflation is likely to develop. Certainly, then, exactly *how* a position is financed *does* make a difference.

### ***Hedge, speculative and Ponzi finance***

As pointed out by Schroeder (2002), from Minsky's point of view the very act of borrowing to finance accumulation is the crucial determinant of financial instability. Furthermore, Minsky argued that in a world of interlocked balance sheets financial crises are endogenous—even if what eventually triggers the crisis depends on specific institutional conditions and may be related to particular historical episodes—because the increase of financial fragility is itself endogenous.

A financially fragile firm is one that faces increasing payment commitments *vis-à-vis* its gross profits. Financial fragility may result from an increase in the firm's leverage ratio or from a modification (shortening) of the maturity structure of its outstanding liabilities. In any case, according to Minsky, fundamental to the distinction between robust and fragile financial structures is the distinction among hedge, speculative and Ponzi finance. In his own words:

A unit engages in hedge finance when the cash flow from the operations exceeds the cash payments due on contracts; a household mortgage is an example. A unit engages in speculative finance when the cash flow from operations falls short of the payment commitments on contracts, although cash flow from operations exceeds the interest charges. Speculative finance occurs when term to maturity of liabilities is short relative to asset life; banks normally engage in speculative finance, as do corporations that have a floating debt in the form of bank loans and commercial paper. A unit engages in 'Ponzi' finance when interest charges on outstanding debt exceed cash flow from operations. Units that are constructing facilities with long gestation periods or whose cash flow from operations or contracts falls short of anticipations are engaged in 'Ponzi' finance (Minsky 1975b, p. 7).

In other words, a hedged unit is one whose assets are expected to produce cash inflows from operating projects that exceed financing costs and operating expenses, including dividends to shareholders, "by a sufficient 'margin of safety' or cushion capable of absorbing any unforeseen changes in cash inflows and outflows" (Kregel 1998). To be precise, the 'margin of safety' comprises the difference between cash inflows and outflows from assets and liabilities, respectively; a 'cushion' that should be large enough so as to absorb any unexpected decrease in inflows (e.g. a fall in gross profits) or any unexpected increase in outflows (e.g. a rise in the interest rate on outstanding debt).

Likewise, a firm engages in speculative finance as its 'margin of safety' declines and the probability of it being unable to meet pending financial commitments increases, so that at some point over the life of the loan the firm may require an extension from its creditors or a reduction in the amount of dividends normally paid out to shareholders. This comprises a *speculative* position because both the lender and the borrower are speculating that by the end of the project resources will suffice to repay interest and principal, despite occasional shortfalls.

Arestis and Glickman (2002) point out to an aspect of speculative finance that will be crucial when extending Minsky's framework to deal with an open economy:

Minsky characterizes the *speculative-financing* unit in two closely related but entirely overlapping ways. On the one hand, he offers a definition in terms of

such a unit's own cash prospects. Thus he writes that "the balance sheet cash flows from a unit can be larger than the expected income receipts so that the only way they can be met is by rolling over ... debt; units that roll over debt are engaged in speculative finance" (Minsky 1986). At the same time, he also refers to the *speculative-financing* unit in terms of the impact on it of changes in financial market conditions (Arestis and Glickman 2002).

Indeed, there are two facets to speculative finance—the first related to inflow prospects, e.g. future sales; the second to outflow prospects, e.g. future interest rates on outstanding debt. From the second perspective—i.e. considering the exposure of a firm to an unexpected rise in interest rates—any indebted unit, even one that enjoys a hedged position (according to the first criterion) may all of a sudden find itself bearing a speculative, or even a Ponzi position.

It is this second dimension of Minsky's definition of speculative finance that becomes crucial in an open-economy framework, in which firms are allowed to borrow foreign funds and are therefore exposed to unexpected changes in exchange rates. Indeed, in an open-economy setup, where firms assume foreign liabilities, currency depreciation gives rise to the same effect on cash flow commitments as rising interest rates in a closed-economy setup. For this reason "[c]ushions of safety would ... have to be larger for firms operating in countries with open capital markets" (Kregel 1998).

Finally, a unit is engaged in a Ponzi position when its 'margin of safety' is nil, i.e. when shortfalls are likely to occur almost throughout the entire maturing phase of the project, so that the firm needs to borrow additional funds just to be able to meet interest payments; to "increase debt to pay debt", as Minsky used to put it.

Summing up, for Minsky "[t]he relative robustness/fragility of the financial structure is determined by the proportion of units engaged in hedge, speculative and 'Ponzi' finance; the greater the proportion engaged in hedge finance, the more robust the financial system" (Minsky 1975b). The attempt to extend and operationalize this proposition for the case of an open economy comprises the thrust of this paper.

### ***Financial instability hypothesis***

Minsky's financial instability hypothesis can be summarized as follows. Over prolonged financially tranquil periods the success of past investments, i.e. the validation of capital assets purchased in the past, reduces firms' aversion to risk, inducing them to increase debt finance and to implicitly commit an increasing proportion of future cash flows to servicing the debt generated by the new liabilities.<sup>7</sup>

Over the tranquil period hedge finance tends to prevail. But “[i]n a world dominated by hedge finance and in which little value is placed on liquidity ... the interest rate structure yields profits opportunities in financing positions in capital assets” (Minsky 1986; quoted by Arestis and Glickman 2002). As units (firms, households, banks, etc) engage in speculative finance and their demand for assets increases, asset prices tend to increase as well, giving rise to capital gains—reinforcing the disposition which motivated speculative finance in the first place. In short, success induces agents to reduce their ‘margins of safety’:

[I]n a world of uncertainty, given capital assets with a long gestation period, [...] the successful functioning of an economy within an initially robust financial structure will lead to a structure that becomes more fragile as time elapses. Endogenous forces make a situation dominated by hedge finance unstable... (Minsky 1986; quoted by Arestis and Gilckman 2002).

In other words, a prolonged period characterized by the predominance of hedge finance endogenously leads to speculative finance. But as speculative finance spreads, an increasing number of units are exposed to falling into Ponzi positions. Speculative units may be involuntarily pushed into Ponzi positions due to an increase in interest rates and/or due to a fall in gross profits. However, the likelihood of such an event increases due to the very increase in the proportion of debt service payments relative to firms' cash flows. While financial institutions may perceive their increased exposure and react by reducing the amount and increasing the cost of finance, firms may themselves (out of

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<sup>7</sup> “[S]uccess breeds the disregard of the possibility of failure: the absence of serious financial difficulties over a substantial period leads to the development of a euphoric economy in which increasing short-term financing of long positions becomes a normal way of life” (Minsky 1986; quoted by Arestis and Glickman 2002).

precaution) divest their funds towards more liquid assets (Keynes' "precautionary" motive for demanding money), cutting down investment plans and reducing aggregate profits.

Interestingly, as pointed out by Papadimitriou and Wray (1999), while the "shift toward speculative positions, or fragility, occurs intentionally (and more-or-less inevitably because of the way in which expectations are affected by success in a boom) [...] the shift from speculative toward Ponzi finance is mainly unintentional".<sup>8</sup> Once Ponzi positions are significant enough, any "spark" can trigger a debt-deflation.

### ***The role of institutions***

In a well-known collection of articles (Minsky 1982) Minsky sought to explain why "it" (the Great Depression) did not happen again. Minsky laid emphasis on the favorable impact of "big government" and "big bank"—the two chief institutional innovations capitalism emerged with after World War II. A "big government" not only contributes to set a minimum level for aggregate demand (via multiplier effect, as in the standard textbook approach), thus having a beneficial impact on cash flows; it also has a "portfolio effect", as government deficits provide safe assets ("near monies") for private portfolios (Papadimitriou and Wray, 1999). Referring to the US economy, Minsky claimed that post-war recessions had been unusual and, most importantly, had not developed into severe depressions precisely because government deficits tended to place a floor on employment, personal income and cash flows.

Minsky also thought that an active central bank ("big bank") willing to intervene in support of asset prices was also crucial in preventing financial crises. Indeed, Minsky believed that a "big government" might not suffice in the event of a debt deflation. Given the interlocked nature of balance sheets, an asset price meltdown may still arise after, say, a large firm or bank defaults, forcing creditors to default as well, despite the

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<sup>8</sup> In a very volatile context the shift from hedged to speculative financing positions may be unintentional as well. In any case, it should be noted that as regards individual financial positions, the causal sequence might often go from the macroeconomic level (e.g. changes in exchange rates, interest rates, etc) to the microeconomic level. In other words, a given unit may not be able to effectively decide which financial position it would rather bear at a particular moment in time.

presence of “big government”. Hence, a lender of last resort willing to lend or promise to lend to creditors in difficulty (provided they do not shut out debtors) or even to purchase assets of dubious value and issue risk-less liabilities, is crucial if financial instability is to be thwarted. For Minsky, this—and not the control of inflation—should be the primary purpose of a central bank.

In so far as “big government” and “big bank” are successful in nurturing financial tranquility, detrimental side effects are liable to develop, as some risky economic operations tend to be rewarded (or not penalized as they might have otherwise been). Minsky was well acquainted with the dynamic implications of successful “big government” and “big bank” interventions. As pointed out above, in the absence of financial turmoil economic agents may tend to modify their expectations, engage in riskier positions (shifting from hedge to speculative positions), thus increasing overall financial fragility. Despite these “side effects”, Minsky conceived of institutions in an optimistic fashion, as contributing to stability,<sup>9</sup> in contrast to the orthodox “moral hazard” gist, which tends to view institutions as barriers to achieving equilibrium.<sup>10</sup>

### ***The Minskyan open economy***

Minsky’s work predates the current era of financial liberalization. Partly for this reason it tended to be exposed within a closed economy framework. It has therefore to be broadened in order to incorporate exchange rate and other risks associated with free international capital mobility. In recent years (particularly after the 1997 East Asian crisis) several authors have innovatively tried to extend Minsky’s approach to financial fragility to deal with the case of open economies.

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<sup>9</sup> [I]nstitutions and interventions thwart the instability breeding dynamics that are natural to market economies by interrupting the endogenous process and ‘starting’ the economy again with non-market determined values as ‘initial conditions’” (Minsky and Ferri 1991; quoted by Papadimitriou and Wray 1999).

<sup>10</sup> Of course, “side effects” have to be handled, just as with ordinary medicine. However, just as in the case of ordinary medicine, the existence of side effects need not invalidate medicine’s primary corrective effect. In fact, anticipating the effect of lender-of-last-resort-type of interventions on agents’ perception of risk, Minsky supported balance-sheet supervision and macro-prudential regulations as key complementary regulatory devices.

According to Kregel (1998), an open economy is vulnerable to a financial crisis earlier in the business cycle than in the case of a closed economy because in an open economy 'margins of safety' need to be higher in order to handle the potential damage exogenous changes in exchange rates and/or foreign interest rates may exert on cash flows. For Kregel, susceptibility to a financial crisis depends upon the economy surpassing a particular point in the business cycle; a point at which 'margins of safety' become too thin to cushion unforeseen changes in cash flows.<sup>11</sup>

According to Dymski (1999), an open economy is susceptible to generate major macroeconomic imbalances if capital inflows cannot be channeled into productive investment projects. For Dymski (1999), financial crises are more likely to emerge in developing economies, which lack the institutional capacity to cope with massive capital inflows. Indeed, the tendency of capital inflows to be channeled into speculative investments instead of productive investments in developing economies is what sets the ground for a Minsky crisis, as the reversal (or "sudden stop") in capital flows punctures the resultant asset bubbles, triggering a debt-deflationary process.

According to Arestis and Glickman (2002), as argued by Kregel (1999), financial crises are likely to arise earlier in the business cycle in an open economy than in a closed economy due to the exposure to exchange rate variations. For them, international capital mobility tends to *internationalize* the move towards higher levered positions (from hedge to speculative finance), as the initial validation of profits-cum-capital gains reduces domestic financial conservatism, driving the economy into a "state of internationalized financial fragility":

Openness vastly expands the drive toward financial innovation and extends the opportunities for 'making on the carry'. As a result, it decidedly broadens the routes by which units, including the state itself, can shift from hedged to speculative and Ponzi conditions. The economy is thus driven endogenously into a fragile condition in which it becomes increasingly exposed to disruptive events which, if domestic in origin, will amplify themselves via their external consequences and, if initially external, will bring adverse domestic repercussions in their train (Arestis and Glickman 2002, p. 244).

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<sup>11</sup> For a discussion about the timing followed by the Minskyan phases in an open economy, see Schroeder (2002).

According to Felix (1999), financial and capital account liberalization, by exposing the economy to exchange rate volatility tends to increase the “hurdle rate”, predisposing investible funds towards projects with faster expected pay-offs.<sup>12</sup> A bias towards shorter gestation projects may therefore be expected to emerge.<sup>13</sup> For Felix (1999), the Minskyan contention that financial market dynamics are inherently unstable and give rise to endogenous financial fragility comprises a fertile point of departure for understanding the problems experienced under the current international financial liberalization period. It is the extension of Minsky’s policy advice to the open economy setup what is problematic, given the absence of an international lender of last resort:

[Minsky] assumed a single central bank that could effectively intervene as lender of last resort (LOLR) and a large public sector with a progressive tax structure and expenditure commitments that would allow automatic fiscal stabilizers to set a high floor under aggregate demand... Adapting these *aperçus* to a global setting of decontrolled financial markets with no global LOLR, and national economies with varying policy goals, is, however, a complex exercise in political economy (Felix 1999, p. 27).

The ideas rendered above offer only a primer of a much more abundant and multifaceted literature, which has sought to extend Minsky’s ideas to an open economy framework. Still, they provide a propitious background for both the methodological development and the empirical investigation pursued below.

## **2. The analysis of corporate financial fragility**

In this section I develop a criterion for the assessment of financial fragility at the level of the firm in the context of an open economy. It may be useful, however, to describe the

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<sup>12</sup> The hurdle rate is “the minimum expected return that induces investment in projects involving front-end outlays—that is, fixed costs—and delayed revenue flow. Since information about the time-shape of future costs and revenues become more uncertain the longer the life of the project, delaying the project may reduce risk by allowing more information to be gathered. The hurdle rate of return adds a premium for ‘waiting’ to the cost of capital in investment calculations. The premium is the present value of the expected income stream from postponing the project divided by the expected present value of starting the project now. Greater expected volatility raises the hurdle rate...” (Felix 1999, p. 18).

<sup>13</sup> For example, this bias is evidenced in the current prevalence of mergers and acquisitions over greenfield investment in connection with foreign direct investment flows.

nature of the available empirical evidence before developing the set of financial indicators meant to distinguish among hedged, speculative and Ponzi positions.

### ***The Panel***

The empirical assessment of financial fragility requires detailed balance sheet information. In Argentina, the most comprehensive and reliable information available from this standpoint is provided by the ENGE (acronym for “National Survey of Large Firms”), carried out by INDEC (acronym for “National Bureau of Statistics and Censuses”). The panel includes the largest 500 non-financial corporations (listed and not-listed) operating in Argentina, both foreign and domestic, which represent approximately 15% of Argentina’s GDP.

**Table 1: INDEC 500’s sectoral decomposition\***

	1995	1996	1997	1998	1999	2000	2001
<b>Domestic Firms</b>							
Number of firms in panel	317	301	268	267	258	244	240
Firms in tradable sector	195	180	172	174	164	153	148
Gross Value of Production (as a % of Domestic firms’ GVP)	57%	57%	63%	63%	65%	64%	60%
Firms in non-tradable sector	122	121	96	93	94	91	92
Gross Value of Production (as a % of Domestic firms’ GVP)	43%	43%	37%	37%	35%	36%	40%
<b>Foreign firms</b>							
Number of firms in panel	182	198	231	232	241	255	259
Firms in tradable sector	140	157	174	164	158	172	174
Gross Value of Production (as a % of Foreign firms’ GVP)	80%	80%	73%	68%	61%	66%	67%
Firms in non-tradable sector	42	41	57	68	83	83	85
Gross Value of Production (as a % of Foreign firms’ GVP)	20%	20%	27%	32%	39%	34%	33%

\* Due to methodological reasons the number of firms adds up to 499 only.

Source: Author’s calculations based on INDEC

I shall refer to the firms in the panel as “INDEC 500” hereafter. This is a recent survey, for which no information is available prior to 1995.<sup>14</sup> For the sake of subsequent analysis, the firms in the panel have been classified into foreign and domestic firms, on the one hand, and tradable and non-tradable sector firms, on the other, as shown in Table 1 below, which gives a broad picture of INDEC 500’s composition.<sup>15</sup>

**Cash flows and financial fragility<sup>16</sup>**

As argued in Section 1, financial fragility ultimately arises from firms borrowing funds to finance production. According to Minsky, an economy is financially fragile if the bankruptcy of one firm can set off a chain reaction of bankruptcies of other firms, giving way to a recursive negative spiral. Hence, the likelihood of a systemic breakdown depends on the distribution of firms’ financial positions along a line that goes from more robust (*hedged*) to more fragile positions (*Ponzi*). In other words, “increased fragility of individual firms implies that the economy as a whole becomes financially unstable” (Schroeder 2002).

Minsky analyzes financial fragility through firms’ cash flow accounting categories, focusing on the extent to which income flows from the productive part of the firm may satisfy previously contracted financial obligations. The cash flow of a firm equates the *source* of funds from net operating revenues (*R*) and borrowing (*B*), to its *uses* for investment (*I*), servicing debt (*i\*D*), and dividend payments (*Div*):

$$R + B \equiv I + i*D + Div \tag{1}$$

or,

$$RE + B \equiv I + i*D \tag{2}$$

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<sup>14</sup> Moreover, some of the information required for this paper is only available as of 1998.

<sup>15</sup> Foreign firms have been identified according to the conventional 10% minimum equity share to foreign stockholders.

<sup>16</sup> This and the following subsection draw essentially on Foley (2003).

where  $i$  stands for the interest rate on outstanding debt  $D$ ,  $RE$  for retained earnings, and  $RE = R - Div$ . Net operating revenues or profits ( $R$ ) are equal to gross profits minus tax payments. Note that (1) and (2) comprise accounting identities.

Both for both operational and analytical purposes it may be useful to make a distinction between *financial* investment ( $I_{Fi}$ ) and *productive* investment ( $I_{Pr}$ ). In addition, when considering an open economy, it may be worth classifying financial investment into domestic ( $I_{Fi}^D$ ) and foreign ( $I_{Fi}^F$ ). So, too, as regards firms' borrowing. Hence, identity (1) may be re-expressed as:

$$R + B^D + (B^F * e) \equiv I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) + i * D^D + (i^F * D^F * e) + Div \quad (3)$$

where  $B^D$  and  $B^F$  stand for domestic and foreign borrowing;  $D^D$  and  $D^F$  for domestic and foreign debt;  $i^F$  for the foreign interest rate; and  $e$  for the nominal exchange rate (domestic currency per unit of foreign currency).

The distinction between the purchase of domestic and foreign financial assets may be important in assessing the nature and dynamics of a crisis. Note, for instance, that from a balance of payments perspective, the latter denotes capital outflows. An increase in the share of foreign financial assets in firms' portfolios may exert additional pressure on the balance of payments, what may be of particular importance in the case of countries experiencing foreign sector constraints. A sudden shift to foreign financial assets may in turn exert severe downward pressure on the value of domestic assets, including the domestic currency, triggering devaluation and/or debt-deflation.

Exposure to financial fragility in the case of an open economy depends crucially on the decomposition of debt between foreign and domestic.<sup>17</sup> In addition, when dealing with the corporate sector, the sectoral composition of foreign debt should also be taken into account. As suggested above, in the context of an open economy it is not the same whether foreign debt is mainly held by the tradable or the non-tradable sector (the latter also including the government and the bulk of the population). Indeed, a non-tradable

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<sup>17</sup> Of course, the maturity structure of debt is also crucial, as became evident during the 1997 East Asian crisis. I have not developed this issue here for lack of relevant data.

sector firm borrowing foreign currency can instantly become insolvent due to currency devaluation.<sup>18</sup>

This seems to have been relevant in the case of Argentina. As shown in Table 2 below, foreign liabilities as a share of total liabilities had a tendency to increase between 1995 and 2001, together with the general increase in leverage ratios.<sup>19</sup> Notice the increasing exposure of non-tradable sector firms to currency risk throughout this period.<sup>20</sup> Even if non-tradable sector firms tended to exhibit a slightly lower proportion of foreign to total liabilities than tradable sector firms, it should be noted that their foreign liabilities were equal to 25% of their total assets by 2001.<sup>21</sup>

**Table 2: Leverage ratios and foreign indebtedness – INDEC 500 – 1995/2001**

	1995	1996	1997	1998	1999	2000	2001
<i>Leverage ratio (*)</i>							
Indec 500	0.44	0.47	0.50	0.52	0.52	0.52	0.53
Tradable sector	0.45	0.47	0.50	0.51	0.50	0.49	0.51
Non-tradable sector	0.44	0.48	0.50	0.53	0.54	0.55	0.55
<i>Foreign Liabilities / Total Liabilities</i>							
Indec 500	0.39	0.41	0.47	0.49	0.49	0.47	0.51
Tradable sector	0.42	0.44	0.51	0.55	0.54	0.53	0.56
Non-tradable sector	0.36	0.38	0.41	0.43	0.44	0.42	0.45
<i>Foreign Liabilities / Total Assets</i>							
Indec 500	0.17	0.20	0.23	0.26	0.25	0.25	0.27
Tradable sector	0.19	0.21	0.25	0.28	0.27	0.26	0.29
Non-tradable sector	0.16	0.18	0.21	0.23	0.24	0.23	0.25

(\*) Leverage ratio = Total Liabilities / Total Assets

Source: Author's calculations based on INDEC

<sup>18</sup> The tendency of private investment to shift in the direction of the non-tradable sector comprises one of the characteristic features of Palma's (2003) 'route 1' to financial crises.

<sup>19</sup> According to Bebczuk (2004), who develops a "concentrated ownership model" in order to explain dividend policies in companies with highly concentrated ownership (as is often the case in developing countries), debt may act as an insurance device, which enables risk sharing with creditors. Interestingly, foreign subsidiaries of transnational corporations may be inclined to behave in a similar way, exhibiting high leverage and dividend repatriation ratios (Abeles 2004).

<sup>20</sup> Most notably, 61% of foreign non-tradable sector firms' liabilities had been contracted abroad.

<sup>21</sup> Given this 0.25 ratio of foreign liabilities to total assets, a 50% real devaluation would make the foreign liabilities to total assets ratio equal to 0.5, driving many of these non-tradable sector firms into insolvency. (Argentina's currency depreciated by more than 70% between 2001 and 2002.)

A further decomposition of sources of funds may be useful for the assessment of corporate exposure to currency risk. Net operating revenues ( $R$ ) may be classified into operational or “productive” profits proper ( $R_P$ ), on the one hand, and interest and dividend receipts ( $R_F$ ) on the other. The latter may in turn be broken up into domestic ( $R_F^d$ ) and foreign ( $R_F^f$ ) currency financial proceeds, as shown in (4).<sup>22</sup>

$$R_{Pr} + R_{Fi}^D + (R_{Fi}^F * e) + B^D + (B^F * e) \equiv I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) + i * D^D + (i^F * D^F * e) + Div \quad (4)$$

### ***Operationalizing hedge, speculative and Ponzi positions***

In order to analyze a firm’s financial position we need to consider its net worth ( $NW$ ), i.e. the difference between the value of its assets ( $A$ ) and its debts ( $D$ ):

$$NW = A - D \quad (5)$$

As exposed in Section 1, Minsky defines three possible financial positions—hedged, speculative or Ponzi. Following Foley (2003), a *hedged* firm is one for which net operating revenues exceed its debt service obligations and investment plans, including dividends for shareholders, so that its net worth is increasing and its debt decreasing. According to the above representation of sources and uses of funds, as summarized in (4), this implies:

$$R_{Pr} + R_{Fi}^D + (R_{Fi}^F * e) > I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) + i * D^D + (i^F * D^F * e) + Div \quad (6)$$

so that:

$$B = B^D + (B^F * e) \leq 0 \quad (7)$$

A *speculative* firm is one for which net operating revenues exceed its debt service obligations, including dividend payments, but do not completely suffice to afford investment plans. A speculative firm hence needs to borrow “external” funds to finance expansion. Both its net worth and indebtedness are growing:

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<sup>22</sup> Foreign currency proceeds are important in this context since the impact of currency devaluation on firms’ foreign debt and net worth could be compensated by foreign asset holdings (Abeles 2004).

$$R_{Pr} + R_{Fi}^D + (R_{Fi}^F * e) \geq i * D^D + (i^F * D^F * e) + Div \quad (8)$$

but:

$$R_{Pr} + R_{Fi}^D + (R_{Fi}^F * e) \leq I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) + i * D^D + (i^F * D^F * e) + Div \quad (9)$$

so that:

$$0 \leq B = B^D + (B^F * e) \leq I = I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) \quad (10)$$

Finally, a *Ponzi* firm is one for which net operating revenues fail to cover its debt service obligations (including dividend payments), so that it has to borrow to pay back previously contracted debt (“increase debt to pay debt”). A *Ponzi* firm increases its liabilities and decreases its net worth, which may eventually become negative.<sup>23</sup>

$$R_{Pr} + R_{Fi}^D + (R_{Fi}^F * e) < i * D^D + (i^F * D^F * e) + Div \quad (11)$$

so that:

$$B = B^d + (B^f * e) > I = I_{Pr} + I_{Fi}^D + (I_{Fi}^F * e) \quad (12)$$

Financial distress at the level of the firm may arise for different reasons. Given a firm’s liabilities and dividend payments schedule, a reduction in net operating revenues may force a hedged unit into a speculative position, or a speculative unit into a Ponzi position. Alternatively, in order to preserve its financial position, a firm experiencing falling profitability may cut back on its dividend payments or reduce its investment plans. In the latter case, however, other firms’ cash flows would eventually suffer as well.

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<sup>23</sup> As in Foley (2003), the same taxonomy can be expressed by means of *intensive* variables. Aggregating profits, borrowing, investment and debt services back into single homogenous variables as in equation (1), it may be possible to distinguish Minsky’s trinity in terms of a firm’s growth rate  $g$  (investment over assets), profit rate  $r$  (profits over assets), and the interest rate paid  $i$  (interest payment over stock of debt). In the case of a hedged unit the rate of profit exceeds both the growth rate of the firm’s capital ( $r > g$ ) and the rate of interest ( $r > i$ ); in the case of a speculative unit, the rate of growth of assets exceeds its profit rate, which in turn exceeds the rate of interest ( $g > r > i$ ); finally, in the case of a Ponzi unit, the interest rate exceeds the profit rate ( $i > r$ ). Schroeder (2002) applies this taxonomy at the macroeconomic level to analyze the case of Thailand in the 1990s.

An increase in domestic interest rates on outstanding debt may also drive a hedged unit into a speculative position, or a speculative unit into a Ponzi position. Note, however, that the impact of rising domestic interest payments could be offset by interest accrued on domestic financial assets. The overall impact of an increase in domestic interest rates therefore depends in the net (debtor or creditor) position of the firm. In the case of a net debtor position, yet again, the firm may cut back on its dividend payments or investment plans in order to preserve its original financial position.

Currency devaluation (increase in  $e$ ) could also put a firm facing significant foreign liabilities into severe financial trouble, turning a hedged into a speculative unit, and further into a Ponzi unit, or putting a Ponzi unit out of business altogether.<sup>24</sup> Again, the extent to which currency devaluation actually affects a firm's financial position depends on its net international (debtor or creditor) position. As pointed out above, a firm could hedge its foreign liabilities against the risk of domestic currency devaluation by increasing its holdings of foreign assets.<sup>25</sup>

Finally, notice that financial distress could also arise, *ceteris paribus*, from a simple increase in dividend payments.<sup>26</sup> This is not just a hypothetical situation. Dividend payments have become more burdensome with financial liberalization and the development of capital markets, as pointed out by Eatwell:

As liquidity increases with the creation of ever more sophisticated financial products, the stock market begins to operate like a bond market. Institutional investors increasingly demand that dividend rates should be maintained, irrespective of corporate performance, thereby imposing a further deflationary burden on corporate cash flow (Eatwell 1996).

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<sup>24</sup> Arestis and Glickman (2002) have dubbed firms that issue foreign liabilities in order to expand, exposing themselves to foreign exchange-rate movements as "super-speculative-financing units".

<sup>25</sup> Of course, an increase in foreign interest rates  $r^F$  would inflict a similar effect, as was the case prior to the 1980's Latin American debt crisis.

<sup>26</sup> This is not just a hypothetical situation. Dividend payments have become more burdensome with financial liberalization and the development of capital markets, as pointed out by Eatwell (1996): "As liquidity increases with the creation of ever more sophisticated financial products, the stock market begins to operate like a bond market. Institutional investors increasingly demand that dividend rates should be maintained, irrespective of corporate performance, thereby imposing a further deflationary burden on corporate cash flow".

In other words, a mere reduction in retention rates could weaken a firm's financial position. As shown in Table 3 below, the scale of dividend payments in Argentina can be deemed as anything but negligible.

**Table 3: Retention rates in Argentina's corporate sector – INDEC 500 – 1995/2001**

	1995	1996	1997	1998	1999	2000	2001
INDEC 500	59.8%	55.6%	66.7%	41.7%	1.4%	2.3%	-252.5%
Domestic	60%	53%	63%	26%	-27% (*)	-193% (*)	-715% (**)
Foreign	60%	58%	69%	50%	9%	18%	-171% (*)

Note: Retention rate = (Net Operating Profits – Interests – Dividends) / (Net Operating Profits – Interests)

(\*) Negative retention rates result from dividend payments exceeding current net profits (after tax and interest payments).

(\*\*) Negative retention rates result from negative net profits (after tax and interest payments).

Source: Author's calculations based on INDEC

### ***Indicators of Financial Position (IFP)***

As pointed out above, Minsky visualized firms in an economy as being virtually distributed along a line where more robust financial positions (*hedged*) lie on one end and more fragile ones (*Ponzi*) on the other. Given the necessary information, it may be possible to identify each firm's financial position according to Minsky's trinity and analyze the evolution of their distribution over time. With this in mind, I have employed two sets of indicators of financial position (*IFP*). The first set of indicators *excludes* dividend payments from the uses-of-funds side:

$$IFP_{b/Dividends}^1 = \frac{R_P + R_{Fi}^D + R_{Fi}^F \cdot e}{I + DDS + FDS \cdot e} \qquad IFP_{b/Dividends}^2 = \frac{R_P + R_{Fi}^D + R_{Fi}^F \cdot e}{DDS + FDS \cdot e}$$

where  $IFP_{b/Dividends}$  stands for "Indicator of Financial Position *before* Dividend payments";  $I$  stands for investment, including both productive ( $I_{Pr}$ ) and financial ( $I_{Fi}$ ) investment flows;  $DDS$  for domestic debt services, including both interest and principal payments; and  $FDS$  for foreign debt services, also including both interest and principal payments. Note how the indicators depicted in (13) and (14) draw from (6), (8) and (11) above.

There is a slight difference between these two indicators, denoted by their superscripts “1” and “2”. While the first one,  $IFP_{b/Dividends}^1$ , includes investment expenditures ( $I$ ) in the denominator (as part of the uses of funds), the second one,  $IFP_{b/Dividends}^2$ , excludes them. It is necessary to make this (apparently insignificant) distinction in order to identify each firm’s financial position. While the first indicator,  $IFP_{b/Dividends}^1$ , may indisputably show whether a given firm bears a hedged position or not, it cannot show (in the case the firm is not hedged) whether the firm bears a speculative or a Ponzi position. Likewise, while the second indicator,  $IFP_{b/Dividends}^2$ , may indisputably show whether a firm bears a Ponzi position or not, it cannot show (in the case the firm is not engaged in Ponzi scheme) whether the firm bears a hedged or a speculative position. Still, resorting to both indicators in unison the following classification ensues:

**Table 4: Classification of Indicators of Financial Position before Dividend payments**

Hedged	Speculative	Ponzi
$IFP_{b/Dividends}^1 > 1$	$IFP_{b/Dividends}^1 < 1$ and $IFP_{b/Dividends}^2 > 1$	$IFP_{b/Dividends}^2 < 1$

In other words, if a firm exhibits  $IFP_{b/Dividends}^1 > 1$ , it means its net operating revenues, indicated by the numerator in equation (13), more than suffice to pay back its debt and finance its investment plans, indicated by the denominator. This firm is engaged in hedge finance. However, if  $IFP_{b/Dividends}^1 < 1$ , it is necessary to resort to the second indicator,  $IFP_{b/Dividends}^2$ , to distinguish whether the firm bears a speculative or a Ponzi position. If the firm exhibits  $IFP_{b/Dividends}^2 < 1$ , it means its net operating revenues are not even sufficient to service its debt (let alone finance investment); this firm bears a Ponzi position. The intermediate case (a firm that exhibits  $IFP_{b/Dividends}^1 < 1$  and  $IFP_{b/Dividends}^2 > 1$ ) denotes speculative finance. Note that this classification leaves dividend payments to shareholders aside. That is not the case with the second set of indicators. In fact, the

second set of indicators differs from the first only in that it *includes* dividend payments when accounting for uses of funds:

$$IFP_{a/Dividends}^1 = \frac{R_P + R_{Fi}^D + R_{Fi}^F \cdot e}{I + DDS + FDS \cdot e + Div} \quad IFP_{a/Dividends}^2 = \frac{R_P + R_{Fi}^D + R_{Fi}^F \cdot e}{DDS + FDS \cdot e + Div}$$

where  $IFP_{a/Dividends}$  stands for “Indicator of Financial Position *after* Dividend payments”.

From (16) and (17) an analogous classification results:

**Table 5: Classification of Indicators of Financial Position *after* Dividend payments**

Hedged	Speculative	Ponzi
$IFP_{a/Dividends}^1 > 1$	$IFP_{a/Dividends}^1 < 1$ and $IFP_{a/Dividends}^2 > 1$	$IFP_{a/Dividends}^2 < 1$

The same reasoning described before applies here. Arguably, this second set of indicators entails a more realistic representation of firms’ actual financial position, given that firms normally pay out dividends to shareholders. It is nevertheless interesting to analyze the different results obtained from sorting the panel among hedged, speculative and Ponzi positions under each of these two sets of indicators, as this may indicate to what extent dividend policies may have contributed to firms financial constraints.

### 3. The empirical evidence

In this section I carry out a sectoral examination of Argentina’s corporate balance sheets between 1998 and 2001, classifying them into hedged, speculative and Ponzi positions, according to the criteria described in Section 2. Table 6 below presents the evolution of the distribution of hedged, speculative and Ponzi positions within INDEC 500, classified according to  $IFP_{b/Dividends}^1$  and  $IFP_{b/Dividends}^2$ , as in Table 4 above; i.e. under the assumption that firms paid no dividends to shareholders. As expected, hedged and speculative positions tended to give way to Ponzi positions as the 1998-2001 recession proceeded and the financial breakdown came closer.

**Table 6: Hedged, speculative and Ponzi positions – INDEC 500 – 1998/2001**

	1998	1999	2000	2001
Hedged	23%	22%	20%	17%
Speculative	49%	41%	40%	36%
Ponzi	28%	38%	40%	47%
Total	100%	100%	100%	100%

Source: Author's calculations based on INDEC

In other words, even under the assumption that firms paid no dividends to shareholders at all, about ½ of the firms in the panel had to borrow funds in order to service their debt and stay in business during 2001, what is all the more severe given the record-low investment figures that year, as shown in Table 7 below.

**Table 7: Rate of growth of investment flows – INDEC 500 – 1996/2001**

	1996	1997	1998	1999	2000	2001
<i>Investment (*)</i>						
<b>Indec 500</b>	<b>3.5%</b>	<b>12.6%</b>	<b>6.4%</b>	<b>5.1%</b>	<b>3.9%</b>	<b>-0.4%</b>
Tradable sector	7.8%	14.6%	4.7%	-0.8%	3.1%	1.0%
Non-tradable sector	-1.4%	10.1%	8.7%	12.4%	4.8%	-1.9%
<i>Productive Investment (**)</i>						
<b>Indec 500</b>	<b>-0.4%</b>	<b>12.6%</b>	<b>6.5%</b>	<b>4.9%</b>	<b>2.3%</b>	<b>-0.4%</b>
Tradable sector	5.7%	15.5%	3.8%	-1.2%	2.1%	-0.1%
Non-tradable sector	-5.7%	9.6%	9.4%	10.8%	2.4%	-0.6%

(\*) Annual rate of increase in firms' total assets

(\*\*) Annual rate of increase in firms' productive assets

Source: Author's calculations based on INDEC

As pointed out above, exposure to financial fragility in an open economy setup depends very much on the composition of debt and its sectoral distribution—exposure to currency risk is significantly much higher in the case of non-tradable than in the case of tradable sector firms. As shown in Table 8, which breaks up the panel into tradable and non-tradable sector firms, the latter seem to have followed a fairly steeper path in the direction of financial fragility. Indeed, along with the increasing weight of non-tradable sector firms in the panel, the proportion of Ponzi firms within the non-tradable subset more than doubled, going from 22% in 1998 to 46% in 2001. Tradable sector firms

reveal a similar proportion of Ponzi units in 2001 (47%), but their increase *vis-à-vis* 1998 is less spectacular.<sup>27</sup>

**Table 8: Hedged, speculative and Ponzi units – Tradable *vis-à-vis* non-tradable sector  
INDEC 500 – 1998/2001**

	1998		1999		2000		2001	
	Units	%	Units	%	Units	%	Units	%
<b>Tradable sector</b>	<b>304</b>	<b>100%</b>	<b>292</b>	<b>100%</b>	<b>294</b>	<b>100%</b>	<b>297</b>	<b>100%</b>
Hedged	72	24%	60	21%	54	18%	47	16%
Speculative	138	45%	122	42%	116	39%	110	37%
Ponzi	94	31%	110	38%	124	42%	140	47%
<b>Non-tradable sector</b>	<b>131</b>	<b>100%</b>	<b>140</b>	<b>100%</b>	<b>161</b>	<b>100%</b>	<b>160</b>	<b>100%</b>
Hedged	26	20%	34	24%	38	24%	32	20%
Speculative	76	58%	54	39%	65	40%	55	34%
Ponzi	29	22%	52	37%	58	36%	73	46%

Source: Author's calculations based on INDEC

It may also be important to distinguish foreign from domestic firms' behavior, as in Table 9. Interestingly, Table 9 seems to show that foreign firms moved faster into financially fragile positions than domestic firms. The proportion of Ponzi units among foreign firms rose from 27% to 48% between 1998 and 2001.<sup>28</sup> Domestic firms revealed a higher proportion of Ponzi units in 1998 (31%) and a lower one in 2001 (43%), i.e. their path towards financial fragility seems somewhat more moderate.

<sup>27</sup> Recall that this paper's working hypothesis hinges on the idea that substantial inflows of capital to Argentina during the 1990s (which contributed to sustain a perceptibly overvalued domestic currency) led to an unsustainable boom in the non-tradable sector, exacerbating overall financial fragility.

<sup>28</sup> Note that foreign firms' significance within the panel grew as well during the same period.

**Table 9: Hedged, Speculative and Ponzi units – Domestic *vis-à-vis* foreign firms  
INDEC 500 – 1998/2001**

	1998		1999		2000		2001	
	Units	%	Units	%	Units	%	Units	%
<b>Domestic firms</b>	<b>173</b>	<b>100%</b>	<b>157</b>	<b>100%</b>	<b>164</b>	<b>100%</b>	<b>160</b>	<b>100%</b>
Hedged	39	23%	40	25%	35	21%	27	17%
Speculative	81	47%	61	39%	63	38%	64	40%
Ponzi	53	31%	56	36%	66	40%	69	43%
<b>Foreign firms</b>	<b>262</b>	<b>100%</b>	<b>275</b>	<b>100%</b>	<b>291</b>	<b>100%</b>	<b>297</b>	<b>100%</b>
Hedged	59	23%	54	20%	57	20%	52	18%
Speculative	133	51%	115	42%	118	41%	101	34%
Ponzi	70	27%	106	39%	116	40%	144	48%

Source: Author's calculations based on INDEC

Recall that the various classifications presented above are based on the first set of indicators,  $IFP_{b/Dividends}^1$  and  $IFP_{b/Dividends}^2$ ; i.e. they have been obtained under the assumption that firms paid out no dividends to shareholders. On the one hand, this assumption exposes the true cash flows of firms *ex ante*, as determined by the totality of firms' gross profits; on the other hand, it tends to inflate firms' cash flows *ex post*, concealing their correct financial position.

Table 10 exposes again the distribution of hedged, speculative and Ponzi positions according to  $IFP_{b/Dividends}^1$  and  $IFP_{b/Dividends}^2$  (i.e. according to the classification derived from Table 4), together with the corresponding distribution that results from employing  $IFP_{a/Dividends}^1$  and  $IFP_{a/Dividends}^2$  (i.e. according to the classification derived from Table 5), which include dividend payments to shareholders.

**Table 10: Financial Positions before and after dividend payments – INDEC 500 – 1998/2001**

	1998	1999	2000	2001
<b>Hedged units</b>				
<i>Before</i> Dividend Payments	23%	22%	20%	17%
<i>After</i> Dividend Payments	18%	18%	16%	15%
<b>Speculative units</b>				
<i>Before</i> Dividend Payments	49%	41%	40%	36%
<i>After</i> Dividend Payments	42%	34%	32%	28%
<b>Ponzi units</b>				
<i>Before</i> Dividend Payments	28%	38%	40%	47%
<i>After</i> Dividend Payments	40%	48%	52%	57%

Source: Author's calculations based on INDEC

Note that financial positions deteriorate significantly once dividend payments are taken into account. In 1998, the first (and in terms of Argentina's macroeconomic performance, "best") year in this short series, the proportion of Ponzi units increases from 28% (*before* dividend payments) to 40% (*after* dividend payments). This means that a significant number of firms were actually borrowing funds simply to meet their dividend payments. In 2001, once dividend payments are computed, 57% of the firms in the sample held Ponzi positions, instead of 47%, as accounted before dividend payments.

Table 11 breaks up the INDEC 500 panel into tradable and non-tradable sector firms, as in Table 8, but in this case taking dividend payments into account. The difference between tradable and non-tradable sector firms' behavior here is not as noticeable as in Table 8. It should be noted, however, that the share of non-tradable firms in the panel increased significantly between 1998 and 2001, overshadowing the growth in the share of non-tradable sector firms bearing a Ponzi position. Indeed, in 1998, 26% of the firms in a Ponzi situation belonged to the non-tradable sector; whereas in 2001 34% of the firms in that situation belonged to the non-tradable sector. Recall that, as indicated in Table 2, in 2001 45% of non-tradable sector firms' total debt was foreign debt.<sup>29</sup>

<sup>29</sup> The weight of foreign-currency liabilities was actually much higher than foreign liabilities proper (as accounted for in the Balance of Payments), since firms were allowed to borrow foreign currency in the domestic banking system. Foreign-currency liabilities to the domestic banking

**Table 11: Hedged, speculative and Ponzi units – Tradable *vis-à-vis* non-tradable sector firms after dividend payments – INDEC 500 – 1995/2001**

	1998		1999		2000		2001	
	Units	%	Units	%	Units	%	Units	%
<b>Tradable sector</b>	<b>305</b>	<b>100%</b>	<b>293</b>	<b>100%</b>	<b>295</b>	<b>100%</b>	<b>298</b>	<b>100%</b>
Hedged	56	18%	53	18%	44	15%	42	14%
Speculative	119	39%	101	34%	86	29%	83	28%
Ponzi	130	43%	139	47%	165	56%	173	58%
<b>Non-tradable sector</b>	<b>132</b>	<b>100%</b>	<b>141</b>	<b>100%</b>	<b>161</b>	<b>100%</b>	<b>161</b>	<b>100%</b>
Hedged	22	17%	27	19%	29	18%	26	16%
Speculative	65	49%	46	33%	61	38%	45	28%
Ponzi	45	34%	68	48%	71	44%	90	56%

Source: Author's calculations based on INDEC

In turn, Table 12 below differentiates between foreign and domestic firms' behavior, as in Table 9, but this time taking dividend payments into consideration. Here, again, deterioration seems much more pronounced in the case of foreign *vis-à-vis* domestic firms. Indeed, 60% of foreign-owned firms found themselves in a Ponzi position after paying out dividends (compared to 48% before paying out dividends, as shown in Table 9). Domestic firms bearing a Ponzi position also increase significantly, from 43% before dividend payments (Table 9) to 52% after dividend payments (Table 12).

As I have argued elsewhere, dividend repatriation may be expected to increase significantly during the downward phase of the business cycle (Abeles, 2004). Quite remarkably, however, as observed in Table 13, in 2001 foreign firms repatriated 2½ times their profits (net of interest payments), implying that transnational subsidiaries' remittances greatly exceeded their profits, to include also past earnings, depreciation funds, and probably even borrowed funds. This explains why 60% of foreign firms are found to bear Ponzi positions once dividend payments are taken into account.<sup>30</sup> In the case of domestic firms, their falling into Ponzi positions seems to have had less of a

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system were partially rescued ("pesified") by the Argentine government after the devaluation of 2002.

<sup>30</sup> Note that total dividend repatriation by foreign firms included in INDEC 500, which amounted to \$3.4 billion in 2001, represented more than ¼ of Argentina's total loss of foreign reserves (which fell by \$12 billion) during 2001.

discretionary component, given their negative aggregate profitability (net of interest payments).

**Table 12: Hedged, speculative and Ponzi units– Domestic *vis-à-vis* foreign firms after dividend payments – INDEC 500 – 1998/2001**

	1998		1999		2000		2001	
	Units	%	Units	%	Units	%	Units	%
<b>Domestic firms</b>	<b>175</b>	<b>100%</b>	<b>159</b>	<b>100%</b>	<b>165</b>	<b>100%</b>	<b>161</b>	<b>100%</b>
Hedged	31	18%	35	22%	27	16%	26	16%
Speculative	67	38%	55	35%	57	35%	51	32%
Ponzi	77	44%	69	43%	81	49%	84	52%
<b>Foreign firms</b>	<b>262</b>	<b>100%</b>	<b>275</b>	<b>100%</b>	<b>291</b>	<b>100%</b>	<b>298</b>	<b>100%</b>
Hedged	47	18%	45	16%	46	16%	42	14%
Speculative	117	45%	92	33%	90	31%	77	26%
Ponzi	98	37%	138	50%	155	53%	179	60%

Source: Author's calculations based on INDEC

**Table 13: Dividend repatriation and retention rates**  
(Million pesos/dollars and %)

	1995	1996	1997	1998	1999	2000	2001	1995-2001
<b>Domestic firms</b>								
(1) Net Profits (*)	3,700	3,861	3,746	2,032	703	268	-99	14,212
(2) Dividend payments	1,488	1,817	1,402	1,506	893	787	804	8,697
(3) Dividend repatriation	520	430	289	278	226	130	111	1,985
(4) Repatriation rate (**)	14%	11%	8%	14%	32%	48%	-113%	14%
(5) Retention rate (***)	60%	53%	63%	26%	-27%	-193%	-715%	39%
<b>Foreign firms</b>								
1. Net Profits (*)	2,873	3,476	5,751	3,970	2,531	3,358	1,405	23,365
2. Total Dividends paid	1,155	1,443	1,762	1,994	2,295	2,755	3,802	15,206
3. Dividend repatriation	1,069	1,246	996	1,445	1,684	2,115	3,375	11,929
(4) Repatriation rate (**)	37%	36%	17%	36%	67%	63%	240%	51%
(5) Retention rate (***)	60%	58%	69%	50%	9%	18%	-171%	35%

(\*) Profits after interest and tax payments

(\*\*) Repatriation rate = (3) / (1)

(\*\*\*) Retention rate = [(1) – (2)] / (1)

Source: Author's calculations based on INDEC

#### 4. Conclusions

As mentioned above, in recent years several authors have innovatively sought to extend Minsky's approach to financial fragility, originally developed in the context of closed economies, to deal with the case of open economies.<sup>31</sup> The overriding theme in this literature is the destabilizing nature of private finance, exacerbated by free international capital mobility. Inspired by these contributions, I have attempted to operationalize Minsky's taxonomy of hedge, speculative and Ponzi finance at the level of the firm for the case of open economies and to provide new empirical evidence on non-financial corporate vulnerability for the case of Argentina prior to the December 2001 crisis. The mere approach to private finance contrasts the one-sided orthodox insistence on fiscal vulnerability as the ultimate cause of Argentina's latest financial breakdown.<sup>32</sup>

While not meaning to relegate the influence of fiscal imbalances in the buildup of Argentina's 2001 crisis, the empirical evidence provided in this paper points in a somewhat different direction. Indeed, diminishing corporate cash flows may have themselves had an effect on fiscal revenues and not the other way round, as conventionally claimed. In actual fact, private foreign over-indebtedness gave way to momentous defaults after the 2002 currency devaluation, in conjunction with public sector's (more notorious) default.

According to a private survey carried out by a financial consulting firm (AGM),<sup>33</sup> out of a sample of 60 non-financial corporations whose liabilities exceeded US\$100 million, adding up to a total US\$27.4 billion debt,<sup>34</sup> 41 companies fell into arrears with their (mostly foreign) creditors, for a total of US\$22.2 billion; i.e. 81% of the sample's total indebtedness.<sup>35</sup> Of the aforesaid US\$22.2 billion of irregular debt, 15% corresponded to

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<sup>31</sup> Including Arestis and Glickman (2002), Dymski (1999), Felix (1999), Foley (2003), Kregel (1998), Schroeder (2002), among others.

<sup>32</sup> Noteworthy exceptions include Damill, Frenkel and Juvenal (2003), Kregel (2002), Lozano and Schorr (2001), and O'Connell (2002).

<sup>33</sup> Aguirre-González-Marx Associates.

<sup>34</sup> Mostly, though not entirely foreign debt.

<sup>35</sup> According to official balance of payments data total non-financial private sector foreign debt amounted to US\$61 billion in December 2001.

exporting companies, 37% to non-exporting companies, and 48% to public utility companies, according to AGM's own classification. That is to say, even if not all of the "non-exporting" companies can be categorized as strictly belonging to the non-tradable sector, as expected the bulk of arrears undoubtedly pertained to non-tradable sector firms.<sup>36</sup>

Minsky's analytical framework comprises a particularly fruitful source for understanding current open-economy issues, particularly in the current era of financial globalization. Even if I would not argue that Argentina's 2001 crisis should be characterized as a "Minsky crisis" proper, there are many elements, both at a conceptual and methodological/empirical level, which seem to make more sense when examined through a Minskyan lens.

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<sup>36</sup> In fact, 74.5% of the 60 companies' total US\$27.4 debt corresponded to "non-exporting" and public utility companies, whereas only the remaining 25.5% corresponded to "exporting" companies.

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