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THÈSE

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Market Efficiency: Price Momentum and Accrual Anomaly

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L'EFFICACITÉ DU MARCHÉ FINANCIER: ESSAIS SUR L'EFFET "MOMENTUM" ET L'ANOMALIE "ACCRUALS"

Pour faciliter l'allocation efficace des ressources sur les marchés financiers, les prix des actifs cotés sur ces marchés doivent envoyer des signaux précis aux investisseurs. L'efficacité des marchés financiers en matière d'allocation des ressources dépend donc de la capacité du marché et agréger et à rendre compte de l'information pertinente. A partir du type d'informations intégrées dans les prix, Fama (1970) propose une description de l'efficience du marché en trois catégories: la forme faible, la forme semi-forte et la forme forte. Les tests de forme faible sont des tests permettant de savoir si les prix actuels reflètent pleinement toutes les informations impliquées dans les prix historiques. Les tests de forme semi-forte sont ceux pour savoir si les prix actuels reflètent pleinement toutes les informations publiquement disponibles. Les tests de forme forte sont des tests permettant de savoir si des investisseurs ou des groupes d'investisseurs peuvent obtenir un surprofit en utilisant des informations privées.

Dans sa revue postérieure, Fama (1991) élargit ces catégories à des catégories plus générales: les tests de prévisibilité des rentabilités; les études d'événements et les tests d'informations privées. Parmi ceux-ci, les tests de prévisibilité des rentabilités ont amenés des éléments de preuves considérables à l'encontre de l'efficience du marché. Ces tests peuvent être divisés en trois ensembles. Le premier ensemble fournit des preuves sur les rendements

systématiquement inférieurs ou systématiquement supérieurs en fonction du moment de la journée, du jour de la semaine ou du mois de l'année. Le deuxième ensemble montre des preuves sur la rentabilité des stratégies de gestion de titres basées sur les rendements historiques. Les deux anomalies diamétralement opposées souvent trouvées selon les horizons de placement sont les anomalies de retournement de tendance (communément appelée « *reversal* ») et de continuité (communément appelée « *momentum* »). De Bondt & Thaler (1985) documentent le phénomène de retournement de tendance des rendements des actions pour une période de longue durée de un à cinq ans. Ils montrent que les actions qui ont surperformé (ou sous-performé) le marché sur une période de temps ont tendance à sous-performer (ou surperformer) le marché lors d'une période ultérieure. Inversement, Jegadeesh & Titman (1993) découvrent le phénomène de continuité à court terme: les actions qui ont donné des rendements élevés ont tendance à continuer à avoir des rendements plus élevés dans les périodes subséquentes. Par conséquent, les stratégies de gestion de titres préconisant des positions longues sur les valeurs avec des rendements élevés au cours des trois à douze derniers mois et des positions courtes avec de faibles rendements au cours des mêmes périodes réalisent des profits significativement importants. Le dernier ensemble de tests associe des rendements anormaux observés sur les actions à des caractéristiques de l'entreprise telles que sa taille, le rapport entre la valeur comptable et la valeur de marché de ses capitaux propres, le rapport bénéfice-prix, les émissions d'actions et les ajustements comptables (communément appelés « *accruals* »). Par exemple, Banz (1981) découvre que les entreprises à faible capitalisation boursière ont des rendements moyens anormalement élevés. Sloan (1996) constate que les entreprises avec une hausse des ajustements comptables ont de faibles rendements boursiers l'année suivante. Ces relations entre les rendements boursiers et les caractéristiques des entreprises ne semblent pas pouvoir être

expliquées par les modèles d'évaluation des actifs existants, et sont donc en conséquence traditionnellement appelées des anomalies de marché (Fama and French, 2008).

Parmi ces anomalies de marché, l'effet *momentum* et l'anomalie *accruals*, nous utiliserons ces termes par la suite de ce document, ont été largement débattus dans la littérature. Un grand nombre d'études a cherché à documenter la présence de ces anomalies sur les marchés, dans le temps et dans l'espace. Fama and French (2008) reportent que la profitabilité *momentum* et l'anomalie *accruals* sont omniprésentes. Ils montrent que les rendements anormaux associés aux *accruals* et au *momentum* sont économiquement et statistiquement importants et robustes selon les groupes de tailles avec la méthode de régressions transversales et selon la base de la méthode de regroupement en portefeuille. Rouwenhorst (1998), Chui et al. (2000), Griffin, Ji et Martin (2003) trouvent que l'ampleur de l'effet *momentum* est forte sur les marchés américains et européens, mais plutôt faible sur les marchés asiatiques. Pincus et al. (2007) constatent que l'anomalie se produit dans le monde entier en échantillon groupé, mais qu'elle est concentrée dans quatre pays : l'Australie, le Canada, le Royaume-Uni et les États-Unis. L'anomalie *accruals* est susceptible de se produire dans les pays de *common law*, dans les pays où la comptabilité donne une plus large place aux *accruals* dans les choix de communication financière, ainsi que dans les pays à faible protection des actionnaires ou encore à plus faible concentration des détenteurs de titre.

Cette thèse se compose de trois essais portant sur ces deux anomalies bien documentées au travers de la littérature. Le premier essai se propose de revisiter l'anomalie *accruals* sur la base d'une mise en perspective de la qualité de l'information comptable (en particulier la persistance temporelle des résultats) et de la santé financière des entreprises. Cette analyse prend pour terrain d'analyse le marché nord-américain. Les second et troisième essais documentent l'anomalie

accruals et l'effet *momentum* dans le cadre d'un marché boursier émergent d'une économie en développement, le marché boursier vietnamien.

Le premier essai se concentre sur la question de savoir si l'ampleur de l'anomalie *accruals* est entraînée par la probabilité de détresse financière. La question est importante car la réponse induira un facteur explicatif additionnel au phénomène.

Sloan (1996) montre que le facteur clé sous-jacent aux différences de propriétés entre les ajustements comptables composant le bénéfice, les *accruals*, et les flux de liquidité consiste en ce que les *accruals* font plus facilement l'objet de distorsions. Ces ajustements comptables reflètent des estimations de flux de liquidité futurs, les reports de flux de liquidité passés (pensons sur ces deux aspects aux créances clients, aux dettes fournisseurs, aux dettes fiscales et sociales,…), des éléments de répartition inter-temporelle des charges et des produits (les charges à répartir, les provisions d'investissement, les subventions d'investissement, les dotations aux amortissements,…) et des choix de valorisation (les provisions pour risques et charges, les variations de stocks), éléments qui font tous l'objet d'un degré de subjectivité plus élevé que la constatation des encaissements et décaissements. Par conséquent, une entreprise avec des ajustements comptables inhabituellement élevés ou faibles pourrait connaître une moindre persistance de ses bénéfices futurs. Sloan (1996) suggère que les investisseurs ne comprennent pas, ou en tous cas ne tiennent pas compte de cette différence, et ainsi surévaluent les actions avec de hauts ajustements comptables (*accruals* élevés) et sous-estiment les actions à faibles ajustements comptables (*accruals* faibles). Cette hypothèse est nommée par Sloan (1996) l'hypothèse de fixation (sur le résultat net, indépendamment de sa répartition entre éléments du flux de liquidité et éléments constitutifs des *accruals*).

Les recherches postérieures fournissent des explications plus précises sur la persistance différentielle des ajustements comptables et des cash-flows pour prédire les résultats futurs. La persistance différentielle provient des erreurs de mesure dans l'estimation des ajustements comptables (Dechov & Dichev, 2002) et des ajustements extrêmes (Allen et al., 2013). Les erreurs apparaissent liées à la nature des activités de l'entreprise (Hribar, 2002) et aux opportunités de gestion des résultats permises par les principes comptables admis pour une entreprise et/ou un pays donné (Schipper et Vincent, 2003). En d'autres termes, les erreurs proviennent à la fois de manipulations managériales intentionnelles et d'erreurs involontaires dans l'estimation des bénéfices et obligations futurs (Dechow et Dichev, 2002; Richardson et al., 2005, 2006).

Par conséquent, les relations entre les phénomènes économiques à l'origine de ces sources d'erreurs de mesure des ajustements comptables et la persistance différentielle du bénéfice et des *accruals* a reçu beaucoup d'attention dans la littérature. Pincus et al. (2007) examinent l'effet des structures institutionnelles et comptables sur l'apparition d'anomalie d'ajustements comptables. Ils trouvent que le système juridique, l'ampleur de l'utilisation autorisée des ajustements comptables, la protection des actionnaires et la concentration de l'actionnariat influencent l'existence d'une des anomalies d'ajustements comptables.

Le présent essai approche cette question sur la base de la question du rôle de contrôle des créanciers sur le comportement managérial des entreprises emprunteuses vis-à-vis des ajustements comptables. La relation entre une entreprise et ses créanciers est illustrée par la probabilité de détresse financière de l'entreprise. Nous soutenons que la surveillance et le monitoring des entreprises en difficulté financière par leurs créanciers rend peu susceptibles ces entreprises de manipuler leurs résultats (à la hausse). En d'autres termes, il est moins probable

que la gestion des résultats - une source essentielle de la persistance différentielle et de l'anomalie *accruals* - apparaisse dans les entreprises en difficulté financière que dans les entreprises en bonne santé financière.

Ainsi, dans ce premier essai, nous essayons de répondre à trois questions : Les entreprises avec un faible niveau de détresse financière manifestent-elles d'une plus grande différence entre la persistance des *accruals* et la persistance des cash-flows que les entreprises à fort niveau de détresse financière? Les entreprises avec un faible niveau de détresse financière sont-elles caractérisées par un niveau d'anomalies *accruals* plus élevées que les entreprises à fort niveau de détresse financière? Les entreprises ayant un faible niveau de détresse financière ont-elles des *accruals* de moindre qualité que les entreprises à fort niveau de détresse financière? Les réponses contribueront à démêler la question embarrassante de savoir pourquoi l'anomalie d'ajustements comptables se pose (Jiang, 2007). L'anomalie *accruals* provient à la fois de la manipulation intentionnelle managériale et des erreurs involontaires dans l'estimation de bénéfices et d'obligations futurs. Si les entreprises de plus haut niveau de probabilité de détresse financière ont une persistance différentielle plus faible, nous pouvons alors imaginer que le degré d'implication des créanciers exerce une influence sur le niveau de la persistance différentielle. En d'autres termes, les réponses mettent l'accent sur la responsabilité de la manipulation intentionnelle de la persistance différentielle sur l'anomalie *accruals* et renforcent le rôle de surveillance des créanciers sur un tel comportement.

Ayant étudié un échantillon de 25 071 observations d'entreprises cotées sur l'AMEX et le NYSE, le premier essai présente les quelques conclusions principales suivantes.

Premièrement, la persistance différentielle des *accruals* et des cash-flows est beaucoup plus importante pour les entreprises de plus faible probabilité de détresse financière. Ce résultat est robuste après le contrôle de la volatilité des bénéfices, des ajustements absolus, de la croissance des bénéfices, de la taille des entreprises et des entreprises en perte. Cela implique que l'effet de la détresse financière sur la persistance différentielle est dû aux problèmes comptables - normes comptables et/ou gestion des résultats.

Deuxièmement, l'anomalie *accruals* se produit dans le groupe des entreprises avec une faible probabilité de détresse financière, mais ne se produit pas dans le sous-échantillon d'entreprises avec une forte probabilité de détresse financière. En d'autres termes, l'anomalie *accruals* n'est pas omniprésente mais limitée aux actions de sociétés avec une faible probabilité de détresse financière. Ces résultats sont confirmés lors de l'examen de la rentabilité des portefeuilles de couvertures (hedge portfolio) basés sur les ajustements comptables.

Troisièmement, les résultats sont en accord avec l'hypothèse d'agence de Kothari et al. (2006), qui fournit une explication de l'anomalie *accruals* alternative à l'hypothèse de fixation. La rentabilité des portefeuilles de couverture basés sur les ajustements comptables est principalement tirée par la rentabilité des portefeuilles constitués des entreprises caractérisées par les niveaux d'*accruals* les plus élevés. Le rendement ajusté par la taille sur le quintile caractérisé par les *accruals* les plus élevés est significativement négatif tandis que celui du quintile caractérisé par les *accruals* les plus faibles est non significatif. Pour chaque proxy de détresse financière, les rendements ajustés-par-la-taille des portefeuilles de couverture construits à partir du portefeuille de plus faible détresse financière sont significativement positifs et principalement influencés par les rendements ajustés négatifs sur les portefeuille constitués des entreprises manifestant les ajustements comptables les plus élevés. Cependant, les rendements des

portefeuilles de couverture construits à partir des actions des entreprises caractérisés par une forte détresse financière sont non significatifs, même si les rendements ajustés par la taille sur les quintiles des ajustements comptables les plus élevés sont significativement négatifs. Les rendements négatifs ajustés par la taille sur les quintiles des ajustements comptables les plus élevés avec un risque élevé de détresse financière pourraient refléter l'anomalie du risque de faillite dans Dichev (1998). Autrement dit, les résultats indiquent que l'anomalie des ajustements comptables est cohérente avec l'hypothèse d'agence selon laquelle les entreprises potentiellement surévaluées, qui sont sur-représentées dans le quintile le plus élevé de la comptabilité des ajustements comptables, manipulent le bénéfice vers le haut pour répondre aux attentes du marché. La surveillance par les créanciers de ces entreprises avec une forte probabilité de détresse financière empêche toutefois de tels comportements.

Quatrièmement, la croissance des chiffres d'affaires a un effet sur la mesure de l'anomalie, mais n'est pas le facteur unique qui conduit à cette anomalie. Les statistiques descriptives montrent que les entreprises du premier quintile des ajustements comptables ont une croissance des chiffres d'affaires plus élevées que celle du dernier quintile pour les ajustements comptables. Cela pose donc la question de savoir si le rendement des portefeuilles de couverture d'ajustements comptables (*accruals hedge portfolios*) est entraîné par la différence des rentabilités des entreprises à faible et à forte croissance. Nous avons suivi Chan et Chen (1991) et Khan (2005) dans la construction d'un indice de rendement, à savoir l'indice *GrowthDif* qui duplique les comportements des entreprises à forte croissance des ventes. Nous testons les corrélations entre cet indice et les rendements des portefeuilles de couverture à base d'ajustements comptables construits à partir de l'ensemble de l'échantillon et des sous-échantillons de firmes avec les trois niveaux de probabilité de détresse financière. Les résultats

montrent que l'effet de la croissance des ventes sur la rentabilité des portefeuilles de portefeuilles de couverture est moindre pour les sous-échantillons d'entreprises présentant un risque de détresse financière élevée et plus forte pour les sous-échantillons d'entreprises de faible risque de détresse financière et d'entreprises de risque neutre de détresse financière. En d'autres termes, la croissance n'est pas le seul facteur déterminant l'anomalie d'exercice.

Enfin, la qualité des *accruals* est la plus importante pour les entreprises caractérisées par la probabilité de détresse financière la plus forte. La qualité des ajustements comptables est mesurée sur la base de la méthode empirique proposée par Dechow et Dichev (2002), puis augmentée par Francis et al. (2005). Les résultats indiquent que, sauf pour les entreprises de catégorie spéculative, les entreprises ayant une forte probabilité de détresse financière ont une meilleure qualité d'ajustement comptable que celles ayant une faible probabilité de détresse financière. Ce résultat est cohérent avec le rôle de contrôle des créanciers sur le comportement discrétionnaire de managérial des entreprises emprunteuses vis à vis des ajustements comptables.

En somme, ce premier essai contribue à la littérature en montrant que l'anomalie *accruals* n'est pas omniprésente mais limitée aux actions de sociétés ayant une faible probabilité de détresse financière. Tous les résultats sont en ligne avec le résultat que nous revendiquons quant au rôle de surveillance des créanciers sur les comportements d'ajustements comptables dans les entreprises emprunteuses, et suggèrent donc que la détresse financière devrait être incorporée dans les modèles d'estimation des ajustements discrétionnaires.

Dans le deuxième essai, nous étendons les questions de recherche abordées dans le premier essai au marché boursier vietnamien. La preuve supplémentaire d'un marché émergent renforce

la conclusion sur le rôle de surveillance des créanciers. Dans cet essai, nous discutons la différence entre les politiques comptables adoptées par les entreprises présentant un risque faible de détresse financière et celles adoptées par les entreprises présentant un risque élevé de détresse financière. Les politiques comptables agressives et les politiques comptables prudentes (ou « conservatrices ») sont deux types différents de choix de gestion de l'information comptable compatibles avec les normes comptables. Ces politiques comptables jouent en particulier sur les ajustements comptables et les bénéfices dans deux directions opposées. Alors que les premières surestiment les ajustements, conduisant à des retournements de gains futurs et provoquant une persistance inférieure des *accruals* (voir Sloan, 1996; Richardson et al., 2006;. Allen et al., 2013), les secondes minimisent les ajustements (Watts, 2003a, b) et ne vont conduire à une persistance inférieure des *accruals* que de façon limitée. En outre, en raison de la surveillance par les créanciers, une entreprise caractérisée par une forte probabilité de détresse financière a une probabilité significative de mettre en œuvre un reporting comptable et une communication financière prudentes (DeAngelo et al., 1994 ; Pae, 2007 ; Zhang, 2008 ; Wen-Hsin Hsu et al., 2011). Par conséquent, nous posons qu'il devrait y avoir des différences en terme d'étendue de la persistance différentielle et de l'anomalie *accruals* entre les entreprises présentant un risque de difficulté financière élevé et celles caractérisées par un risque plus faible.

Le Vietnam a un contexte idéal pour l'étude parce que son système de comptabilité et ses caractéristiques de gouvernance d'entreprise sont de nature à contribuer à un haut niveau de comptabilité agressive. Le système de comptabilité se compose de trois cadres juridiques: la loi sur la comptabilité, les normes comptables vietnamiennes (VAS), et les circulaires d'orientation connexes. Alors que la loi sur la comptabilité prescrit les principes généraux, la structure

organisationnelle et la profession comptable, les VAS et les circulaires d'orientation fournissent des orientations détaillées des pratiques comptables.

La principale lacune des VAS et des circulaires d'orientation par rapport aux normes internationales telles que l'IAS est l'absence de traitement pour la perte de valeur. L'IAS exige que les actifs fixes soient réévalués à la fin de l'année financière afin d'assurer que ces actifs ne sont pas reportés à une valeur supérieure à leur valeur recouvrable. Cependant, il n'y a aucune norme équivalente au sein des VAS. L'absence de cette norme conduit à la distorsion agressive dans les valeurs comptables des actifs tels que les biens, installations et équipements. En particulier, le Vietnam a connu une bulle immobilière. Une propriété achetée et enregistrée à un prix élevé dans la bulle sera reportée à une valeur excessivement élevée par la suite. En parallèle avec l'écart mentionné ci-dessus, le respect insuffisant des normes exigeant l'enregistrement des dépréciations des stocks, des créances douteuses et des pertes sur investissements financiers pourrait entraîner des distorsions agressives dans les valeurs comptables de ces actifs. Une série de circulaires a toutefois été promulgué pour faire respecter l'enregistrement des provisions pour la dépréciation de ces actifs. Malheureusement, peu d'entreprises ont mis en œuvre le principe de provisionnement des pertes sur d'actifs dans la pratique. Plusieurs cas graves de non enregistrement de provisions ont été détectés par des auditeurs. La plupart des entreprises cotées n'enregistrent pas de provisions pour dépréciation des stocks et des créances douteuses. Les raisons de ce phénomène pourraient être la faible protection des investisseurs et la pauvreté des informations divulguées par les sociétés cotées. Un rapport sur la gouvernance d'entreprise du pays par la Banque mondiale révèle que l'indice de protection des investisseurs au Vietnam est

assez faible par rapport à la moyenne de la région Pacifique et Asie de l'Est[1]. La divulgation de l'information est liée de manière primaire au cadre de gouvernance de l'entreprise.

Au Vietnam, le marché obligataire est immature, les prêts bancaires constituent la principale source de financement par dette de la plupart des entreprises du pays. Pour contrôler le risque de crédit, de nombreuses banques ont développé leur propre système interne de notation des entreprises, qui utilise les états financiers comme source importante d'informations. Le développement des affaires, la croissance des défaillances, la montée en compétence des équipes pourraient conduire les banques locales à accorder une importance plus grande à la qualité de l'information comptable des emprunteurs, en particulier vérifier si les politiques comptables suivies par ces entreprises sont en conformité avec les principes comptables admis. Par conséquent, on pourrait espérer que le rôle de surveillance des banques soit effectif et réduise les possibilités d'entreprises ayant une comptabilité agressive de recourir excessivement à l'emprunt. En un mot, le Vietnam offre des conditions idéales pour tester la relation entre la détresse financière et l'anomalie accruals, et en particulier examiner l'influence des banques sur les politiques comptables des entreprises.

Dans ce deuxième essai, nous observons dans un premier temps que l'anomalie *accruals* est présente sur le marché boursier vietnamien. En outre, les entreprises avec un faible risque de détresse financière sont caractérisées par une plus grande persistance différentielle des *accruals* vis-à-vis des cash-flows que les entreprises présentant un risque élevé de détresse financière. En

[1] La Force de l'indice de protection des investisseurs du Vietnam est de 3 alors que la moyenne de la région Asie de l'Est et du Pacifique est de 5,4. Voir Vietnam - Rapport sur l'observation des normes et codes (ROSC): évaluation des pays de la gouvernance d'entreprise, 2013, extrait de http://documents.worldbank.org/curated/en/2013/08/19692713/vietnam-report-observance-standards-codes-rosc-corporate-governance-country-assessment

conséquence, l'anomalie *accruals* apparaît concentrée dans les entreprises à faible risque de détresse financière, et ne semble en particulier pas apparaître dans les entreprises avec un risque élevé de détresse financière. Cette constatation conforte l'intuition développée au sein du premier essai, l'anomalie *accruals* n'est pas omniprésente mais limitée au sous-échantillon d'entreprises ayant un faible risque de détresse financière. L'analyse empirique indique également que les entreprises présentant un risque élevé de détresse financière ont tendance à exercer une pratique comptable plus conservatrice que celles ayant un faible risque de détresse financière. Tous ces résultats sur un marché émergent renforcent la conclusion précédente quant au rôle de surveillance des créanciers. Les entreprises ayant une forte probabilité de détresse financière sont davantage scrutées par leurs créanciers et donc davantage susceptibles de pratiquer des politiques comptables prudentes.

Dans le troisième essai, nous examinons l'effet *momentum* et testons sa présence sur le marché boursier vietnamien. Cette question est essentielle à la fois au regard de la littérature et également quant au développement du marché. L'effet *momentum* a été étudié sur base internationale, des pays développés aux marchés émergents, y compris les pays d'Asie, à l'exception du Vietnam. Par conséquent, cet essai vient compléter les résultats existant sur l'effet *momentum* concernant en particulier un marché nouvellement créé et en forte croissance. D'un point de vue appliqué, on peut raisonnablement poser que le développement d'un marché remplira son rôle de soutien et d'accompagnement au développement économique que si ce marché fonctionne avec un minimum d'efficacité, en particulier que si les prix donnent de bons indicateurs de la valeur des entreprises cotées. De façon plus générale, l'efficience informationnelle du marché financier nous apparaît être un déterminant essentiel de son efficacité économique en terme d'allocation des ressources.

Le marché boursier vietnamien a émergé comme l'une des destinations d'investissement les plus attrayantes de la région asiatique. Il a montré une croissance spectaculaire tant en nombre d'actions cotées et de capitalisation boursière totale. Le nombre d'entreprises cotées est passé de deux en 2000 à sept cents en 2012, tandis que la capitalisation boursière totale est passé de 444 000 000 000 VND (28 millions USD) en 2000 à VND 76 000 000 000 000 (37 milliards USD) en 2012. Bien que l'expansion soit rapide, le marché est fortement impacté par la technique des investisseurs individuels domestiques, qui se vantent souvent de leur «jeu boursier» . Beaucoup de ces investisseurs ont des connaissances et des expériences limitées dans les placements en actions et prennent leurs décisions d'achat ou de vente en fonction des rendements passés et de rumeurs actuelles. Les opérations à court terme comme le « surf trading » sont populaires parmi eux, surtout pendant les périodes d'expansion. Le comportement grégaire semble également répandu sur ce marché. Ces activités des investisseurs individuels pourraient causer des biais comportementaux, qui sont considérés comme la source de la rentabilité de *momentum*. Hong & Stein (1999) divisent les agents du marché en deux types: investisseurs informés et investisseurs *momentum*. Les investisseurs informés prédisent les rendements futurs sur la base de leurs informations fondamentales privées et ne font pas attention aux prix actuels ou passés, tandis que les investisseurs *momentum* gèrent leurs positions sur la seule base des variations de prix passés. Lorsque de nouvelles informations se répandent progressivement parmi les investisseurs informés, des réactions de court terme se produisent sur les valeurs concernées. Plus tard, après les investisseurs informés, les investisseurs *momentum* se positionnent par rapport à la tendance et dégagent des profits. Leurs transactions sur le marché sont susceptibles de devenir excessives et pousser les prix au-delà des valeurs fondamentales. Dans ce cas, lorsqu'une consolidation des excès se produit elle conduit à l'inversion des fondamentaux sur le long terme.

Comme on peut l'observer en pratique, de nombreux investisseurs individuels au Vietnam ressemblent aux investisseurs *momentum* de Hong & Stein (1999), et de ce fait les fluctuations du prix des actions sur le marché vietnamien pourraient bien refléter l'effet *momentum*. Par conséquent, en examinant l'effet *momentum* et en approfondissant le raisonnement, le troisième essai fournit quelques indications sur le comportement des investisseurs et sur les fluctuations du cours des actions sur le marché.

Dans ce dernier essai, nous observons l'apparition d'un effet *momentum* à court terme sur le marché vietnamien. Le portefeuille gagnant-moins-perdant, qui sélectionne les titres en fonction de leurs rendements moyens passé sur une semaine et rendement tenu pendant une semaine, dégage le profit hebdomadaire le plus élevé de 0,83%. L'analyse empirique indique également que les rendements des gagnants et des perdants sont moins persistants et très volatile, mais la forte corrélation entre les rendements gagnants et perdants fait apparaître des résultats significatifs pour les stratégies de placement *momentum*. En outre, la rentabilité des stratégies *momentum* n'est pas omniprésente mais limitée aux sous-échantillons de petite et de grande taille dans la période précédant le choc de Lehmann. Surtout, elle résulte des gains de marché à court terme et est compatible avec l'hypothèse de sur-réaction. Cela implique que les investisseurs *momentum* au Vietnam sont moins averses au risque et leurs sur-réactions plus fortes dans les périodes consécutives aux gains du marché. Cependant, l'ampleur des inversions est très faible, ce qui peut être expliqué par l'argument de Chui, Titman, et Wei (2010) sur l'individualisme. Des investisseurs moins individualistes, moins sujets à des biais d'excès de confiance, sont moins susceptibles de prendre des décisions d'investissement qui produisent des bénéfices de *momentum* et d'inversion sur les horizons à long terme. Après une baisse des marchés à court terme ou encore le choc de Lehmann, l'effet *momentum* disparait.

CHAPTER 1: GENERAL INTRODUCTION

Efficiency of resource allocation in capital markets is determined by accuracy of information reflected in prices. Based on the type of information incorporated in prices, Fama (1970) provides a description of market efficiency in three categories: form, semi-strong form and strong form. Weak-form tests are tests of whether the current prices fully reflect all information involved in historical prices. Semi-strong form tests are those of whether the current prices fully reflect all publicly available information. Strong form tests are tests of whether any investors or groups can gain an excess profit by utilizing private information. Furthermore, Fama (1991) also extends these categories to more general ones: tests of return predictability; event studies and tests of private information. Among those, the tests of return predictability have shown considerable evidence against market efficiency. These tests can be divided into three strands. *The first strand* reports evidence on the lower or higher returns depending the time of the day, the day of the week and the month of the year. The *second strand* shows evidence on the profitability of trading strategies based on past returns. Accordingly, reversals and momentum are two diametrically opposed anomalies that are often found for different investment horizons in the literature of this strand. In detail, Bondt and Thaler (1985) find the reversal phenomenon in stock returns for long term period of one to five years. They show that stocks which have outperformed (or underperformed) the market over a period of time are proved to underperform (or outperform) the market over the subsequent and similar period. Conversely, Jegadeesh and Titman (1993) discover the so-called momentum phenomenon or continuation phenomenon in short term: stocks that have yielded high (low) returns continue to have high (low) returns in the subsequent period. Consequently, the trading strategies that long stocks with high returns over

the past three to 12 months and short stocks with low returns over the same periods earn significant large profits. The *last strand* documents the anomalous returns associated with firm characteristics such as firm size, book-to-market ratio, earnings-to-price ratio, stock issues and accruals. For instance, Banz (1981) uncovers that firms with lower market capitalization have abnormally higher average returns. Sloan (1996) finds that firms with higher accruals have lower stock returns in the following year. These relations between stock returns and firm characteristics cannot be explained by existing asset pricing models, and thus are called as market anomalies (Fama & French, 2008).

Among these market anomalies, momentum effect and accrual anomaly have been widely debated in literature. The vast majority of studies have been devoted to examining whether these anomalies are pervasive across markets. Fama and French (2008) find that the momentum profitability and accrual anomaly are pervasive. Accordingly, both cross-sectional regressions and the sorting method show strong and robust evidence of anomalous returns associated with accruals and momentum in all size-groups. Besides, Rouwenhorst (1998); Chui, Wei, and Titman (2000); Griffin, Ji, and Martin (2003) prove that the magnitude of momentum effect is strong in the US and European markets but weaker in Asian markets. In addition, Pincus, Rajgopal, and Venkatachalam (2007) show that the anomaly occurs world-wide in a pooled sample, but is concentrated in four countries, Australia, Canada, the United Kingdom and the U.S. Lastly, the accrual anomaly is likely to occur in common law countries, as well as in territories which allow extensive use of accruals accounting or have weak shareholder protection or lower the concentration of share ownership.

This dissertation consists of three self-contained essays that address the two-well documented anomalies. While the first essay provides insight into the accrual anomaly, the

others offer additional evidence on the momentum effect and accrual anomaly in the Vietnamese stock market.

The first essay investigates whether the magnitude of accrual anomaly is driven by the financial distress probability. This topic is inspired by explanations for the accrual anomaly in the prior literature, which can be divided into two main streams. The first main one is motivated by Sloan (1996), who argues that the key factor underlying the different properties of the accrual and cash flow components of earnings is high subjectivity and accounting distortions in accrual components. In detail, these accruals reflect estimates of future cash flows, deferrals of past cash flows, allocation and valuations, all of which involve in greater degrees of subjectivity than the components of cash flows. Hence, an unusually high or low accrual component might lead to the less persistence of earnings. Normally, investors do not understand this difference, and thereby overvalue stocks with high accruals and undervalue those with low accruals. The second main stream provides clearer explanations for the differential persistence of accruals and cash flows in predicting future earnings. The differential persistence derives from measurement errors in estimating accruals (Richardson, Sloan, Soliman, & Tuna, 2005, 2006), following large accruals (Dechow & Dichev, 2002), or extreme accruals (Allen, Larson, & Sloan, 2013). The errors might be contributed by the business nature of a firm (Hribar, 2002) or the accounting problems regarding accounting standard or earnings management (Schipper & Vincent, 2003). In other words, the errors arise from both intentional managerial manipulation and unintentional errors in estimating future benefits and obligations (Dechow & Dichev, 2002; Richardson et al., 2005; 2006). Hence, relations between the economic phenomena behind these sources of accrual measurement errors and earnings persistence/differential persistence/accrual anomaly have attracted close attention in literature. Pincus et al. (2007) examine the effect of institutional and

accounting structures on the occurrence of accrual anomaly. They find that legal system, the extent of accrual usage permitted, shareholder protection and concentration of share ownership influence the existence of accrual anomaly.

As an extension of the second main stream, the first essay herein approaches the monitoring role of creditors over the accrual management behavior in borrowing firms. The relation between a firm and its creditors is illustrated by the firm's financial distress probability. It is argued that financially distressed firms are closely scrutinized by their creditors and thus are unable to manage earnings upwards. In other words, earnings management – a critical source of the differential persistence and accrual anomaly – is unlikely to appear in financially distressed firms. Hence, the essay raises three questions: (1) Do firms with low financial distress have a larger difference in persistence between accruals and cash flows than firms with high financial distress? (2) Do firms with low financial distress present higher accrual anomaly occurring than firms with high financial distress? Do firms with low financial distress exhibit lower accruals quality than firms with high financial distress? The accrual anomaly arises from both intentional managerial manipulation and unintentional errors in estimating future benefits and obligations. If we find that firms with low financial distress have a larger difference in persistence between accruals and cash flows than firms with high financial distress, it is clear that the level of differential persistence of firms is influenced by the extent to which their creditors are involved. In other words, the outcomes not only emphasize the responsibility of intentional managerial manipulation in differential persistence and accrual anomaly, but also highlight the monitoring role of creditors. These unravel the perplexing question of why accrual anomaly arises (Jiang, 2007).

The second essay extends the research questions addressed in the first essay into the Vietnamese stock market. As the result, the additional evidence from an emerging market strengthens the previous claim on the monitoring role of creditors. The essay approaches the difference in accounting choices employed by firms with low and high financial distress risk. Within the generally acceptable accounting practices, aggressive and conservative accounting policies are two different types of managerial choices that influence accruals and earnings in opposite directions. While the former overstates accruals, causing the lower persistence of accruals and leading to reversals in future earnings (see Sloan, 1996; Richardson et al., 2006; Allen et al., 2013) , the latter understates accruals (Watts, 2003a, 2003b) and thus do not lead to the lower persistence of accruals. Moreover, due to the monitoring imposed by the creditors, a firm with high financial distress risk is likely to practice conservative accounting, especially when the firm relies on bank loans and wants to borrow repeatedly (DeAngelo, DeAngelo, & Skinner, 1994; Pae, 2007; Wen-Hsin Hsu, O'hanlon, & Peasnell, 2011; Zhang, 2008). Hence, the magnitude of differential persistence and accrual anomaly is expected to be different between firms having low and high financial distress risk.

Vietnam is identified as an ideal context for the study of aggressive accounting because of its incomplete accounting system and unique features of corporate governance. Indeed, the accounting system consists of three legal frameworks: the Accounting Law, Vietnamese Accounting Standards (VAS), and the associated guidance circulars. While the Accounting Law prescribes general principles, organizational structure and profession of accounting, VAS and the guidance circulars provide detailed guidance of accounting practices. Although the two latter sources of accounting regulations are generally based on such international standards as IAS with some modifications to reflect the local accounting environment, they have a fatal flaw,

which is the absence of treatment for impairment loss. Indeed, IAS requires fixed assets to be revalued at the financial year-end to ensure that these assets are not carried at more than their recoverable amount. However, there is no equivalent requirement in VAS. This absence can facilitate managers' aggressive choices; thus, distort book values of such long-term assets as property, plant and equipment. Specially, property values in Vietnam could have been boosted by the recent real estate bubble, and then reported at high purchase prices afterwards.

Along with the above fatal flaw, the weak enforcement of standards requiring the record of devaluation of inventories, bad receivables and loss of financial investments could result in aggressive distortions in the book values of these assets. In Vietnam, a series of circulars were promulgated to enforce recording the devaluation of these assets. Unfortunately, few firms implemented the principle of recording provisions in practice. In fact, several serious cases of not recording the provisions were detected by auditors.

Rationales behind the above phenomenon could be the weak investor protection and the poor information disclosure of listed firms. Hung (2000) documents that stronger outside shareholder rights and their more rigorous enforcement could eliminate the ability of managers to manipulate earnings. A report on the country's corporate governance by the World Bank states that the index of investor protection in Vietnam is rather low relative to the East Asia & Pacific region-average[2]. Disclosure is primary related to the framework of corporate governance. Vietnam has a code law legal system but its governance structure is a hybrid between the one-tier board model in the common law countries and the two-tier board model in the code law countries (Hai & Nunoi, 2008). It consists of shareholders' meeting, board of management (BOM), CEO and

[2]The Strength of investor protection index of Vietnam is 3 whereas the average of the East Asia & Pacific region is 5.4. See Vietnam - Report on the Observance of Standards and Codes (ROSC): corporate governance country assessment, 2013, retrieved from http://documents.worldbank.org/curated/en/2013/08/19692713/vietnam-report-observance-standards-codes-rosc-corporate-governance-country-assessment

supervisory board. Like the board of directors in common law countries, the board of management (BOM) elected from the shareholders' meeting plays an important role in the corporate governance of the shareholding companies. The supervisory board is selected by the shareholders' meeting and distinct from board of management. Its duties are to oversee the financial condition of companies and to monitor company compliance with rules and regulations. However, in practice it normally consists of shareholders, who are also employees. The dependence of supervisory members on the firm raises a concern over the quality of disclosed information (Hai & Nunoi, 2008).

Furthermore, Vietnam has an immature bond market, and thus bank loans are the main source for debt financing of most local firms. Banks have developed their own internal corporate credit rating system, which uses financial statements as an important source of input information. They monitor the borrowers' compliance with accounting standards. Accordingly, the monitoring role of banks are expected to prevent borrowing firms from exploiting aggressive accounting. In short, Vietnam offers ideal conditions for testing the relationship between financial distress and accrual anomaly, and examining the influence of banks on the borrowing firms' accounting policies.

The last essay herein examines whether the momentum effect occurs in the Vietnamese stock market. The answer to this question is essential in both theory and practice. The essay is expected to fulfill the "geographical" gap of the current literature, which has never investigated the case of Vietnam as a newly established but fast growing market.

The Vietnamese stock market has emerged as one of the most attractive investment destinations in Asia. It has shown a dramatic growth in both number of listed stocks and total

market capitalization. The number of listed stocks rose from two in 2000 to 700 in 2012, while the total market capitalization jumped from VND 444 billion (USD 28 million) in 2000 to VND 76 trillion (USD 37 billion) in 2012. Despite rapid expansion, the market is strongly impacted by the trading of domestic individual investors, who often boast about their "stock playing" (i.e. stock investing). Many of these investors have limited knowledge and experiences in stock investments and make their buying or selling decisions based on past returns and current rumors. Short-term trading like surfing is popular among them, especially during expansion periods. Herding behavior is prevalent in the market. These activities of individual investors might cause behavioral biases, which are considered as the source for momentum profitability.

Hong and Stein (1999) divide the market agents into two types: news watchers and momentum traders. The news watchers predict future returns based on their private fundamental information and do not pay attention to current or past prices, whereas the momentum traders trace profits based only on past price changes. When new information spreads gradually across news watchers, price under-reaction occurs in the short-run. Later on, following the news watcher, momentum traders realize the trend and earn the profit. Their trading may eventually become excessive and push the prices to above fundamental values, in which case overreaction come about and lead to fundamental reversals in the long-run. As seen from practice, many individual investors in Vietnam resemble the momentum traders in Hong & Stein (1999), and Vietnamese stock price movements seemingly reflective of the momentum effect. Hence, the second essay's examination on the momentum effect and digging the reasoning is expected to shed light on investors' behavior and stock price movements of the market.

CHAPTER 2: FINANCIAL DISTRESS AND ACCRUAL ANOMALY *

* This chapter is a revised and expanded version of a paper entitled "Financial Distress and Accrual Anomaly" presented at the 5th Conference ATLAS AFMI, Hanoi, Vietnam in May 2015, at the 36th Conference of the Association Française de Comptabilité (AFC), Toulouse, in May 2015 and the 2nd Vietnam International Conference in Finance (VICIF), HCMC in June 2015

2.1. Introduction

The less persistence of accruals relative to cash flows in predicting future earnings and the accruals mispricing were found by Sloan (1996) and have been widely discussed in literature. Subsequent literature extended Sloan's (1996) work by providing clearer explanations for the differential persistence of accruals (Dechow & Dichev, 2002; Schipper & Vincent, 2003; Richardson et al., 2005). The differential persistence derives from measurement errors in estimating accruals (Richardson et al., 2005; 2006), following large accruals (Dechow & Dichev, 2002), or extreme accruals (Allen et al., 2013). The errors might be contributed by the business nature of a firm (Hribar, 2002) or the accounting problems regarding accounting standard or earnings management (Schipper & Vincent, 2003). In other words, the errors arise from both intentional managerial manipulation and unintentional errors in estimating future benefits and obligation (Dechow & Dichev, 2002; Richardson et al., 2005, 2006). Hence, the relations between the economic phenomena behind these sources of accrual measurement errors and earnings persistence/differential persistence/accrual anomaly have been receiving much attention in literature (see our literature review).

We examine the relationship between accrual anomaly and financial distress as measured by probability of bankruptcy. The relation is intuitive. Financially distressed firms are normally scrutinized by their creditors and thus are unlikely to manage earnings upwards. In other words, earnings management – a critical source of accruals' differential persistence and accrual anomaly – is unlikely to appear in financially distressed firms. Hence, we expect that the differential persistence of accruals and cash flows is larger for firms with lower financial distress probability.

As a result, this subsample of firms exhibits a greater magnitude of accrual anomaly. These hypotheses are in accordance with the arguments on the role of banks in monitoring borrowers' managerial behaviors (Chemmanur & Fulghieri, 1994; Diamond, 1984) and with the evidence on conservative accounting policies practiced by troubled or highly levered firms (DeAngelo et al., 1994; Jelinek, 2007).

Because the underlying foundation of our hypotheses is the monitoring role of the creditors, we use Zmijewski (1984) bankruptcy statistics (*hereafter*, ZM-score) which puts a high weight on total debts as a measure of financial distress risk. Additionally, we employ Altman (1968)'s Z-score and Standard & Poor's (S&P) Long-Term Domestic Issuer Credit Ratings for robustness checks. We find that the differential persistence of accruals and cash flows is significantly larger for firms with lower financial distress probability. Accordingly, accrual anomaly is economically and statistically positive for this subsample of firms, but insignificant for the one with high financial distress probability. Moreover, firms with high financial distress probability have higher accruals quality. These findings are consistent with our initial argument on the monitoring role of the creditors over their borrowing firms' earnings management behaviors.

In search of the explanations for the accrual anomaly in our sample between the two competing hypotheses- *fixation* and *agency*- in extant literature, we examine one-year-ahead size-adjusted returns to the accruals quintile portfolios. The results indicate that the return to the highest accrual quintile is economically and statistically negative while the return to the lowest accrual quintile is insignificantly positive. Furthermore, the highest quintile has higher sales growth than the rest. These findings support the agency hypothesis by Kothari, Loutskina, and Nikolaev (2006) that over-valued firms, which are over-represented in the highest accrual quintile manage earnings upwards to meet market expectations. We suggest that the monitoring

imposed by the creditors of those firms with high financial distress probability prevents such behaviors.

We contribute to literature by showing that accrual anomaly is not pervasive but limited to the stocks with low financial distress probability. Our findings are consistent with the monitoring role of creditors over borrowing firms' earnings managerial behaviors, and thus suggest that financial distress should be incorporated in models estimating discretionary accruals[3].

The structure of this paper is as follows: Section 2.2 gives a brief review about the prior studies on accrual anomaly and explains our research motivation; Section 2.3 introduces methodology and data; Section 2.4 provides empirical results; and the last section concludes our findings.

2.2. Literature review and research motivation

Sloan (1996) documents that the accrual component of earnings is more subject to distortion than its cash flow alternative. The accruals reflect estimates of future cash flows, deferrals of past cash flows, allocation and valuations, all of which involve greater degrees of subjectivity than the components of cash flows. Hence, an unusually high or low accrual component might lead to a lower persistence of earnings. Normally, investors do not understand this difference, and thereby overvalue stocks with high accruals and undervalue those with low accruals (regarded as the *fixation hypothesis in* Sloan, 1996). Subsequent literature provides clearer explanations for the lower persistence of accruals relative to that of cash flows. Dechow & Dichev (2002) argue that accruals incorporate estimates and must be corrected in future accruals and earnings if these estimates are inaccurate. These estimation errors and the subsequent

[3]Jelinek (2007) also suggests that researchers should control for the impact of financial distress when estimating abnormal accruals.

corrections are noises that reduce the quality of accruals. Put differently, the quality of accruals is negatively associated with the magnitude of accrual estimation errors. Their empirical analysis indicates that accruals quality is positively correlated with earnings persistence and negatively associated with the magnitude of accruals. This means that higher levels of accruals may involve a higher degree of estimation and, hence, estimation errors, which lower accruals quality and lessen earnings persistence. Richardson et al. (2005) introduce a model that links reliability and earnings persistence. They argue that less reliable accrual estimates produce measurement errors, resulting less persistence in the earnings. In a similar study, Richardson et al., (2006) provide evidence confirming the role of temporary accounting distortions -which arise from accrual estimation errors- in explaining the lower persistence of accruals. Lower persistence may also come from extreme accrual reversals following extreme working capital accruals as in Allen et al. (2013). The errors may come from different sources, the business nature of a firm (Hribar, 2002), the accounting problems regarding accounting standard or earnings management (Schipper and Vincent, 2003), or from both intentional managerial manipulation and unintentional errors in estimating future benefits and obligation (Dechow & Dichev, 2002; Richardson et al., 2005; 2006).

Hence, relations between the economic intuitions behind these sources of accrual measurement errors and earnings persistence/differential persistence/accrual anomaly have attracted close attention in literature. For instance, Dechow and Ge (2006) show that the low earnings persistence of firms with low accruals arrives from balance sheet adjustments relating to special items. Pincus et al. (2007) examine the effect of institutional and accounting structures on the occurrence of accrual anomaly. They find that legal system, the extent of accrual usage permitted, shareholder protection and concentration of share ownership influence the existence

of accrual anomaly. Dichev and Tang (2009) show that earnings persistence is mainly driven by earnings volatility which is, in turn, derived from two factors –external economic shocks and problems in the accounting determination of income. Frankel and Litov (2009) confirm Dichev and Tang (2009)'s findings after controlling for several economic factors. Jiang (2007) studies the relationship between stock performance and accrual persistence and its impact on accrual anomalies. As stock performance regarded as a proxy for bad/good news may influences accrual measurement through accounting conservative principles, the accrual component of firms with poor stock performance has less persistence in predicting future earnings than the accrual component of firms with good stock performance. Consequently, the accruals-based hedge portfolio yields greater abnormal returns following the year of bad stock performance. He argues that the conservative accounting in bad-news years is responsible for the less persistence of accruals. Khan (2008) provides a link between economic and financial distress and accrual anomaly because, in his sample, low accrual firms are likely to be distressed with negative earnings, high leverage, low-to-negative sales growth, and high bankruptcy risk. He finds that bankruptcy risk has a greater effect on returns of low accrual firms than the level of accruals.

Because a firm often increases its working capital to suffice sales growth, sales growth – a proxy for glamour stock – is likely to be positively correlated to accruals (Dechow, Kothari, & Watts, 1998). Hence, another set of papers link accruals and investment/growth. Fairfield, Whisenant, and Yohn (2003) relate accrual anomaly to growth by arguing that the lower earnings persistence of high-accrual firms reflect the effect of diminishing marginal returns on investments. Beaver (2002) and Desai, Rajgopal, and Venkatachalam (2004) suspect the accrual anomaly as a value-glamour anomaly in disguise. However, whether the two kinds of mispricing

are one or two distinct phenomena depends on the selection of value-glamour proxy (Desai et al., 2004).

While the above mentioned literature attributes accruals mispricing to accruals measurement errors and investor's misunderstanding (regarded as the *fixation hypothesis* in Sloan, 1996), Kothari et al. (2006) views managerial behaviors as an explanation for the mispricing. Under their hypothesis (known as the *agency hypothesis*), managers of over-valued firms which are over-represented in the highest accrual decile attempt to manage earnings upwards, resulting in high abnormal returns in the subsequent year.

The agency relationship may occur between creditors and borrowing firms. In this paper, we extend the agency hypothesis by looking at the monitoring role of creditors over the accrual management behavior in borrowing firms. Especially, we study the relationship between a firm and its creditors with reference to its financial distress probability. We argue that financially distressed firms are closely scrutinized by their creditors and thus are unlikely to manage earnings upwards. In other words, earnings management – a critical source of the differential persistence and accrual anomaly – is unlikely to appear in financially distressed firms. Hence, we expect that the differential persistence of accruals and cash flows is larger for firms with lower financial distress probability. As a result, this subsample of firms exhibits a greater magnitude of accrual anomaly.

We expect that firms with high financial distress probability are more subject to the monitoring activities imposed by their creditors, and thus have higher accruals quality than those with low financial distress probability. These hypotheses are consistent with the arguments on the role of banks in monitoring borrowers' managerial behaviors (Diamond, 1984; Chemmanur

and Fulghieri, 1994) and with the evidence on conservative accounting policies practiced by troubled or highly levered firms (DeAngelo et al.,1994; Jelinek, 2007). Diamond (1984) argues that having cost advantage in collecting information on borrowers, banks work as delegated monitors to check borrowers' managerial behaviors. In addition, banks have a desire to acquire reputation for making the right decision of whether to liquidate the borrower or to renegotiate its debt when the firm is in financial distress, and thus they have incentives to devote a larger amount of resources than bondholders toward the evaluations for such decision (Chemmanur & Fulghieri, 1994). Using a small sample of troubled firms, DeAngelo et al. (1994) find large negative accruals in the dividend reduction year and subsequent three years, suggesting that debt contracts provide distressed firms with incentives to practice conservative accounting. They explain that managers of troubled firms who lose credibility with private lenders have incentive to choose income-decreasing accounting practices to signal the lenders that they are willing to face up to the firm's problem. Jelinek (2007) shows that firms that increase leverage have lower accruals than those with consistently high leverage. Additionally, using Zmijewski bankruptcy statistics as a proxy for financial distress, she finds that severely financially distressed firms have large negative accruals. Ghosh and Moon (2010)'s study reveals that higher leverage increases earnings quality, suggesting that managers are likely to use discretionary accruals to signal the lenders about the firm's future prospects in order to lower financing costs. However, once debt is at a very high level, higher leverage, in contrast, reduces earnings quality, implying that managers are likely to avoid covenant violations.

Literature on accounting conservatism also provides supporting evidence for our argument. As bondholders require timely recognition of performance and net asset values (Watts, 2003), firms with high financial distress probability exercise more conservative accounting practices

than those with low financial distress risk (Pae, 2007; Zhang, 2008; Wen-HsinHsu et al., 2011). Pae (2007) documents that firms with high leverage exercise more conservative accounting than those with low leverage. Zhang (2008) find positive association between level of conservatism and debt covenant violations and negative association between level of conservatism and interest rate. He argues that conservatism benefits lenders through the timely signaling of default risk and benefits borrowers through lower interest rates. Wen-Hsin Hsu et al. (2011) find positive association between financial distress and the level of conditional accounting conservatism. However, higher leverage increases earnings quality only to the extent that financially distressed firms are still not close to bankruptcy. When they are violating covenants or filing bankruptcy, in the period prior to the violation or bankruptcy, managerial behavior may go in the opposite direction. Managers of those highly financially distressed firms may have incentives to employ income-increasing accounting choices (see (DeFond & Jiambalvo, 1994; Rosner, 2003; Sweeney, 1994) for example). As a result, we remove highly financially distressed firms from our sample to prevent noises.

We examine accrual anomaly in a similar context to that in Khan (2008) and Avramov, Chordia, Jostova, and Philipov (2013). Khan (2008) examines a whole sample including highly economically and financially distressed firms and finds that accrual anomaly seems to be driven by abnormal returns of these distressed firms. Avramov et al. (2013) investigate the influence of financial distress on the profitability of anomaly-based trading strategies and find that the accruals-based strategies have significant profits across all credit groups. Again, they include highly financially distressed firms and thus do not find the difference in profits across credit groups. The anomaly concentrated in highly financially distressed firms in these two papers may reflect distress risk. Thus, we exclude those firms from our sample and examine the difference in

earnings persistence, differential persistence and accrual anomaly between subsamples of firms with high and low level of financial distress.

We employ Zmijewski (1984) bankruptcy statistics (*hereafter*, ZM-score) as a measure of financial distress. As described below, this score has a high weight on total debt and thus could serve as a proxy for the relationship between a firm and its creditors. A firm with a higher ZM-score is regarded as higher level of financial distress and is subject to the stricter scrutiny of its creditors. We also use two alternative proxies- Altman (1968)'s Z-score and Standard & Poor's (S&P) Long-Term Domestic Issuer Credit Ratings to measure financial distress risk.

We hypothesize that:

H1: Firms with low financial distress have a larger difference between the persistence of accruals and cash flows than firms with high financial distress.

H2: Firms with low financial distress have higher accrual anomaly than firms with high financial distress.

H3: Firms with low financial distress have lower accruals quality than firms with high financial distress.

2.3. Methodology and data

2.3.1. Methodology

Measurement of accruals

To eliminate errors in measurement of accruals, we follow Hribar and Collins (2002) to define operating accruals based on cash flows statements as below:

$$OACC_t = ROA_t - CFO_t \quad (2.1)$$

Where $OACC_t$ is operating accruals in year *t*; ROA_t is earnings in year *t*, measured as income before extraordinary items (Compustat Annual Item #123); CFO_t is cash flows in year *t*, measured as cash flows from operating activities (Compustat Annual Item #308). These variables are deflated by average total assets in year *t*.

Earnings persistence

We use equation (2.2) in Sloan (1996) to test earnings persistence. ρ_1 regarded as earnings persistence shows the predictability of earnings. ρ_1 is expected to range from 0 and 1.

$$ROA_{t+1} = \rho_0 + \rho_1 ROA_t + \omega_{t+1} \quad (2.2)$$

Lower persistence of accruals in comparison with cash flows

Sloan (1996) estimates the average persistence of each component of current earnings as below:

$$ROA_{t+1} = \gamma_0 + \gamma_C CFO_t + \gamma_A OACC_t + \omega_{t+1} \quad (2.3)$$

The less persistence of accruals in comparison with cash flows means a negative value of $(\gamma_A - \gamma_C)$. As *CF= ROA -OACC*, following Richardson et al.(2005), we replace *CFO* in (2.3) with *ROA* as below:

$$ROA_{t+1} = \rho_0 + \rho_1 ROA_t + \rho_2 OACC_t + \varepsilon_{t+1} \quad (2.4)$$

where $\rho_1 = \gamma_C$ is the persistence of operating cash flows component and $\rho_2 = \gamma_A - \gamma_C$ is the difference between the persistence of cash flows and operating accruals, which is expected to be negative.

Mispricing of accruals

If investors understand the lower persistence of accruals, there should be no significant relationship between accruals and future abnormal returns. If not, the relationship will be significantly negative (Sloan, 1996; Richardson et al., 2005). We calculate abnormal returns as the annual size-adjusted buy-hold stock returns for the period of one year beginning four months after the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for the same size-matched decile firms in CRSP, where size is measured as market capitalization at the beginning of the return accumulation period. To control for systematic risk, MV (logarithm of market capitalization), BTMV (book-to-market ratio), ETP (earnings-to-price ratio) and CAPM beta measured four months after the fiscal year-end are also added in the model. Beta is estimated from the regression of $R_{it} = \alpha_{it} + \beta_{it} R_{mt} + \varepsilon_{it}$ where R_{it} is monthly return of security *i*, and R_{mt} is the equally weighted index in CRSP, using prior 36 months' data ending four months after the fiscal year-end.

$$ARE_{t+1} = \rho_0 + \rho_1 ROA_t + \rho_2 OACC_t + \phi_1 BTMV_t + \phi_2 MV_t + \phi_3 ETP_t + \phi_4 beta_t + \varepsilon_{t+1} \quad (2.5)$$

The accrual mispricing implies negative sign of ρ_2.

Financial distress and differential persistence, accrual anomaly

Because the underlying foundation of our hypotheses is the monitoring role of the creditors over the borrowing firms' earnings managerial behaviors, a plausible measure of financial distress is one that could also serve as a proxy for the relationship between a firm and its creditors. Zmijewski (1984)'s bankruptcy statistics (*hereafter,* ZM-score) with a high weight on total debts has such characteristics. A firm with a higher ZM-score is regarded as having higher

level of financial distress and is subject to the stricter scrutiny of its creditors. ZM-score is calculated as follows.

$$ZM = -4.803 – 3.6(NI /TA) + 5.4 (DEBT/TA) -0.1(CA/CL) \quad (2.6)$$

Where NI = Net Income (Compustat Item #172); TA = Total Assets (Compustat Item #6); DEBT= Long-term Debt (Compustat Item #9) + Short-term Debt (Compustat Item #34);

CA = Current Assets (Compustat Item #4); CL =Current Liabilities (Compustat Item #5).

Altman (1968)'s Z-score and O-score derived from Ohlson (1980) are two commonly used measures of bankruptcy risk. However, Kim (2013) finds that the O-score based bankruptcy risk anomaly in Dichev (1998) is a manifestation of accrual anomaly. Thus, using O-score as a measure of financial distress in a combination with accrual anomaly may lead to the multicollinearity issue. Consequently, we use Z-score as an alternative proxy for financial distress. Z-score is computed as follows:

$$Z = 1.2*X1 + 1.4*X2 +3.3*X3 + 0.6*X4 + 1*X5 \quad (2.7)$$

Where:

X1= (Current Assets-Current Liabilities)/Total Assets = (Compustat Item#4- Item#5)/Item#6

X2= Retained Earnings/Total Assets= Compustat Item#36/ Item#6

X3= Earnings before interest and taxes /Total Assets= (Compustat Item#122 +Item #134)/ Item#6

X4= Market Value of Equity/Total Liabilities= (Price at fiscal year-end * Number of shares outstanding)/ Compustat Item #5

X5= Sales/Total Assets= Compustat Item #12/Item#6.

A higher Z-score implies a lower degree of financial distress. To keep consistency with other financial distress proxies, Z score is multiplied by -1.

To have a comparison with Avramov et al. (2013), we use Standard & Poor's (S&P) Long-Term Domestic Issuer Credit Ratings as the third measure of financial distress. S&P Ratings are transformed in numeric scores with 1 reflecting a AAA rating and 22 representing a D rating.

At the end of year *t*, we separate our observations into terciles based on their level of one of the three financial distress proxies. The firm-years in the highest tercile are regarded as highly financially distressed firms (*hereafter*, high FD firms), while those in the lowest tercile are called as low financially distressed firms (*hereafter*, low FD firms). The remaining ones are called neutral firms. To examine the hypotheses, we add a dummy ID in equations (2.2), (2.4) and (2.5). ID is equal to 1 if the observation belongs to the sub-sample of high FD firms and 0 if it belongs to the sub-sample of low FD firms. Equations (2.2), (2.4) and (2.5) are transformed into (2.2'), (2.4') and (2.5'), respectively.

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID) ROA_t + \varepsilon_{t+1} \quad (2.2')$$

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) OACC_t + \varepsilon_{t+1} \quad (2.4')$$

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) OACC_t + (\phi_1 + \kappa_1 ID) BTMV_t + (\phi_2 + \kappa_2 ID) MV_t + (\phi_3 + \kappa_3 ID) ETP_t + (\phi_4 + \kappa_4 ID) beta_t + \varepsilon_{t+1} \quad (2.5')$$

H1, H2 means that β_2 s in (2.4'), (2.5') are significantly positive.

Financial distress and accruals quality

Accruals play an important role in adjusting the recognition of cash flows over time. Dechow & Dichev (2002) provide an empirical way to measure accruals quality by estimating the residuals from firm-specific regressions of changes in working capital on past, present and future operating cash flows (DD model). Francis, LaFond, Olsson, and Schipper (2005) augment the DD model with two fundamental variables-namely PPE and change in revenues from the modified Jones model as follows.

$$OACC_{it} = \beta_{0,j} + \beta_{1,j} CFO_{j,t-1} + \beta_{2,j} CFO_{jt} + \beta_{3,j} CFO_{i,t+1} + \beta_{4,j} \Delta \mathrm{Re}v_{j,t} + \beta_{5,j} PPE_{j,t} + \varepsilon_{j,t} \qquad (2.8)$$

Where $\Delta \mathrm{Re}v_{j,t}$ is changes in sales (Compustat Item# 12) of firm *j*, $PPE_{j,t}$ is gross values of PPE (Compustat Item #7) in year *t*. Like other variables in the model, these variables are deflated by average total assets.

We estimate residuals for each firm-year based on annual cross-sectional estimations of (2.8) for each of two-digit SIC groups with at least 20 firms in year *t*. Accruals quality ($AQ_{j,t}$) of firm *j* in year *t* is the standard deviation of firm *j*'s residuals $\varepsilon_{j,t}$, computed over five years from year *t-4* to year *t*. In this estimation, lower $AQ_{j,t}$ implies higher accruals quality. In order to make the regression results more readable, $AQ_{j,t}$ hereunder is multiplied by -1.

The low quality of accruals arises from two possible sources: one is the firm's innate characteristics and its operating environment, and the other is discretionary managerial behaviors (Francis et al., 2005). We hypothesize that due to the creditors' monitoring; financially distressed firms are unlikely to inflate earnings using discretionary accruals. This means that the discretionary component of accruals quality is lower for high FD firms, or in other words,

financial distress is positively associated with accruals quality. The impact of financial distress and five innate factors identified by Francis et al. (2005) are tested as follows:

$$AQ_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 SD(CFO)_{it} + \beta_3 SD(SALES)_{it} + \beta_4 Ln(OperCycle)_{it} + \beta_5 NegEarn_{jt} + \beta_6 FD_{it} + \varepsilon_{it} \quad (2.9)$$

in which *Size* (firm size measured as the log of total assets), *SD(CFO)* (standard deviation of cash flows from operating activities calculated over five years from year *t-4* to year *t*), *SD(Sales)* (standard deviation of sales calculated over five years from year *t-4* to year *t*) , *Ln(OperCycle)* (log of firm *j*'s operating cycle), *NegEarn* (frequency of reported negative *ROA* computed over five years from year *t-4* to year *t*) are the five innate factors. *FD* is our proxy of financial distress as measured by ZM-score, Z-score and S&P ratings, respectively. *H3* implies that β_6 is significantly positive.

2.3.2. Data

Data selection

We draw our sample from Compustat North America Database and stock returns from CRSP. Following prior literature, we delete financial firms (SIC codes 6000–6999), because of peculiarities in the accruals for such firms. We include only NYSE and AMEX firms to keep consistency with Sloan (1996) and Richardson et al. (2005) and require accruals, next year's size-adjusted returns, ZM and Z-scores not to be missing for an observation to be included into our sample. This results in 30625 firm-year observations.

We eliminate outliers as follows: observations with their one-year-ahead size-adjusted returns or accruals exceeding one in absolute (1078 observations) are dropped. Furthermore,

observations in the first and the 100th percentile of size-adjusted one-year-ahead-returns (584 observations) are also excluded.

We exclude observations with relatively high level of financial distress to eliminate the effect of the noise[4] in our results. Accordingly, observations in the following ranges of percentile are removed: 5th percentile of total assets (1392 observations), 5th percentile of book value of equity (651 observations); 95th percentile of ZM-score (856 observations), 95th percentile of Z-score (687 observations). Observations (5 observations) with its one-year-ahead earnings lower than -1 are also removed. Finally, our sample totals to 25071 observations ranging from 1987 to 2012. The observations in the following regressions may be lessened due to the availability of observations for variables used in each model.

Descriptive Statistics

We first examine whether the accruals mispricing appear in our sample. Every year, we divide stocks into quintiles based on the magnitude of accruals. Some selected firm characteristics and the size-adjusted returns in the subsequent year of these accrual quintile portfolios are shown in Table 2.1.

The return to the highest accrual quintile is significantly negative whereas the return to the lowest accrual quintile is insignificant (the significance level can be seen from Table 2.12). Therefore, the hedge portfolio with a long position in the lowest quintile and a short position in the highest quintile gets an annual return of around 3 percent. This result asserts that the accrual anomaly presents in our sample but is strongly driven by the negative return to the highest accrual quintile.

[4] As indicated in literature, firms with relatively high level of financial distress might inflate their reported earnings to prevent debt covenant violations. The behaviors of such firms are in opposite to those in our hypotheses, and thus might cause noise in the results.

Next, we compare firm characteristics across accrual quintiles. There is a positive relation between operating accruals (OACC) and contemporaneous earnings (ROA), implying that earnings depend strongly on the level of accruals. Moreover, the highest quintile has positive accruals while the rest has negative ones. The negative sign of accruals is primarily due to depreciation and the positive sign indicates an increase in current assets. In the following row, the highest accrual quintile has a much higher increase in working capital (DWC) than the rest. This illustrates that the average firm in the highest accrual quintile increases its receivables and inventories much higher than the average firm in the remaining quintiles. Specifically, the last two columns show that the average firm in the highest accrual quintile has sales growth of 0.273, 132% higher than the fourth quintile (0.206) but the former increases its working capital by 0.057 (relative to average total assets), 270% greater than the latter (0.021). This suggests that the average firm in the highest accrual quintile boost its working capital much higher than the level required for its sales growth. Furthermore, the average firm in the highest accrual quintile experiences a significant decrease in its earnings from the current year's 8% to the following year's 5.5%, which possibly explains the negative abnormal stock return (-4.4%) in the following year. These findings hint that firms in the highest accrual quintile inflate their earnings using accruals, which results in an earnings reversal and market surprise in the following year. Put differently, the accrual anomaly seems to be due to the accruals-managerial behavior of the firms in the highest accrual quintile.

We compare systematic risk (as measured by beta) and financial distress risk across accrual quintiles. While the systematic risk of two extreme accrual quintiles is higher than that of the rest, the trend of financial distress risk is ambiguous depending on the proxy of the risk. The financial distress risk of the extreme quintiles appears higher as implied by S&P ratings, yet

lower as indicated by ZM-scores, whereas, ambiguous as measured by Z-score. Besides, interest expense and leverage are almost the same across all quintiles. The conflicting implications of financial distress measures probably indicate that distressed firms disperse across accrual quintiles. This is dissimilar to the finding by Khan (2008), which reports that firms with low (high) accruals have high (low) level of bankruptcy risk. The difference is due to our exclusion of firms with relatively high level of financial distress.

Table 2.1 : Means (Medians) of selected characteristics of accrual quintile portfolios

	Rankings on OACC				
	Lowest	2	3	4	Highest
OACC	-0.137 (-0.121)	-0.072 (-0.070)	-0.047 (-0.046)	-0.024 (-0.024)	0.036 (0.020)
DWC	0.004 (-0.003)	0.009 (0.004)	0.012 (0.007)	0.021 (0.015)	0.057 (0.042)
CFO	0.171 (0.162)	0.128 (0.123)	0.104 (0.097)	0.086 0.079	0.043 (0.044)
ROA	0.034 (0.042)	0.056 (0.051)	0.057 (0.049)	0.062 (0.054)	0.080 (0.067)
Size	6305 (958)	8623 (1395)	8680 (1583)	7399 (1361)	4485 746
Beta	0.896 (0.838)	0.744 (0.699)	0.696 (0.640)	0.729 (0.669)	0.909 (0.847)
Leverage	0.223 (0.223)	0.247 (0.250)	0.264 (0.273)	0.251 (0.258)	0.216 (0.210)
Interest Exp.	0.019 (0.017)	0.019 (0.018)	0.020 (0.019)	0.019 (0.018)	0.017 (0.014)
Sales Growth	0.167 (0.077)	0.122 (0.072)	0.117 (0.069)	0.206 (0.084)	0.273 (0.123)
ZM	-3.906 (-3.859)	-3.854 (-3.793)	-3.766 (-3.693)	-3.878 (-3.814)	-4.183 (-4.152)
Z-score	-4.150 (-2.999)	-3.940 (-3.054)	-3.951 (-2.869)	-4.289 (-3.117)	-5.814 (-3.742)
S&P ratings	9.205 (9)	8.223 (8)	8.127 (8)	8.346 8	9.278 (9)
One-year-ahead ROA	0.044 (0.049)	0.053 (0.052)	0.052 (0.048)	0.052 (0.050)	0.055 (0.054)
One-year-ahead ARE	-0.013 (-0.033)	0.0015 (-0.011)	-0.007 (-0.015)	-0.016 (-0.020)	-0.044 (-0.059)

CF = cash flows in year *t* = Cash Flows from Operating Activities (Compustat Annual Item #308)
OACC = Operating accruals in year t = Income Before Extraordinary Items (Compustat Annual Item #123) –*CF*
DWC= Change in Working capital (Compustat Annual Item #121)
ROA = Earnings = Income Before Extraordinary Items (Compustat Annual Item #123)
These variables are all deflated by average total assets.
Beta= beta in the fourth months post fiscal year-end. Beta is estimated from the regression of $R_{it} = \alpha_{it} + \beta_{it} R_{mt} + \varepsilon_{it}$ where $R_{it}$is monthly return of security *i*, and R_{mt} is the equally weighted index in CRSP, using prior 36 months' data ending four months after the fiscal year-end.
Leverage = (Short term debt + Long-term debt)/ Total assets; Interest expense= Interest Expense deflated by average total assets
Sale Growth = (Sales in year *t* – Sales in year *t-1*)/ Sales in year *t-1*
ZM= Zmijewski's (1984) bankruptcy statistics = -4.803 – 3.6(NI /TA) + 5.4 (DEBT/TA) -0.1(CA/CL), where NI = Net Income, TA= Total Assets, DEBT= Long Term debt + Short Term debt, CA= Current Assets, CL = Current Liabilities.
Z-score = Altman's (1965) Z-core = = 1.2*X1 + 1.4*X2 +3.3*X3 + 0.6*X4 + 1*X5, where X1= (Current Assets-Current Liabilities)/Total Assets, X2= Retained Earnings/Total Assets, X3= Earnings before interest and taxes /Total Assets, X4= Market Value of Equity /Total Liabilities, X5= Sales/Total Assets
S&P ratings= Standard & Poor's (S&P) Long-Term Domestic Issuer Credit Ratings in the end of fiscal year, subtracted from monthly S&P Long-Term Domestic Issuer Credit Ratings available in the Compustat Database. S&P Ratings are transformed in numeric score as follows:
AAA=1, AA+=2, AA=3, AA-=4, A+=5, A=6, A-=7, BBB+=8, BBB=9, BBB-=10, BB+=11, BB=12, BB-=13, B+=14, B=15, B-=16, CCC+=17, CCC=18, CCC-=19, CC=20, C=21, D=22.
ARE= Annual size-adjusted return, which is calculated by deducting the value-weighted average return for all the same size-matched decile firms in CRSP, where size is measured as market capitalization at the beginning of the return accumulation period. The return accumulation period begins four months the fiscal year-end.
Size = Market value of a firm at the fiscal year-end in thousand US dollars = Closing Price in Fiscal Year End* Shares Outstanding.

Table 2.2: Basic statistics of OACC for accruals and financial distress-intersected portfolios

		Low FD	Neutral FD	High FD
Lowest OACC	Mean	-0.136	-0.134	-0.141
	Median	-0.121	-0.119	-0.121
	SD	0.057	0.053	0.070
	N	1689	1688	1646
2	Mean	-0.072	-0.072	-0.071
	Median	-0.071	-0.071	-0.070
	SD	0.012	0.012	0.012
	N	1528	1742	1744
3	Mean	-0.047	-0.047	-0.047
	Median	-0.046	-0.046	-0.046
	SD	0.010	0.010	0.010
	N	1342	1702	1971
4	Mean	-0.023	-0.023	-0.025
	Median	-0.023	-0.023	-0.026
	SD	0.012	0.012	0.012
	N	1586	1649	1779
Highest OACC	Mean	0.042	0.032	0.031
	Median	0.023	0.019	0.016
	SD	0.071	0.052	0.053
	N	2222	1576	1207
Total	Mean	-0.041	-0.050	-0.055
	Median	-0.042	-0.048	-0.049
	SD	0.077	0.064	0.065
	N	8367	8357	8347

For each year, we separate our observations independently into accrual quintiles and financial distress terciles (namely, high, neutral and low FD) based on ZM-score. The intersection between the two dimensions results in 15 portfolios. Mean, median and standard deviation of OACC and number of observations in each portfolio are presented in this table.

In order to further examine the effect of financial distress risk on accrual anomaly, we construct 15 portfolios as follows. For each year, we separate our observations independently into accrual quintiles, and three financial distress terciles based on ZM-score. The intersection between these two dimensions results in 15 portfolios. Basic statistics of operating accruals (OACC) for each portfolio are shown in Table 2.2. The three portfolios in the highest accrual quintiles have positive operating accruals, while those of the rest have negative accruals. This confirms the findings in Table 2.1 that the average firm in the highest quintile increases its working capital much more than the others. Furthermore, within the highest accrual quintiles, the portfolio with low financial distress risk has higher accruals than those with neutral and high

financial distress risk. The probability that a firm with low financial distress risk falls into the highest accrual quintiles is much higher than that of a firm with neutral or high financial distress risk (2222/8367 compared to 1576/8357 and 1207/8347). In other words, the highest accrual quintile is over-presented by the firms with low financial distress risk.

As the accrual reversals following extreme accruals are potential sources of differential persistence and accrual anomaly (Allen et al. 2013), extreme accrual quintiles should be closely examined. Additionally, to compare accruals-managerial behavior of firms with different level of financial distress, firms with low and high financial distress should also be investigated. Table 2.3 provides a transition matrix of firms in four portfolios which are formed from the intersection between extreme accrual quintiles and extreme financial distress terciles. Each cell shows the number and percentage of firms in the corresponding portfolio falling in one of accrual quintiles in the following year.

Table 2.3: Transition matrix of stocks in the extreme accruals and FD intersected portfolios

One-year-ahead OACC	Low FD- Lowest OACC (LFLO)	Low FD- Highest OACC (LFHO)	High FD- Lowest OACC (HFLO)	High FD- Highest OACC (HFHO)
Lowest	710 (42.04%)	261 (11.75%)	821 (49.88%)	168 (13.92%)
2	333 (19.71%)	273 (12.29%)	340 (20.66%)	135 (11.18%)
3	183 (10.83%)	256 (11.52%)	197 (11.97%)	205 (16.98%)
4	204 (12.07%)	418 (18.81%)	130 (7.90%)	291 (24.11%)
Highest	238 (14.86)	994 (44.73%)	144 (8.75%)	397 (32.89%)
Total	1689	2222	1646	1207

This table provides a transition matrix of firms in four portfolios which are formed from the intersection between extreme accrual quintiles and extreme financial distress (FD) terciles (based on ZM-score). Each cell shows the number and percentage of firms in the corresponding portfolio falling in one of accrual quintiles in the following year.

It can be seen that between two highest accrual portfolios, LFHO is more persistent in accrual ranking than HFHO (44.73 percent vs. 32.89 percent). Persistence in accrual ranking of LFHO firms reflects the inability of accruals to transform into cash. Unreported results indicate that the average firm in LFHO increases its working capital by 7.3 percent (relative to average total assets) in the current year and 3.2 percent in the following year, whereas the numbers for firms in the HFHO are 3.8 percent and 1.1 percent, respectively. In other words, HFHO firms appear to have higher accruals quality than those in LFHO. On the other hand, between two lowest accrual portfolios, HFLO is more persistent in accrual ranking than LFLO (49.88 percent vs. 42.04 percent). The higher accrual-ranking persistence of the HFLO implies higher level of conservatism in accruals. To sum up, within the same accrual extreme quintiles, firms with higher financial distress risk seem to exhibit better accruals quality.

In summary, descriptive statistics in Table 2.1, 2.2 and 2.3 suggest that the accrual anomaly does present in our sample but is strongly driven by the negative abnormal return on the highest accrual firms. The firms in the highest accrual quintiles might inflate earnings by boosting its working capital much more than needed, which results in earnings reversals in the following year. Moreover, such the highest accrual firms concentrate in the low financial distress tercile and the highest accrual firms with low financial distress risk appear to have lower accruals quality than their counterparts with high financial distress risk.

2.4. Empirical Results

2.4.1. Financial distress and earnings persistence

Table 2.4 reports the Fama-MacBeth regression results of earnings persistence equation (2.2'). Column (1) indicates that the earnings persistence is 0.674, which is close to that (0.652) in Dichev and Tang (2009). In columns (2), (3) and (4), we report the regression coefficients

using three different measures of financial distress. Firms with low financial distress risk have earnings persistence (α_1) of 0.736, 0.743 or 0.799, while firms with high financial distress risk have persistence ($\alpha_1 + \beta_1$) of 0.527, 0.435 or 0.562. The negative coefficients of ID*ROA reveal that earnings in firms with higher financial distress risk are significantly less persistent.

Table 2.4: Financial distress and earnings persistence

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID) ROA_t + \omega_{t+1} \quad (2.2')$$

	Whole sample	FD= ZM score ID=1 for High FD, ID=0 for Low FD	FD=Z-core ID=1 for High FD, ID=0 for Low FD	FD= S&P Ratings ID=1 for High FD, ID=0 for Low FD
	(1)	(2)	(3)	(4)
Intercept	0.0125***	0.00957***	0.0132***	0.0111***
	(5.10)	(3.29)	(4.10)	(4.37)
ROA	0.674***	0.736***	0.743***	0.799***
	(30.80)	(28.76)	(26.79)	(28.73)
ID*ROA		-0.209***	-0.308***	-0.237***
		(-6.41)	(-8.15)	(-7.36)
$\alpha_1 + \beta_1$		0.527***	0.435***	0.562***
		(14.52)	(11.84)	(14.19)
Adjusted R^2	0.392	0.434	0.471	0.456
N	25034	16692	16689	8458

ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets.
For each year, all observations are sorted into terciles based on their level of financial distress. The observations in the highest tercile are regarded as high financial distress (FD) firms, those in the lowest tercile are called low FD firms, the rest is called neutral FD firms. ID=1 for the observation belonging to the subsample of high FD firms, 0 for the observation belonging to the subsample of low FD firms. See Table 2.1 for definitions of ZM score, Z-score and S&P ratings.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept of the dummy ID is not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

To uncover the sources for the difference in earnings persistence between the subsamples of firms with different level of financial distress risk, we replicate Frankel and Litov (2009)'s tests. Frankel and Litov (2009) use ranks of (lagged) earnings volatility, earnings change, absolute accruals, earnings growth (as indicated by earnings to price), and firm size (measured as lagged total assets) to examine driving factors of earnings persistence. In addition to those used by Frankel and Litov (2009), we add ranked financial distress risk to the tests. In our sample, earnings change has high correlations with lagged, contemporaneous earnings volatility and

absolute accruals, thus is excluded from our model. To keep consistency with other variables, the proxies of financial distress are transformed into their decile ranks. This means that all variables except for ROA are sorted into deciles. From the lowest to the highest decile, the observations are assigned the value from 0 to 0.9 respectively. We regress one-year-ahead earnings on contemporaneous earnings and the interactions between ranked variables (financial distress, earnings volatility, absolute accruals, earning growth and firm size) and earnings (ROA) to examine the influence of these variables on earnings persistence. The Fama-Mac Beth results for this testing are presented in Table 2.5.

Table 2.5: Financial distress and earnings persistence with control variables

	Whole sample		FD= ZM score		FD= Z score		FD= S&P Ratings	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ROA	0.674*** (30.80)	1.260*** (31.81)	0.743*** (30.13)	1.291*** (31.91)	0.737*** (27.94)	1.161*** (34.50)	0.776*** (26.82)	1.144*** (15.28)
Ranked FD*ROA			-0.252*** (-5.45)	-0.185*** (-3.99)	-0.410*** (-9.28)	-0.329*** (-5.50)	-0.301*** (-7.16)	0.0324 (0.55)
Ranked Volatility of ROA * ROA		-0.388*** (-9.40)		-0.370*** (-9.22)		-0.247*** (-6.33)		-0.352*** (-7.34)
Ranked absolute OACC*ROA		-0.371*** (-11.52)		-0.340*** (-11.40)		-0.300*** (-9.41)		-0.292*** (-6.92)
Ranked E/P * ROA		-0.0824 (-1.50)		-0.150** (-2.49)		-0.172*** (-3.20)		-0.136** (-2.61)
Ranked Lagged TA*ROA		-0.0542 (-1.27)		-0.00952 (-0.20)		-0.00953 (-0.20)		0.00830 (0.10)
Adjusted R^2	0.392	0.443	0.403	0.448	0.420	0.456	0.421	0.475
N	25034	23693	25034	23693	25034	23693	12493	12214

ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets
Volatility of ROA= Earnings Volatility in year *t* is measured as standard deviation of *ROA* over year *t-4* to year *t*.
E/P= Earnings to Price ratio at the fiscal year end.
Earning Volatility, E/P, Absolute OACC, Lagged TA (Lagged total assets) and three financial distress (FD) proxies are transformed in decile ranks ranging from 0 to 0.9.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept, the intercepts for interacted term components are not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

Columns (1), (3), (5), (7) replicate the results in Table 2.4 but with the ranked financial distress proxies in (3), (5) and (7). The negative coefficients on *Ranked FD*ROA* indicate that financial distress has negative effect on earnings persistence, consistent with the findings in

Table 2.4. Column (2) replicates the results of Dichev & Tang (2009) and Frankel & Litov (2009). In accordance with these studies, earnings volatility and absolute accruals have negative effect on earnings persistence. Departing from Frankel & Litov (2009), earnings growth and firm size do not influence the earnings persistence. Columns (4), (6) and (8) include one of the three financial distress proxies in ranks. The results show that, after controlling for other variables, the negative effect of financial distress on earnings persistence is still strong using ZM and Z-scores, yet is insignificant using S&P ratings.

Losses are considered as another explanation for the less earnings persistence (Frankel & Litov, 2009). Frankel & Litov (2009), Dichev & Tang (2009) exclude firm-years with negative earnings. We replicate Table 2.5 for positive earnings and report the results in Table 2.6.

Table 2.6: Financial distress and earnings persistence with positive earnings

	Whole sample		FD=ZM		FD= Z score		FD= S&P Ratings	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ROA	0.759*** (27.42)	1.223*** (29.23)	0.730*** (19.52)	1.204*** (31.21)	0.739*** (23.24)	1.142*** (30.14)	0.863*** (43.61)	1.187*** (15.48)
Ranked FD*ROA			0.0695 (1.17)	0.00701 (0.14)	-0.295*** (-6.32)	-0.135** (-2.39)	-0.279*** (-4.87)	0.0128 (0.19)
Ranked Volatility of ROA * ROA		-0.239*** (-6.90)		-0.224*** (-6.55)		-0.188*** (-5.34)		-0.165*** (-3.44)
Ranked absolute OACC *ROA		-0.191*** (-4.89)		-0.193*** (-5.24)		-0.177*** (-4.73)		-0.0771* (-1.98)
Ranked E/P * ROA		-0.343*** (-6.04)		-0.342*** (-5.85)		-0.312*** (-5.85)		-0.463*** (-6.70)
Ranked Lagged TA*ROA		0.0395 (1.03)		0.0492 (1.15)		0.0402 (0.98)		-0.00495 (-0.06)
Adjusted R^2	0.400	0.454	0.407	0.456	0.420	0.459	0.446	0.500
N	22435	21259	22435	21259	22435	21259	11430	11181

ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets
Volatility of ROA= Earnings Volatility in year *t* is measured as standard deviation of *ROA* over year *t-4* to year *t*.
E/P= Earnings to Price ratio at the fiscal year end.
Earning Volatility, E/P, Absolute OACC, Lagged TA (Lagged total assets) and three financial distress (FD) proxies are transformed in decile ranks ranging from 0 to 0.9.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept, the intercepts for interacted term components are not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

The coefficient of interaction between financial distress and earnings (*Ranked FD*ROA*) is insignificant for ZM-score and S&P ratings and becomes much smaller for Z-score. These results indicate that the lower earnings persistence of the firms with high financial distress risk in Table 2.4 is mostly due to the loss firms.

2.4.2. Financial distress and differential persistence

Table 2.7 provides the Fama-MacBeth regression results of equation (2.4') which shows the relationship between financial distress and differential persistence of accruals and cash flows.

Table 2.7: Financial distress and differential persistence

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) OACC_t + \varepsilon_{t+1} \quad (2.4')$$

	Whole sample	FD= ZM score ID=1 for High FD, ID=0 for Low FD	FD=Z-core ID=1 for High FD, ID=0 for Low FD	FD= S&P Ratings ID=1 for High FD, ID=0 for Low FD
	(1)	(2)	(3)	(4)
Intercept	0.00152 (0.64)	-0.00216 (-0.73)	0.00248 (0.89)	0.0000527 (0.03)
ROA	0.726*** (35.18)	0.783*** (32.72)	0.780*** (31.19)	0.838*** (37.66)
ID*ROA		-0.189*** (-5.81)	-0.295*** (-7.51)	-0.230*** (-8.45)
OACC	-0.166*** (-11.13)	-0.190*** (-7.07)	-0.182*** (-8.65)	-0.163*** (-7.96)
ID*OACC		0.0569** (2.33)	0.0898*** (3.69)	0.0517 (1.61)
$\alpha_2 + \beta_2 = 0$		-0.133*** (-6.65)	-0.0918*** (-4.38)	-0.112*** (-4.61)
Adjusted R^2	0.416	0.461	0.492	0.477
N	25034	16692	16689	8458

OACC = Operating accruals deflated by average total assets
ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets.
For each year, all observations are sorted into terciles based on their level of financial distress. The observations in the highest tercile are regarded as high financial distress (FD) firms, those in the lowest tercile are called low FD firms, the rest is called neutral FD firms. ID=1 for the observation belonging to the subsample of high FD firms, 0 for the observation belonging to the subsample of low FD firms. See Table 2.1 for definitions of OACC, ROA, ZM score, Z-score and S&P ratings.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept of the dummy ID is not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

In line with prior literature, column (1) reports a negative coefficient of OACC, which implies that accruals have lower persistence than cash flows. The significant negative coefficients of OACC in columns (2), (3), (4) assert that accruals have lower persistence than cash flows for the firms with low financial distress risk. The significant positive coefficients of ID*OACC in columns (2), (3) and marginally positive coefficient of ID*OACC in column (4) reveal that firms with high financial distress risk have smaller differential persistence than firms with low financial distress risk. The tests for the significance of the sum $\alpha_2 + \beta_2$ show that accruals have lower persistence than cash flows in the firms with high financial distress risk. The differential persistence of accruals and cash flows arises from measurement errors in estimating accruals (see Richardson et al., 2005; 2006), following large accruals (Dichev & Dechow, 2002) or extreme accruals (Allen et al., 2013). Moreover, the errors in accrual estimation depend on the nature of business (Hribar, 2002), accounting standards or earnings management (Schipper & Vincent, 2003). To control for the external variables representing the nature of business, we include the ranked variables as identified in Table 2.5. The interaction between the ranked variables and OACC indicate the influence of these variables on the differential persistence. The Fama-MacBeth regression results are shown in Table 2.8.

Table 2.8: Financial distress and differential persistence with control variables

	Whole sample		FD=ZM		FD= Z-score		FD= S&P Ratings	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ROA	0.726***	1.168***	0.791***	1.219***	0.778***	1.126***	0.816***	1.117***
	(35.18)	(29.95)	(34.36)	(30.08)	(32.71)	(30.59)	(36.98)	(16.61)
Ranked FD*ROA			-0.241***	-0.195***	-0.395***	-0.346***	-0.290***	0.00422
			(-5.71)	(-4.30)	(-8.92)	(-5.98)	(-8.05)	(0.07)
OACC	-0.166***	-0.127**	-0.189***	-0.183**	-0.193***	-0.208***	-0.180***	-0.238***
	(-11.13)	(-2.29)	(-7.79)	(-2.78)	(-8.77)	(-3.73)	(-7.00)	(-3.23)
Ranked FD*OACC			0.0886**	0.124***	0.134***	0.195***	0.0832*	0.183***
			(2.47)	(3.18)	(3.60)	(4.66)	(1.74)	(3.32)
Ranked Volatility of ROA * OACC		-0.163***		-0.137***		-0.120***		-0.179***
		(-4.49)		(-3.35)		(-3.32)		(-3.10)
Ranked absolute OACC*OACC		0.0828		0.0832		0.0901*		0.134**
		(1.57)		(1.58)		(1.86)		(2.36)
Ranked E/P * OACC		0.105**		0.114***		0.0953***		0.0688
		(3.09)		(3.09)		(3.08)		(1.23)
Ranked Lagged TA*OACC		-0.0945**		-0.121***		-0.124***		-0.0445
		(-2.94)		(-4.08)		(-4.23)		(-0.82)
Adjusted R^2	0.416	0.459	0.426	0.465	0.441	0.472	0.443	0.494
N	25034	23693	25034	23693	25034	23693	12493	12214

ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets
Volatility of ROA= Earnings Volatility in year t is measured as standard deviation of ROA over year t-4 to year t.
E/P= Earnings to Price ratio at the fiscal year end.
ZM-score, ZM-score, S&P ratings, Earning Volatility, E/P, Absolute OACC, Lagged TA (Lagged total assets) are transformed in decile ranks ranging from 0 to 0.9.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept, the intercepts for interacted term components, the coefficients of interaction between ranked control variables and ROA are not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

Columns (1), (3), (5), (7) replicate the results in Table 2.7 but with the ranked financial distress proxies in (3), (5) and (7). The significantly positive coefficients of *Ranked FD*OACC* indicate that the level of financial distress negatively impacts the magnitude of differential persistence, which is in line with the findings in Table 2.7. After including the control variables, the effect of financial distress on the differential persistence becomes more economically and statistically significant (see columns (4), (6) and (8)). As mentioned earlier, the differential persistence arises from the measurement errors of accruals, which normally follow extreme accruals. Put differently, firms with extreme accruals have larger differential persistence. However, the positive coefficients on *Ranked absolute OACC*OACC* in (6) and (8) are not in accordance with this argument and make us confused. The positive coefficient of *Ranked*

*absolute OACC*OACC* might be due the conflicting impact of the highest and the lowest accruals on the differential persistence in our sample. An unreported test which replaces *Ranked absolute OACC* with *Ranked OACC* gets negative coefficients on *Ranked OACC*OACC* and qualitatively unchanged results on the influence of financial distress. In other words, firms with greater accruals have larger differential persistence in our sample.

Again, to exclude the effect of loss firms, we rerun the regressions in Table 2.8 with positive ROA and report the results in Table 2.9. The effect of financial distress on the differential persistence is still significant for Z-core and ZM, becomes marginal for S&P ratings. The insignificance of the effect for S&P ratings may be due to the conservatism in estimating statistical significance of Fama-MacBeth method. Nevertheless, the signs of the effect for three financial distress measures are the same. Hence, we conclude that the effect of financial distress on differential persistence still exists after controlling for earnings volatility, absolute accruals, earnings growth, firm size, loss firms. This implies that the effect of financial distress on differential persistence is attributed to the accounting problem-accounting standards or earnings management. The findings support our first hypothesis that firms with low financial distress risk have larger differential persistence of accruals and cash flows than firms with high financial distress risk.

Table 2.9: Financial distress and differential persistence with positive earnings

	Whole sample		FD=ZM		FD= Z score		FD= S&P Ratings	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ROA	0.784***	1.182***	0.770***	1.180***	0.764***	1.137***	0.876***	1.163***
	(31.14)	(31.02)	(24.23)	(32.29)	(26.53)	(29.69)	(49.08)	(18.21)
Ranked FD*ROA			0.0272	-0.00460	-0.292***	-0.130**	-0.271***	0.0341
			(0.53)	(-0.09)	(-6.11)	(-2.21)	(-5.48)	(0.58)
OACC	-0.119***	-0.182***	-0.172***	-0.233***	-0.178***	-0.231***	-0.134***	-0.199**
	(-6.99)	(-3.02)	(-7.21)	(-3.50)	(-8.05)	(-3.67)	(-5.32)	(-2.27)
Ranked FD*OACC			0.157***	0.143***	0.179***	0.208***	0.0716	0.0971
			(4.24)	(3.98)	(4.08)	(4.10)	(1.44)	(1.61)
Ranked Volatility of ROA * OACC		-0.0691		-0.0469		-0.0491		-0.0768
		(-1.31)		(-0.84)		(-0.93)		(-1.49)
Ranked absolute OACC*OACC		0.147***		0.145***		0.146***		0.164***
		(3.03)		(2.97)		(3.23)		(2.86)
Ranked E/P * OACC		0.0229		0.0286		-0.00708		0.000193
		(0.61)		(0.79)		(-0.18)		(0.00)
Ranked Lagged TA*OACC		-0.0572		-0.0897***		-0.0982***		-0.0456
		(-1.55)		(-2.84)		(-2.90)		(-0.63)
Adjusted R^2	0.418	0.469	0.427	0.473	0.440	0.477	0.461	0.516
N	22435	21259	22435	21259	22435	21259	11430	11181

ROA = Income Before Extraordinary Items (Compustat Annual Item #123) deflated by average total assets
Volatility of ROA= Earnings Volatility in year t is measured as standard deviation of ROA over year t-4 to year t.
E/P= Earnings to Price ratio at the fiscal year end.
ZM-score, ZM-score, S&P ratings, Earning Volatility, E/P, Absolute OACC, Lagged TA (Lagged total assets) and three financial distress (FD) proxies are transformed in decile ranks ranging from 0 to 0.9.
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept, the intercepts for interacted term components, the coefficients of interaction between ranked control variables and ROA are not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

2.4.3. Financial distress and accrual anomaly

Table 2.10 reports the relationship between financial distress and accruals mispricing using Fama- MacBeth regressions. Consistent with prior literature, the negative coefficient of OACC in column (1) asserts the occurrence of accrual anomaly in our sample. The significant negative coefficients of *OACC* in column (2), (3), (4) indicate the existence of accrual anomaly in the firms with low financial distress risk. The coefficients of *ID*OACC* are not significant in (2), (3) and (4), which do not lead to any conclusions on the difference in magnitude of accrual anomaly occurring in firms with low and high financial distress risk.

Table 2.10: Financial distress and accrual mispricing

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)OACC_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t + (\phi_4 + \kappa_4 ID)beta_t + \varepsilon_{t+1} \quad (2.5')$$

	Whole sample	FD= ZM score ID=1 for High FD, ID=0 for Low FD	FD=Z-core ID=1 for High FD, ID=0 for Low FD	FD= S&P Ratings ID=1 for High FD, ID=0 for Low FD
	(1)	(2)	(3)	(4)
Intercept	-0.0434 (-0.81)	-0.0407 (-0.82)	-0.0661 (-1.40)	-0.0497 (-0.85)
ROA	0.0135 (0.13)	-0.0364 (-0.41)	-0.0326 (-0.39)	0.00748 (0.05)
ID*ROA		0.593*** (3.29)	0.531** (2.55)	0.492** (2.16)
OACC	-0.171** (-2.80)	-0.204*** (-3.12)	-0.243*** (-4.03)	-0.332*** (-3.76)
ID*OACC		0.0411 (0.38)	0.148 (1.30)	0.0660 (0.28)
BTMV	0.00178 (0.90)	0.00352 (0.94)	-0.0101 (-1.21)	0.00294 (0.81)
ID*BTMV		0.00656 (0.97)	0.0236 (1.11)	0.0264 (1.53)
ETP	0.146** (2.42)	0.456*** (3.94)	0.676*** (4.21)	0.341 (1.65)
ID*ETP		-0.533*** (-3.92)	-0.741*** (-3.85)	-0.365 (-1.68)
MV	0.00267 (0.50)	0.00100 (0.20)	0.00282 (0.63)	0.00362 (0.72)
ID*MV		0.00189 (0.47)	0.00145 (0.32)	-0.0171* (-1.90)
Beta	-0.0101 (-0.51)	-0.0231 (-1.63)	-0.0124 (-0.81)	-0.0170 (-0.71)
ID*beta		0.0200 (1.14)	0.000807 (0.06)	0.00661 (0.32)
$\alpha_2 + \beta_2$		-0.163 (-1.48)	-0.0953 (-0.71)	-0.266 (-1.27)
Adjusted R^2	0.0455	0.0555	0.0624	0.0801
N	17952	14616	14673	7829

ROA = Earnings; OACC= Operating Accruals, see Table 2.1 for definitions of these variables.

MV=logarithm of market capitalization; BTMV = book-to-market ratio; ETP=earnings-to-price ratio; beta =CAPM beta. These variables are measured four months after the fiscal year-end. Beta is estimated from the regression of $R_{it} = \alpha_{it} + \beta_{it} R_{mt} + \varepsilon_{it}$ where R_{it} is monthly return of security *i*, and R_{mt} is CRSP equally weighted monthly stock returns, using prior 36 months' data ending four months after the fiscal year-end.

ARE_{t+1}= annual size adjusted buy-hold stock returns for the period of one year beginning four months after the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as market capitalization at the beginning of the return accumulation period.

For each year, all observations are sorted into terciles based on their level of financial distress. The observations in the highest tercile are regarded as high financial distress (FD) firms, those in the lowest tercile are called low FD firms, the rest is called neutral FD firms. ID=1 for the observation belonging to the subsample of high FD firms, 0 for the observation belonging to the subsample of low FD firms. See Table 2.1 for definitions of ZM-score, Z-score and S&P ratings.

The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept of the dummy ID is not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

However, the tests for the significance of sum $\alpha_2 + \beta_2$ reveal that the accrual anomaly does not happen in the firms with high financial distress risk. These findings support our second hypothesis that firms with low financial distress have higher accrual anomaly occurring than firms with high financial distress.

In equation (2.5'), the high correlation between ROA and OACC may lead to biased results due to the multi-collearity. To check the robustness of our results, we exclude ROA and rerun the regressions. The results as reported in Table 2.11 assert the occurrence of accrual anomaly in the firms with low financial distress risk and the non-occurrence in the firms with high financial distress risk (see column (2), (3) and (4)).

Table 2.11: Financial distress and accrual mispricing (without ROA)

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + (\alpha_2 + \beta_2 ID)OACC_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t + (\phi_4 + \kappa_4 ID)beta_t + \varepsilon_{t+1}$$

	Whole sample	FD= ZM score ID=1 for High FD, ID=0 for Low FD	FD=Z-core ID=1 for High FD, ID=0 for Low FD	FD= S&P Ratings ID=1 for High FD, ID=0 for Low FD
	(1)	(2)	(3)	(4)
Intercept	-0.0413 (-0.78)	-0.0369 (-0.75)	-0.0674 (-1.45)	-0.0574 (-0.96)
OACC	-0.160** (-2.81)	-0.208*** (-3.25)	-0.248*** (-3.98)	-0.304*** (-3.23)
ID*OACC		0.113 (1.10)	0.217* (2.05)	0.0794 (0.30)
BTMV	0.00142 (0.88)	0.00304 (0.82)	-0.00657 (-1.31)	0.00240 (0.78)
ID*BTMV		0.00522 (1.04)	0.0192 (1.13)	0.0258 (1.66)
ETP	0.146*** (3.02)	0.418*** (4.03)	0.644*** (4.76)	0.411* (1.91)
ID*ETP		-0.314*** (-2.98)	-0.588*** (-4.26)	-0.236 (-1.10)
MV	0.00259 (0.52)	0.000359 (0.07)	0.00254 (0.57)	0.00420 (0.87)
ID*MV		0.00469 (1.25)	0.00306 (0.71)	-0.0141 (-1.54)
Beta	-0.0101 (-0.51)	-0.0236 (-1.64)	-0.0127 (-0.82)	-0.0186 (-0.78)
ID*beta		0.0190 (1.07)	-0.00149 (-0.10)	0.0109 (0.55)
$\alpha_2 + \beta_2$		-0.0958 (-0.93)	-0.0303 (-0.23)	-0.225 (-1.01)
Adjusted R^2	0.0416	0.0517	0.0587	0.0704
N	17952	14616	14673	7829

OACC= Operating Accruals, see Table 2.1 for definitions of this variable.

MV=logarithm of market capitalization; BTMV = book-to-market ratio; ETP=earnings-to-price ratio; beta =CAPM beta. These variables are measured four months after the fiscal year-end. Beta is estimated from the regression of $R_{it} = \alpha_{it} + \beta_{it} R_{mt} + \varepsilon_{it}$ where R_{it} is monthly return of security *i*, and R_{mt} is CRSP equally weighted monthly stock returns, using prior 36 months' data ending four months after the fiscal year-end.

ARE_{t+1}= annual size adjusted buy-hold stock returns for the period of one year beginning four months after the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as market capitalization at the beginning of the return accumulation period.

For each year, all observations are sorted into terciles based on their level of financial distress. The observations in the highest tercile are regarded as high financial distress (FD) firms, those in the lowest tercile are called low FD firms, the rest is called neutral FD firms. ID=1 for the observation belonging to the subsample of high FD firms, 0 for the observation belonging to the subsample of low FD firms. See Table 2.1 for definitions of ZM-score, Z-score and S&P ratings.

The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. The intercept of the dummy ID is not shown for brevity. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

2.4.4. Returns on hedge portfolios

For each year, we sort our observations independently into accrual quintiles and financial distress terciles (namely, high, neutral and low financial distress terciles). The intersection between these two dimensions results in 15 portfolios for each proxy of financial distress. For each financial distress tercile, we long the stocks in the lowest accrual quintile and short those in the highest accrual quintile. The equally weighted, size-adjusted annual returns on the accrual-financial distress-portfolios and on the hedge portfolios in are presented in Table 2.12. The return on the hedge portfolio of the whole sample is around 3.3 percent per year, which is mainly driven by the significant negative abnormal return (-4.4%) on the highest accrual quintile. The abnormal return on the lowest accruals portfolio is not significantly positive, which is not in line with the results in Sloan (1996). Sloan (1996) documents that due the fixation on reported earnings, investors over-value high-accruals firms and under-value low-accruals firms, and this leads to negative abnormal returns on the highest accruals stocks and positive abnormal returns on the lowest ones. The difference between our results and Sloan (1996)'s motivate us to find another explanation for the accrual anomaly other than the fixation hypothesis. Kothari et al. (2006)argue that the highest accruals portfolio is likely to be over-represented by overvalued firms where their managers attempt to boost the reported earnings to meet market expectation. However, overvaluation and superior reported earnings cannot last indefinitely, resulting in negative abnormal returns on the highest accrual portfolio in the following year. In contrast, under-valued firms are unlikely to deflate earnings downwards but might attempt to manage earnings upwards to correct the misevaluation. Thus, these firms disperse across deciles other than the lowest one. Consequently, the lowest accruals firms are expected to have normal returns, i.e. non-positive abnormal returns. Our results are consistent to these arguments of Kothari et al.(2006). It is

worth recalling from Table 2.1 that the highest accrual firms have higher sales growth than the rest, which also in line with the overvaluation argument of Kothari et al. (2006).

Table 2.12: Annual abnormal returns on accrual quintiles and hedge portfolios

FD measures	Rankings by OACC						Hedge portfolios
		Lowest	2	3	4	Highest	
	Whole sample	-0.0114 (-0.81)	0.000807 (0.06)	-0.00513 (-0.34)	-0.0151 (-1.02)	-0.0442** (-3.40)	0.0329*** (3.30)
ZM	High FD	-0.0221 (-1.15)	-0.00999 (-0.51)	-0.0143 (-0.74)	-0.0126 (-0.66)	-0.0461** (-2.58)	0.0240 (1.18)
	Neutral FD	0.00330 (0.22)	0.0113 (0.86)	-0.00547 (-0.35)	-0.0148 (-0.95)	-0.0452*** (-3.16)	0.0485*** (3.59)
	Low FD	-0.0181 (-1.41)	-0.00188 (-0.14)	0.00936 (0.63)	-0.0253* (-1.85)	-0.0427** (-3.28)	0.0247*** (2.81)
Z-score	High FD	-0.0229 (-1.20)	-0.0175 (-0.89)	-0.0105 (-0.56)	-0.00211 (-0.11)	-0.0507** (-2.74)	0.0278 (1.25)
	Neutral FD	-0.00196 (-0.12)	0.0223 (1.51)	-0.00925 (-0.54)	-0.0214 (-1.32)	-0.0432** (-2.69)	0.0412*** (3.10)
	Low FD	-0.00957 (-0.73)	-0.00368 (-0.26)	0.00529 (0.36)	-0.0264* (-1.89)	-0.0444*** (-3.34)	0.0348*** (3.67)
S&P ratings	High FD	-0.00986 (-0.41)	-0.00733 (-0.39)	-0.0197 (-1.18)	-0.0143 (-0.74)	-0.0470** (-2.39)	0.0372 (1.56)
	Neutral FD	0.00465 (0.23)	0.00173 (0.09)	-0.0126 (-0.62)	-0.0259 (-1.15)	-0.0205 (-1.49)	0.0220 (1.12)
	Low FD	-0.00235 (-0.14)	0.0283** (2.32)	0.00393 (0.22)	0.00232 (0.14)	-0.0370** (-2.34)	0.0347** (2.51)

See Table 2.1 for measurements of ZM-score, Z-core and S&P ratings.
For each year, all observations are independently classified into accrual quintiles and financial distress terciles (namely, high, neutral and low FD). The intersection between the two dimensions results in 15 portfolios for each proxy of financial distress.
For each FD tercile, we long the stocks in the lowest accrual quintile and short those in the highest accrual quintile. The equally weighted returns on each accrual quintile and on the hedge portfolios are presented in this table.

For each proxy of financial distress, the return on the hedge portfolio built from the low financial distress tercile is significantly positive and mainly driven by the negative return on the highest accrual quintile. However, the return on the hedge portfolio built from high financial distress tercile is insignificant even though the return on the highest accrual quintile is significantly negative. An unreported test indicates that the average earnings of the highest accrual quintile with high financial distress risk are 4.5 percent in the current year and decrease to 2.9 percent in

the subsequent year. The decrease of earnings might be attributed to the high level of financial distress associated with high leverage (41.6 percent of total assets) and high interest expense (3.2 percent of average total assets). Thus, the negative abnormal returns on the highest accrual quintiles with high financial distress risk might reflect the anomaly of bankruptcy risk in Dichev (1998).

2.4.5 Is accrual anomaly explained by sales growth?

Table 2.1 indicates that the highest accruals quintile has higher sales growth than the lowest accruals quintile. This finding raises a question of whether the return on the accrual-hedge portfolio is driven by the difference in growth. Under agency hypothesis, Kothari et al. (2006) argue that accruals in high-accrual firms are not merely a result of earning management, but a large fraction of them are likely to be an outcome of its underlying economic fundamentals such as sales growth. Following Chan and Chen (1991), Khan (2008), we test the growth effect on accrual anomaly by constructing a return index that mimics the behavior of high sales growth firms. In our sample, firms with high (low) accruals have high (low) sales growth, thus the return spread between low and high growth firms may be ascribed to growth or accrual. Hence, to control for accrual effect from growth effect, we sort our sample on quintiles according to sales growth and take return spread between the lowest growth-highest accrual firms and the highest growth-lowest accrual firms and regard it as *GrowthDif* index. We test the correlation between this index and the returns on the accrual hedge portfolios of the whole sample and of each financial distress tercile. If sales growth has no effect on the accrual anomaly, the correlation should be -1. The results are reported in Table 2.13.

Table 2.13: Relation between *GrowthDif* index and the returns on the hedge portfolios

Panel A: Descriptive Statistics of Growth Dif index and the return on accruals-hedge portfolio

	Mean	P25	P50	P75	SD
GrowthDif	-0.034	-0.110	-0.016	0.049	0.121
Accruals-Hedge Port	0.033***	-0.006	0.044	0.058	0.050
Corr= -0.5303***					

Panel B: Correlations between GrowthDif index and returns on accrual hedge portfolios

	High FD	Neutral FD	Low FD
ZM bankruptcy statistic	-0.6490***	-0.1604	-0.2388
Z-score	-0.5476***	-0.1500	-0.1962
S&P ratings	-0.3515*	0.0387	-0.2196

For each year, all observations are independently classified into accrual quintiles and sales growth quintiles. The spread between the return to the subsample of the lowest growth-highest accrual firms and that to the subsample of the highest growth-lowest accrual firms is regarded as *GrowthDif* index. The correlations between this index and the returns to the accruals-hedge portfolios in Table 2.12 are presented in this table.

Panel A shows statistics of *GrowthDif* index and returns on accruals-based hedge portfolio. The accruals-based hedge portfolio has significantly positive return while *GrowthDif* index has insignificant returns, which suggests that the accrual effect is not subsumed by the growth effect. In Panel B, the correlations between *GrowthDif* index and the returns on the accruals-based hedge portfolios of high financial distress terciles are economically and significantly negative, advising that sales growth has less effect on accrual anomaly for the high financial distress terciles. The correlations between *GrowthDif* index and the returns on the accruals-based hedge portfolios of neutral and low financial distress terciles are insignificant, suggesting that the effect of sales growth on accrual anomaly is stronger for the neutral and low financial distress terciles than for the high financial distress terciles. Nevertheless, the return on the *GrowthDif* index is insignificant while that on accruals-based hedge portfolio is economically and significantly positive, suggesting sales growth is not the only factor driving the anomaly.

2.4.6. Financial distress and accruals quality

Table 2.14, Panel A shows Pearson correlations between *AQ*-a measure of accruals quality and other firm fundamentals including five innate variables identified by Francis et al. (2005) and three proxies of financial distress.

Table 2.14: Financial distress and accruals quality

Panel A: Pearson correlations between *AQ* and firm fundamentals

Size	*SD (CFO)*	*SD (Sales)*	*LN (OperCycle)*	*NegEarn*	*ZM-score*	*Z-score*	*S&P*	*S&P[b]*	*S&P[c]*
0.1330 (0.000)	-0.3393 (0.000)	-0.1125 (0.000)	-0.1171 (0.000)	-0.2605 (0.000)	0.1376 (0.000)	0.0985 (0.000)	-0.1919 (0.000)	-0.0431 (0.000)	-0.166 (0.000)

S&P[b]: the subsample of investment grade-firms (S&P ratings range from AAA to BBB-)
S&P[c]: the subsample of speculative grade-firms (S&P ratings range from BB+ to D)
The significance level of correlation coefficients is presented in parentheses.

Panel B: Regressions of *AQ* on and firm fundamentals

Independent Variables	Without *FD*	*FD= ZM-score*	*FD= Z-score*	*FD=Z-score[a]*	*FD=S&P ratings*	*FD= S&P[b]*	*FD= S&P[c]*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Size	0.00187** (2.72)	0.00140** (2.25)	0.00155* (1.96)	0.00152** (2.17)	0.00125** (2.44)	0.000825 (1.43)	0.00328** (2.50)
SD(CFO)	- 0.545*** (-7.34)	-0.525*** (-7.08)	-0.530*** (-7.77)	-0.533*** (-7.19)	-0.367*** (-10.43)	-0.358*** (-9.51)	-0.357*** (-6.80)
SD(Sales)	-0.0137 (-1.61)	-0.0135 (-1.60)	-0.0126 (-1.40)	-0.0119 (-1.38)	-0.0257*** (-5.08)	-0.0280*** (-3.44)	-0.00889 (-0.74)
Ln (OperCycle)	-0.0110*** (-7.65)	-0.0103*** (-7.54)	-0.0106*** (-8.08)	-0.0104*** (-7.50)	-0.0120*** (-11.07)	-0.0132*** (-8.98)	-0.00625*** (-2.86)
NegEarn	-0.0577*** (-12.60)	-0.0610*** (-13.70)	-0.0602*** (-9.76)	-0.0616*** (-11.99)	-0.0570*** (-11.13)	-0.0490*** (-9.11)	-0.0545*** (-4.92)
FD		0.0038*** (5.22)	0.000802 (1.24)	0.00850*** (3.74)	0.000232 (1.16)	0.000878** (2.65)	-0.000598 (-0.45)
Adjusted R^2	0.265	0.269	0.268	0.268	0.218	0.204	0.137
N	15742	15742	15742	15742	8865	6666	2199

AQ= Accruals quality, measured by standard deviation of the residuals from regressions of Equation (2.8). To keep it more intuitive in regression results, *AQ* is multiplied by -1. Higher *AQ* implies higher accruals quality. *Size= LN(Total Assets)* *SD(CFO)*= Standard deviation of *CFO*, *SD(Sales)*=Standard deviation of sales. The standard deviations of these variables are calculated for five years, from year *t-4* to year *t*.
OperCycle= 360/(Sales/Average Account Receivables) + 360/(Cost of Good Sold/Average Inventory)
NegEarn: Frequency of reporting negative earnings in recent five years.
Z-score[a]: regression with ranked Z-score
S&P[b]: regression with the subsample of investment grade-firms (S&P ratings range from AAA to BBB-)
S&P[c]: regression with the subsample of speculative grade-firms (S&P ratings range from BB+ to D)
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

Panel C: Regressions of financial distress proxies on innate control variables

Independent Variables	*ZM-score*	*Z-score*	*S&P*	*S&P*[b]	*S&P*[c]
Size	0.119***	0.412***	-1.132***	-0.747***	-0.394***
	(26.40)	(18.26)	(-43.47)	(-35.24)	(-21.61)
SD(CFO)	-4.439***	-12.30***	8.996***	2.839**	2.164
	(-18.16)	(-9.08)	(6.97)	(2.36)	(1.60)
SD(Sales)	-0.142**	-1.714***	1.721***	1.679***	-0.297
	(-2.34)	(-9.17)	(6.08)	(7.49)	(-0.98)
Ln (OperCycle)	-0.209***	-0.534***	-0.496***	-0.589***	-0.0649
	(-13.26)	(-8.70)	(-11.99)	(-20.31)	(-1.09)
NegEarn	0.919***	3.430***	6.269***	4.426***	2.204***
	(24.62)	(18.64)	(32.81)	(16.76)	(15.67)
Adjusted R^2	0.133	0.111	0.481	0.277	0.266

Size= LN(Total Assets)
SD(CFO)= Standard deviation of *CFO*, *SD(Sales)*=Standard deviation of sales. The standard deviations of these variables are calculated for five years, from year *t-4* to year *t*.
OperCycle= 360/(Sales/Average Account Receivables) + 360/(Cost of Good Sold/Average Inventory)
NegEarn: Frequency of reporting negative earnings in recent five years.
S&P[b]: regression with the subsample of investment grade-firms (S&P ratings range from AAA to BBB-)
S&P[c]: regression with the subsample of speculative grade-firms (S&P ratings range from BB+ to D)
The numbers reported are time-series averages of the estimated parameters from annual cross-sectional regressions. T-statistics are based on the time-series standard errors of the estimated coefficients and presented in parentheses. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. Adjusted R^2s are time-series averages of the adjusted R^2s from annual-sectional regressions.

In line with Dechow &Dichev (2002), accruals quality is positively associated with firm size; negatively correlated with volatility of cash flows, volatility of sales, length of operating cycle and frequency of reporting negative earnings. Accruals quality is positively correlated with ZM-score and Z-score, implying that a firm with greater level of financial distress has higher accruals quality. However, the negative correlation between accruals quality and S&P ratings is questionable. The difference in the correlations of S&P ratings and other financial distress proxies with accruals quality might be due to the peculiarities of ratings. S&P ratings and accruals quality are affected by the same business factors of the firm. For instance, firms with higher sales volatility possibly have higher bankruptcy risk and lower accruals quality. This might lead to the negative relation between accruals quality and S&P ratings in Panel A. We

come back this issue after considering the results from Fama-MacBeth regressions of *AQ* on five innate control variables and financial distress proxies in Panel B.

Column (1) Panel B replicates the results of Dechow &Dichev (2002) with five innate variables identified by Francis et al. (2005). Consistent with Dechow &Dichev (2002), accruals quality is positively associated with firm size, and negatively correlated with volatility of cash flows, length of operating cycle, frequency of reporting negative earnings. The relationship between accruals quality and volatility of sales is marginally negative. Column (2), (3) or (5) includes one of our financial distress proxies in the regression. Accruals quality is positively correlated with ZM-score but insignificantly associated with Z-score and S&P ratings. When Z-score is replaced with its ranks as in column (4), the coefficient becomes significantly positive, implying that accruals quality is positively correlated with Z-score. From an unreported regression, we get similar negative coefficient of Z-score if we exclude the 1st Z-score percentile. Thus, the insignificance of Z-score's coefficient in (3) can be attributed to the effect of the lowest outliers in Z-score[5].

As a downgrade to speculative-grade could be costly for firms to access capital (Alissa, Bonsall, Koharki, & Penn, 2013), there might be differences in earnings managerial behavior of firms in speculative- and investment-grades. Therefore, we divide our sample into two subsamples- investment grade-stocks (with their ratings from AAA to BBB-) and speculative grade-stocks (with their ratings from BB+ to D). The former includes 6666 observations while the latter has 2199 observations. The correlation between accruals quality and S&P ratings in the investment- grade subsample is -0.0431 while that in the speculative-grade subsample is -0.166. In columns (6) and (7), Panel B we rerun the regressions for the two subsamples to further

[5] As mentioned in the data selection, Z-score is multiplied by -1 in this study.

examine the impact of ratings on accruals quality. The coefficient of S&P ratings becomes significantly positive [6] for investment grade-stocks, which is in conflict with the negative correlation between *AQ* and S&P ratings in Panel A.

As mentioned earlier, the negative correlation between *AQ* and S&P ratings might arise from the dependence of S&P ratings on the innate control variables. We regress the three financial distress proxies on the innate control variables and report the results in Panel C. R-squares of the three regressions assert our suggestion that S&P ratings are much more explained by the innate control variables in comparison with other financial distress proxies. Thus, the dependence of both S&P ratings and *AQ* on the innate control variables interprets the negative correlation between S&P ratings and *AQ* in Panel A. Nevertheless, the association becomes significantly positive in column (6) Panel B. For speculation grade-stocks, the influence is insignificant as reported in column (7) Panel B. This can be attributed to the difference in the monitoring roles of creditors and ratings agencies over the earnings management behavior of borrowing firms. While the creditors scrutinize firms' financial reports, ratings agencies assume financial statements to be reasonable and accurate (Alissa et al., 2013). On one hand, firms pay strong attention to their credit ratings and thus might inflate earnings if their ratings deviate from their expectation (Alissa et al., 2013). On the other hand, financially distressed firms like those in the speculative-grade are carefully monitored by their creditors and thus unlikely to inflate their earnings. The conflicting influences of creditors and ratings agencies on the earning management behaviors of speculative-grade firms might result in the insignificance of S&P ratings' coefficient in (7).

[6] The small value of S&P ratings' coefficient is due to the measurement of this variable. It ranges from 1 to 22.

In summary, except for speculative-grade firms, the results from Table 2.14 support our third hypothesis that firms with high financial distress risk have higher accruals quality than those with low financial distress risk.

2.6.Conclusions

We find that firms with low financial distress have larger difference between the persistence of cash flows and accruals than firms with high financial distress. Consequently, accrual anomaly is concentrated in the subsample of firms with low financial distress, but is not present in the subsample with high financial distress. Put differently, accrual anomaly is not pervasive but limited to the stocks with low financial distress probability**.** Finally, we find that firms with high financial distress have higher accruals quality than those with low financial distress. All these finding not only emphasize the responsibility of intentional managerial manipulation in differential persistence and accrual anomaly, but also highlight the monitoring role of creditors over accrual managerial behaviors in borrowing firms.

CHAPTER 3: FINANCIAL DISTRESS AND ACCRUAL ANOMALY: EVIDENCE FROM THE VIETNAMESE STOCK MARKET *

* This chapter is a revised and expanded version of a paper entitled "Financial Distress and Accrual Anomaly: Evidence from the Vietnamese stock market" presented at the the International French Finance Conference (AFFI) Aix-en-Provence in May 2014 and the 12th INFINITI Conference on International Finance, Prato, Italy in June 2014.

3.1. Introduction

The less persistence of accruals relative to cash flows in predicting future earnings and the accruals mispricing were found by Sloan (1996) and have been widely discussed among researchers. Subsequent literature extended Sloan (1996)'s work by providing clearer explanations for the differential persistence of accruals (see Dechow & Dichev, 2002; Schipper & Vincent, 2003; Richardson et al., 2005; 2006; Allen et al., 2013) or identifying driving factors for the anomaly (see Pincus et al., 2007).

The lower persistence of accruals stems from accrual measurement errors (Xie, 2001; Dechow & Dichev, 2002; Richardson et al., 2005; 2006; Allen et al., 2013), which could arise from both aggressive and conservative accounting policies (Richardson et al., 2005). However, there are differences in accrual managerial behaviors associated with these two kinds of accounting policy, resulting in different magnitudes of accrual measurement errors. While aggressive accounting is likely to produce large measurement errors and thus lead to reversals in future earnings (see Sloan, 1996; Richardson et al., 2006; Allen et al., 2013), conservative accounting tends to make negative periodic accruals and understate cumulative accruals, which offset managerial bias (Watts, 2003a; 2003b). This means that the lower persistence of accruals is more likely to happen in the aggressive accounting policy. Put differently, there should be differences in the magnitude of earnings persistence and accrual anomaly between firms practicing either aggressive or conservative accounting[7].

[7] Richardson et al. (2005) indicate that one of their limitations is not to address errors arising from strategic managerial reaction or conservative accounting.

Since accounting choices may influence the magnitude of accrual anomaly, it is necessary to examine managerial incentives of accounting method choices when identifying the driving factors for the accrual anomaly. One of the underlying factors widely debated is financial distress-an indicator of the relationship between creditors and firms. However, with different measures of financial distress, prior literature provides mixed results about the impact of financial distress on managerial incentives. DeFond &Jiambalvo (1994); Sweeney (1994); Rosner (2003) examine a sample of firms violating covenants or filing bankruptcy and find that their managers are likely to employ discretionary accruals to inflate reported earnings in the period prior to the violation or bankruptcy. By contrast, DeAngelo et al. (1994) examine a sample of firms in financial distress with persistent losses and dividend reductions and find large negative accruals in the dividend reduction and subsequent three years for firms with and without covenants, suggesting that distressed firms have incentives to practice conservative accounting[8]. DeAngelo et al. (1994) explain that choosing conservative accounting practices signals private lenders that the managers of troubled firms are willing to face up to the firm's problem, helping them to renegotiate the debt contracts at a critical time. This explanation is in line with the arguments by Diamond (1984) and Chemmanur and Fulghieri (1994) on the banks' monitoring role over borrowers' managerial behaviors. In addition, several other papers focus on conditional accounting conservatism of financially distressed firms and find that distressed firms are likely to exercise conservative accounting, consisting with the Watts (2003a, 2003b)'s argument that debt-holders require timely recognition of performance and net asset values (see Pae, 2007; Zhang, 2008; Wen-Hsin Hsu et al., 2011).

[8] These findings are in contrast to those in the foregoing papers due to the fact that violations and financial distress are different cases (DeFond and Jiambalvo,1994). DeFond and Jiambalvo (1994) also find that firms with going concern qualifications-an indicator of financial distress are likely to have negative accruals.

From the foregoing, we conclude that in general financial distress provides managers with incentives to exercise conservative accounting, especially when the firm relies on bank loans and wants to borrow repeatedly. Hence, there should be differences between accounting choices of firms with low and high financial distress. This means that the magnitude of persistence difference and the mispricing of accruals in these two subsets of firms should not be similar.

Using a conventional measure of financial distress-Ohlson's O-score, and two alternative proxies-leverage and Altman (2005)'s Z''-score, we find that the difference between the persistence of accruals and cash flows in the subsample of firms with low financial distress is significantly larger than the difference in the subsample of firms with high financial distress. Accordingly, accrual anomaly is concentrated in the former, but does not appear in the latter. These findings assert that there are differences in accruals discretionary managerial behaviors of these two kinds of firms and banks' monitoring prevents managers of distressed firms from inflating earnings. An additional test indicates that firms with high financial distress tend to practice more conservative accounting than those with low financial distress.

We also provide evidence that the accrual anomaly subsumes the stock issuance anomaly, which results from a combination of over-investment and aggressive accounting choice in the subsample of firms with low financial distress.

We contribute in literature by providing linkages among three widely debated topics: financial distress, accounting choices and accrual anomaly. Accordingly, we suggest that financial distress should be incorporated in models estimating discretionary accruals[9].

[9]Jelinek (2007) also suggests that researchers should control for the impact of financial distress when estimating abnormal accruals.

The structure of this paper is as follows: Section 3.2 gives a brief review about the prior studies on accrual anomaly, accounting choices and financial distress; Section 3.3 introduces methodology; Section 3.4 illustrates an overview of the Vietnamese context and data selection; Section 3.5 provides empirical results and the last section concludes some findings.

3.2.Literature review

3.2.1. Accrual anomaly and accounting choices

Sloan (1996) documents that the accrual component of earnings is more subject to distortion than its cash flow alternative. The accruals reflect estimates of future cash flows, deferrals of past cash flows, allocation and valuations, all of which involve greater degrees of subjectivity than the components of cash flows. Hence, an unusually high or low accrual component might lead to a lower persistence of earnings. Normally, investors do not understand this difference, and thereby overvalue stocks with high accruals and undervalue those with low accruals (regarded as *fixation hypothesis in* Sloan, 1996). Subsequent literature provides clearer explanations for the lower persistence of accruals relative to that of cash flows. Dechow and Dichev (2002) argue that accruals incorporate estimates and must be corrected in future accruals and earnings if these estimates are inaccurate. These estimation errors and the subsequent corrections are noises that reduce the quality of accruals and lessen earnings persistence. Richardson et al. (2005) introduce a model that links reliability and earnings persistence. They argue that less reliable accrual estimates bring about measurement errors, resulting in less persistence in the earnings. In a similar study, Richardson et al. (2006) provide evidence confirming the role of temporary accounting distortions -which arise from accrual estimation errors- in explanation of the lower persistence of accruals. Consistent with Dechow and Dichev (2002)'s argument, Allen et al.

(2013) find that extreme accrual reversals simultaneously explain both the lower persistence of accruals and the predictable stock returns following extreme accruals.

The estimation errors in accruals may be an inherent phenomenon of the accrual accounting or a result of earnings management (Dechow and Dichev, 2002; Schipper and Vincent, 2003; Richardson et al., 2005, 2006). As an inherent accounting phenomenon, the errors can arise from both accounting choices such as aggressive or conservative accounting (Richardson et al., 2005). Prior literature argues that the errors from the aggressive accounting are responsible for the lower persistence of the accruals. For instance, Sloan (1996) posits the low persistence of high earnings performance that is attributable to the accrual component. A company with a high level of reported income and low cash flows (i.e. large accruals) is highly suspicious because this might be the outcome when the management pushes income recognition and postpones expense recognition. The evidence on the positive relation between accruals and SEC enforcement actions in Richardson et al. (2006) is also in line with the presence of aggressive distortions in accruals. They indicate that firms that are subject to SEC enforcement actions have abnormally high accruals at the time of the alleged earnings manipulations and unusually low accruals following the alleged earnings manipulations. Allen et al. (2013) show that the lower persistence of the accrual component is driven by the reversals of measurement errors in extreme accruals. Furthermore, extreme reversals from high accruals to low accruals are more frequent than extreme reversals from low accruals to high accruals, suggesting that it is more likely for extreme positive accruals to overstate future benefits than it is for extreme negative accruals to overstate future obligations. Particularly, they document that over 10 percent of extreme positive inventory accruals are written down in the subsequent period, reflecting management's reluctance to take timely inventory write-downs. To summarize, the measurement

errors in large positive accruals arising from aggressive accounting can explain the lower persistence of the accrual component in earnings. On the other hand, the errors arising from conservative accounting are less likely to explain the lower persistence of accruals because conservative accounting that asymmetrically treats losses versus gains tends to produce negative periodic accruals and understate cumulative accruals (Watts, 2003b). Put differently, aggressive and conservative accounting policies are two different types of managerial choices, which are acceptable within accounting standards but influence accruals and earnings in opposite directions. Thus, there should be differences in the magnitude of accrual anomaly between two subsets of firms choosing either aggressive or conservative accounting.

3.2.2. Financial distress and accounting choices

As mentioned earlier, accounting choices may influence the magnitude of accrual anomaly. Thus, it is necessary to examine managerial incentives of accounting method choices when identifying the driving factors for the accrual anomaly. One of the underlying factors widely debated is financial distress-an indicator of the relationship between creditors and firms. However, with different measures of financial distress, prior literature provides mixed results about the impact of financial distress on managerial incentives.

Using debt covenant violation or bankruptcy as proxies for financial distress, one strand of studies reports that financial distress provides managers with incentives to employ income-increasing accounting choices. For instance, Watts and Zimmerman (1990) argue that since debt covenants are normally written in terms of accounting numbers and violation of them is costly, firms that are close to violations are likely to inflate earnings to reduce the likelihood of default. DeFond and Jiambalvo (1994) investigate abnormal accruals of the sample firms known to have violated debt covenants and find positive earnings manipulation in the year prior to violation and

in the year of violation after controlling for going concern qualifications and management changes. Sweeney (1994) indicates that managers of firms approaching violations are more likely to choose earnings-increasing accounting changes than comparable firms. Examining a sample of bankrupt firms, Rosner (2003) finds that the firms that do not appear distressed exercise income-increasing earnings management in non-going-concern years.

On the other hand, with other proxies such as losses, dividend reductions, leverage, Z-score, another strand of studies documents that financial distress induces managers to practice more conservative accounting. For instance, DeAngelo et al. (1994) examine a sample of distressed firms with persistent losses and dividend reductions. They find large negative accruals in the dividend reduction and subsequent three years for firms with and without covenants. These findings suggest that financial distress provides firm managers with incentives to practice conservative accounting. DeAngelo et al. (1994) explain that managers of troubled firms who lose credibility with private lenders have incentives to choose income-decreasing accounting practices to signal the lenders that they are willing to face up to the firm's problem. Several papers find similar results to those in DeAngelo et al. (1994). Jelinek (2007) shows that firms with leverage increases have lower accruals than those with consistently high leverage, suggesting that increased leverage is associated with a reduction in earnings management. Specifically, using the Zmijewski (1984) bankruptcy statistic as a proxy of financial distress, she finds a significant negative correlation between this variable and accruals, implying that financial distress induces firm to reduce accruals. Ghosh and Moon (2010) examine the influence of debt on managerial incentives and report a non-linear relationship between debt and earnings quality. They find a positive relation between leverage and earnings quality, suggesting that accruals are less prone to managerial manipulations as leverage increases. These findings are consistent with

the hypothesis about the monitoring role of lenders over the earnings quality. As private lenders demand higher quality information to evaluate the continued creditworthiness of borrowers, their increased monitoring results in higher earnings quality. However, once debt is high, the authors find a negative association between debt and earnings quality, suggesting that managers use accruals aggressively to inflate earnings. Since earnings quality is measured as the estimation errors of accruals that are not mapped into future cash flows, it depends on the accounting choices over discretionary accruals.

The evidence that financial distress influences managerial behaviors over discretionary accruals is also in line with the positive association between financial distress and the magnitude of accounting conservatism. Pae (2007) documents that firms with high leverage exercise more conservative accounting than those with low leverage. Zhang (2008) shows positive association between the level of conservatism and debt covenant violations; and negative association between level of conservatism and interest rate. He argues that conservatism benefits lenders through timely signaling of default risk and benefits borrowers through lower interest rates. Wen-Hsin Hsu et al. (2011) find positive association between financial distress and the level of conditional accounting conservatism. These findings confirm the monitoring role of private lenders or banks over the managerial behaviors of borrowers. Having cost advantage in collecting information on borrowers, banks work as delegated monitors (Diamond, 1984). In addition, banks have a desire to acquire reputation for making right decision of whether to liquidate the borrower or to renegotiate its debt when the firm in financial distress, and thus they devote more resources than bondholders toward the evaluations of such decision (Chemmanur and Fulghieri, 1994).

In summary, extant evidence indicates that financial distress provides managers with incentives to exercise conservative accounting, especially when the firm relies on bank loans and wants to borrow repeatedly. However, in some special cases, when the cost of covenant violations is high, firms that are close to violations are likely to practice aggressive accounting to inflate reported earning to avoid violations. This is the case when a firm heavily relies on public debt because bondholders tend to count on covenant restrictions and raise the tightness as debt increases to mitigate agency conflicts (Berlin, 1987; Ghosh & Moon, 2010).

As financial distress provides managers with incentives to exercise conservative accounting, we expect different accounting choices between firms with low and high financial distress risk. Consequently we expect different magnitude of differential persistence and accruals mispricing in these two subsets of firms. To our understanding, only Avramov et al. (2013) discuss the relation between accrual anomaly and financial distress. They examine the influence of financial distress on the profitability of anomaly-based trading strategies and find that the accruals-based strategies have significant profits across all credit groups, while the profitability of other strategies is concentrated in the worst-rated stocks. Nevertheless, the findings do not directly infer the accounting choices of firms with different levels of financial distress.

In this study, we establish linkages among the three topics in accounting and finance: financial distress, accounting choices and accrual anomaly. We employ Ohlson O-score and two alternative proxies -Altman Z''-score and leverage (liabilities to total assets ratio) for distress risk. As mentioned later on, we find that firms with high financial distress issue a larger amount of new debt relative to stock. This ability to issue debt and equity suggest that perhaps firms classified as highly financially distressed in our sample are not actually in serious financial distress but in economic distress. In other words, they are not highly distressed ones like those

close to covenant violations in prior literature. Furthermore, bank loans are the main source of debt for almost all of firms in our sample. In Vietnam, banks establish borrowers' credit ratings based on their accounting statements to avoid adverse selection and supervise borrowers' managerial behaviors. From the above analysis, we expect the monitoring imposed by banks induces financially distressed firms to employ conservative accounting. This leads to the differences in the magnitude of accrual anomaly between firms with low and high financial distress. We hypothesize that:

H1: Firms with low financial distress have a larger difference between the persistence of accruals and cash flows than firms with high financial distress.

H2: Firms with low financial distress have higher accrual anomaly than firms with high financial distress.

3.3.Methodology

3.3.1. Measurement of total accruals

Sloan (1996) measures accruals as change in non-cash working capital less depreciation expense, in which accounts receivable, inventory and depreciation are subject to high distortion. Nevertheless, Richardson et al. (2005) indicate that the Sloan (1996)'s measure omits accruals and deferrals deriving from non-current net operating assets and non-cash net financial assets. Alternatively, they provide a comprehensive measure of accruals. We follow Richardson et al. (2005) to measure accruals (TACC) as a sum of change in non-cash working capital (DWC), change in net non-current operating assets (DNCO) and change in net financial assets (DFIN) (see Table 3.1 for the detailed measurements of TACC and the three components). TACC and its all components are deflated by the beginning total assets.

As argued by Richardson et al. (2005), important components of DWC is changes in accounts receivable, inventory, which are related to subjective estimations of the loss of bad receivables, the devaluation of inventory. Thus, we expect low reliability in measuring DWC. Similarly, DNCO is expected to have low reliability as it is related to high subjectivity in determining the depreciation/amortization method, the useful life and the salvage value of the PP&E and intangibles. Depart from Richardson et al. (2005), DFIN is expected to have low reliability. DFIN includes changes in short-term financial, in long-term financial investments and in long-term receivables, which are involved in subjective estimations for the loss of financial assets and bad receivables. In Vietnam, for short-term investments in unlisted securities without observable prices, provisions for the loss of financial assets are not required. Additionally, provisions for the long-term investments are estimated based on the book value of invested securities, indicating a considerable measurement errors[10].

Following Richardson et al.(2005) we define cash flows (CF) as the difference between ROA (income deflated by the beginning total assets) and total accruals (TACC). CF can be divided into two components: change in cash balance (DCASH) and net distribution to equity holders (DISTE). Dechow, Richardson, and Sloan (2008) also provide another measurement of total accruals (ACC), which is the difference between change in non-cash assets and change in non-debt liabilities. In this case, the cash flows (FCF) compose of three components: DCASH, DISTE and DISTD (net distribution to debt holders, the negative value of DFINL in our measurement of TACC). This means that the difference between our measure of total accruals (TACC) and that (ACC) of Dechow et al. (2008) is DFINL. We will use ACC for a robustness check.

[10] Refer to Circular 228/2009/TT-BTC providing guidelines for the usage of provisions for devaluation of inventories, loss of financial investments and bad receivables.

3.3.2. The lower persistence of accruals in comparison with cash flows

Sloan (1996) uses equation (3.1) to estimate the average persistence of each component of current earnings:

$$ROA_{t+1} = \gamma_0 + \gamma_C CF_t + \gamma_A TACC_t + \omega_{t+1} \quad (3.1)$$

The difference between the persistence of cash flows and accruals in predicting future earnings means that $(\gamma_A - \gamma_C)$ is expected to be negative. In our sample, TACC and CF have a highly negative correlation of -0.88, thus combining them in one regression equation might lead to misleading inferences due to the multicollinearity problem. As *CF= ROA -TACC*, following Richardson *et al.* (2005), we modify equation (3.1) by replacing CF with ROA. We also add year dummies (D_t) and industry dummy variables (IN_j) to control for time effects and industry effects. Thus, equation (3.1) is modified to equation (3.2):

$$ROA_{t+1} = \rho_0 + \gamma_t D_t + \lambda_j IN_j + \rho_1 ROA_t + \rho_2 TACC_t + \omega_{t+1} \quad (3.2)$$

where $\rho_1 = \gamma_C$ and $\rho_2 = \gamma_A - \gamma_C$ is expected to be negative. TACC can be decomposed into three accrual categories, thus equation (3.2) can be rewritten as below:

$$ROA_{t+1} = \rho_0 + \gamma_t D_t + \lambda_j IN_j + \rho_1 ROA_t + \rho_2 DWC_t + \rho_3 DNCO_t + \rho_4 DFIN + \omega_{t+1} \quad (3.3)$$

where ρ_2, ρ_3, ρ_4 are expected to be negative.

3.3.3. Financial distress and differential persistence, accrual anomaly

We use Ohlson's (1980) O-score as a measure of financial distress and compute O-score as described in footnote 5 of Griffin and Lemmon (2002) as follows.

$$O= -1.32-0.407X1+6.03X2-1.43X3+0.076X4-1.72X5-2.37X6-1.83X7+0.285X8-0.521X9 \quad (3.4)$$

where X1=log(total assets); X2= total liabilities/total assets; X3=working capital/total assets; X4= current liabilities/current assets; X5= 1 if total liabilities > total assets, 0 if otherwise; X6= net income/total assets; X7= cash flows from operating activities/total liabilities; X8=1 if a net loss for the two last years, 0 otherwise; $X9 = \left(\frac{NetIncome_t - NetIncome_{t-1}}{|NetIncome_t| + |NetIncome_{t-1}|} \right)$

We also use two alternative proxies- leverage and Altman (2005)' Z''-score for robustness checks. We compute leverage as total liabilities divided by total equity and use the median to divide the observations into two groups. We calculate Z''-score[11] as described in Altman (2005) as follows:

$$Z'' = 6.56* Y1 + 3.26*Y2 + 6.72*Y3 + 1.05*Y4 \quad (3.5)$$

where Y1= working capital/total assets; Y2= retained earnings/total assets; Y3= operating income/total assets = (net operating profit + interest expense)/total assets; Y4= book value of equity/total liabilities

We use the median of O-score/leverage as a breakpoint to partition our sample into two subsamples of firms with low and high financial distress risk. In the case of Z''-score, we use 2.6 as a breakpoint[12]to divide the sample into such two groups. ID is equal to 1 if the observation belongs to the subsample of high financial distress risk and 0 otherwise.

Thus, equations (3.2) and (3.3) are modified to (3.2') and (3.3'). H1 means that β_2 in (3.2'), β_2, β_3, β_4 in (3.3') are expected to be positive.

[11]A constant term of 3.25 is included in this equation in Altman (2005). However, this constant term is removed in practice (see a presentation by Altman in http://people.stern.nyu.edu/ealtman/zscorepresentation.pdf).

[12] In Altman (2005), 5.85 is used as a breakpoint to divide firms into "Safe" zone and the remaining "Grey" and "Distress" zones. Without the constant term of 3.25 in (3.5), the breakpoint of 2.6 is used instead.

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + \gamma_t D_t + \lambda_j IN_j + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) TACC_t \quad (3.2')$$

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + \gamma_t D_t + \lambda_j IN_j + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) DWC_t + (\alpha_3 + \beta_3 ID) DNCO_t + (\alpha_4 + \beta_4 ID) DFIN_t \quad (3.3')$$

Equations (3.2), (3.3), (3.2') and (3.3') are dynamic panel-data models with a one-lagged dependent variable in their right-hand side. Additionally, our data have "small T and large N" (the period of each firm varies from one to five years). Roodman (2009) points out that the potential correlation between the lagged variable and the past or posibly current realizations of the error should be concerned in such models with "small T and large N". Particularly, the conventional OLS will bias the estimate of the lagged variable's coefficient upwards, while the fixed effect regression biases it downwards. To overcome the endogeneity problem, we employ a two-step system GMM estimator with Windmeijer corrected standard errors to estimate the coefficients of the dynamic equations. We treat all dummies as exogenous, others as endogenous and use lag-limits as instruments. These instruments are also collapsed for robustness checks. As recommended by Roodman (2009), orthogonal deviations are used to maximize sample size.

3.3.4. Mispricing of accruals

If investors recognize the lower persistence of accruals, there should be no significant relationship between accruals and future abnormal returns. If they do not, there will be a negative relation between accruals and future abnormal returns (Sloan, 1996; Richardson et al., 2005). Sloan (1996) employs Mishkin Test to investigate whether stock prices fully reflect the differential persistence of the two components of current earnings. In our sample, TACC and CF have a highly negative correlation, thus combining them in one regression equation like that in Mishkin Test might lead to misleading inferences due to the multi-collinearity problem. Thus, we follow Richardson et al. (2005) to employ a linear regression replacing CF with ROA, which has lower correlation with TACC. We calculate abnormal returns as the annual market index-

adjusted buy-hold stock returns. We add three control variables- MV (logarithm of market capitalization), BTMV (book-to-market ratio) and ETP (earnings-to-price ratio) in the abnormal return regressions. Finally, the mean value of one-year ahead-abnormal returns in the period prior to 2009 is 20.3 percent (t-statistics = 6.71), while the corresponding value in the remaining period is -10 percent (t-statistics= -5.33), suggesting that the two periods correspond to the growing and the recession phases of the stock market. We use a dummy D to control for the two states of the stock market. D is equal to 0 if the firm-year belongs to the period prior to 2009 and 1 otherwise. Similarly, industry dummy variables IN_j are also added to control for industry effects. Thus, the conventional hypothesis on the accrual anomaly can be tested through the following equations:

$$ARE_{t+1} = \rho_0 + \gamma D + \lambda_i IN_i + \rho_1 ROA_t + \rho_2 TACC_t + \phi_1 BTMV + \phi_2 MV + \phi_3 ETP \quad (3.6)$$

$$ARE_{t+1} = \rho_0 + \gamma D + \lambda_i IN_i + \rho_1 ROA_t + \rho_2 DWC_t + \rho_3 DNCO_t + \rho_4 DFIN_t + \phi_1 BTMV + \phi_2 MV + \phi_3 ETP \quad (3.7)$$

where ρ_2 in (3.6) and ρ_2, ρ_3, ρ_4 in (3.7) are expected to be negative.

We use a dummy ID to classify our observations into two subsamples of firms with low and high financial distress risk. Thus, equations (3.6) and (3.7) are modified to equations (3.6') and (3.7'). H2 means that β_2 in (3.6') and β_2, β_3, β_4 in (3.7') are expected to be positive.

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) TACC_t + (\phi_1 + \kappa_1 ID) BTMV_t + (\phi_2 + \kappa_2 ID) MV_t + (\phi_3 + \kappa_3 ID) ETP_t \quad (3.6')$$

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) DWC_t + (\alpha_3 + \beta_3 ID) DNCO_t + (\alpha_4 + \beta_4 ID) DFIN_t + (\phi_1 + \kappa_1 ID) BTMV_t + (\phi_2 + \kappa_2 ID) MV_t + (\phi_3 + \kappa_3 ID) ETP_t \quad (3.7')$$

3.4.Overview of the Vietnamese context and data

3.4.1. Overview of the Vietnamese context

Vietnam is identified as an ideal context for the study of aggressive accounting because of its incomplete accounting system and unique features of corporate governance. Indeed, the accounting system consists of three legal frameworks: the Accounting Law, Vietnamese Accounting Standards (VAS), and the associated guidance circulars. While the Accounting Law prescribes general principles, organizational structure and profession of accounting, VAS and the guidance circulars provide detailed guidance of accounting practices. Although the two latter sources of accounting regulations are generally based on such international standards as IAS with some modifications to reflect the local accounting environment, they have a fatal flaw, which is the absence of treatment for impairment loss. Indeed, IAS requires fixed assets to be revalued at the financial year-end to ensure that these assets are not carried at more than their recoverable amount. However, there is no equivalent requirement in VAS. This absence can facilitate managers' aggressive choices; thus, distort book values of such long-term assets as property, plant and equipment. Specially, property values in Vietnam could have been boosted by the recent real estate bubble, and then reported at high purchase prices afterwards.

Along with the above fatal flaw, the weak enforcement of standards requiring the record of devaluation of inventories, bad receivables and loss of financial investments could result in aggressive distortions in the book values of these assets. According to VAS 02, for instance, when the net realizable value of an inventory item is lower than its historical cost, a provision equal to the difference between these two values should be credited in cost of goods sold. However, this standard does not refer the method for determining net realizable value and thus does not lead to the record of provisions in practice. To provide clearer guidance and to enforce

the record of those provisions, Circular 13 (13/2006/TT-BTC), Circular 228 (No. 228/2009/TT-BTC) and then Circular 89 (No. 89/2013/TT-BTC) were in succession promulgated. Unfortunately, few firms implemented the principle of recording provisions in practice. Several serious cases of not recording the provisions were detected by auditors. For instance, as required by the auditors, Tien Len Steel Corporation (TLH) had to record a large value of provision for loss of its financial investment and adjust its audited net income decreasing 30 percent relative to the pre-auditing income in 2010. Another example is the case of Development Investment Construction Corporation (DIG). For the year of 2012, DIG did not record provision for its overdue receivables worth USD 6.2 million [13] and thus received auditors' qualified opinion with an exception for the bad receivables. According to Mrs. Ha Thi Ngoc Ha-Deputy Director of Accounting and Audit Department, Ministry of Finance, most listed firms do not record provisions for devaluation of inventories and bad receivables[14]. In our sample, in the period prior to the issuance of Circular 228, 42.1 percent of firm-years records provisions for accounts receivable and inventories, while 33.5 percent of firm-years- record provisions for these assets. After the issuance of Circular 228, the numbers increased but were still modest. In particular, 67.7 percent of firm-years have provisions for working capital and 55.2 percent of firm-years book provisions for financial assets. These numbers suggest the pervasiveness of firms not recording sufficiently provisions for devaluing inventories, bad receivables and financial investment in Vietnam.

Rationales for this phenomenon could be the weak investor protection and the poor information disclosure of listed firms. Hung (2000) documents that stronger outside shareholder

[13] According to Vietnam News "Construction company warned over auditing" on 26 June 2013 (Retrieved from http://vietnamnews.vn/economy/241252/construction-company-warned-over-auditing.html)

[14]According to Hoang Loc, "Doanh nghiep niem yet kem minh bach" ("Poor disclosure of listed firms"), VN Express News on 11 December 2012 (retrieved from http://kinhdoanh.vnexpress.net/tin-tuc/chung-khoan/doanh-nghiep-niem-yet-kem-minh-bach-2740080.html

rights and their more rigorous enforcement could eliminate the ability of managers to manipulate earnings. A report on the country's corporate governance by the World Bank states that the index of investor protection in Vietnam is rather low relative to the East Asia & Pacific region-average[15]. Disclosure is primary related to the framework of corporate governance. Under a code law system, the governing board of a firm consists of a wide range of stakeholders including creditors, employees, suppliers, customers and shareholders. Hence, inside information in code law countries is wider diffused than in common law countries (Pincus et al., 2007). Vietnam has a code law legal system but its governance structure is a hybrid between the one-tier board model in the common law countries and the two-tier board model in the code law countries (Hai and Nunoi, 2008). It consists of shareholders' meeting, board of management (BOM), CEO and supervisory board. Like the board of directors in common law countries, the board of management (BOM) elected from the shareholders' meeting plays an important role in the corporate governance in the shareholding companies. The supervisory board is selected by the shareholders' meeting and distinct from board of management. Its duties are to oversee the financial condition of companies and to monitor company compliance with rules and regulations. However, in practice it normally consists of shareholders, who are also employees. The dependence of supervisory members on the firm raises a concern over the quality of disclosed information (Hai and Nunoi, 2008). In a nutshell, due to the poor corporate governance and the shortcoming of VAS, aggressive accounting appears to be pervasive in listed firms.

Furthermore, Vietnam has an immature bond market, and thus bank loans are a main source for debt financing of most local firms. To control credit risk, many banks have developed their

[15] The Strength of investor protection index of Vietnam is 3 whereas the average of the East Asia & Pacific region is 5.4. See Vietnam - Report on the Observance of Standards and Codes (ROSC): corporate governance country assessment, 2013, retrieved from http://documents.worldbank.org/curated/en/2013/08/19692713/vietnam-report-observance-standards-codes-rosc-corporate-governance-country-assessment

own internal corporate credit rating system, which uses financial statements as an important source of input information. They also employ financial professionals to thoroughly understand financial information of borrowing firms and monitor their compliance with accounting standards. Accordingly, the monitoring role of banks are expected to prevent borrowing firms from exploiting aggressive accounting.

3.4.2. Data

Data selection

Although Vietnam has two exchanges- the Hochiminh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX), our study focuses on the HOSE, which accounts for 88 percent of the total market capitalization[16]. The data on financial statements from 2005 to 2011 was supplied by iTrade corporation- a data provider of the Vietnamese stock market. We exclude the observations of financial firms because of their peculiarities in accrual process and those which do not have a fiscal year-end of December 31. Since we use the beginning total assets to deflate the variables and use one-year-ahead earnings and abnormal returns as dependent variables, the observations of 2005 and 2011 are lost from the sample. Furthermore, the observations that have insufficient data for the calculation of total accruals, one-year-ahead earnings, abnormal returns, financial distress are also removed.

Sloan (1996) and Richardson et al. (2005) measure earnings as income from continuing operation as it is not affected by non-recurring components of net income. According to Vietnam Accounting Standards (VAS), the net operating income composes of income from continuing operation and financial income net of financial expenses. Hence, we use net operating income as

[16] As of December 2012, the market capitalization of the HOSE is around 650,000 billion VND (http://www.hsx.vn), while that of the HNX is about 82,000 billion VND (http://www.hnx.vn).

it includes financial income net of financial expenses, which might arise from adjustments of provisions for devaluating financial assets.

Sloan (1996) measures future annual stock buy-hold returns for the period of one year beginning four months after the end of the fiscal year-end to ensure that all relevant information is reflected in the stock returns. According to the Regulation No. 38/2007/TT-BTC regulating the information disclosure in the stock market, the deadline of filling annual financial statements is 100 days from the fiscal year-end. Additionally, there are long holidays from the end of April to the begining of May in Vietnam. To ensure that the publicly accounting information is incorporated in stock returns and to avoid the holiday effect in stock prices, we measure stock returns from around 21 April to 20 April of the subsequent year.

To compute the three control variables (MV-logarithm of market capitalization, BTMV-book-to-market ratio and ETP-earnings-to-price ratio), we collect data of equity, number of outstanding stocks from the first-quarter-financial statements, data of net income from the previous- year-annual reports and market stock prices at around April 20. Finally, our sample includes 711 firm-year observations with the number of firms ranging from 68 in 2006 to 237 in 2010 and the period of each firm varies from one to five years.

Descriptive statistics

Table 3.1: Means of key variables for each subsample classified by financial distress risk

	Whole sample	Low O-score	High O-score	Low LEV	High LEV	Z''>2.6	Z''<=2.6
CF	-0.015	-0.011	-0.019	-0.039	0.008	-0.024	0.002
TACC	0.143	0.187	0.100	0.203	0.083	0.187	0.055
DWC	0.107	0.073	0.142	0.089	0.125	0.122	0.077
DCOA	0.135	0.088	0.183	0.098	0.173	0.139	0.128
DCOL	0.028	0.015	0.041	0.009	0.048	0.017	0.050
DNCO	0.089	0.081	0.096	0.078	0.100	0.076	0.116
DNCOA	0.091	0.081	0.100	0.078	0.104	0.076	0.121
DNCOL	0.002	0.0004	0.003	0.0002	0.004	0.0004	0.005
DFIN	-0.053	0.033	-0.139	0.036	-0.142	-0.011	-0.138
DFINA	0.052	0.076	0.028	0.073	0.031	0.064	0.029
DFINL	0.105	0.043	0.167	0.037	0.174	0.075	0.167
CASH_OP	0.058	0.152	-0.036	0.091	0.026	0.073	0.028
DSALES	0.290	0.219	0.362	0.230	0.351	0.277	0.316

CF = Cash flows = ROA-TACC; ROA= Net Operating Income; TACC = Total accruals = DWC + DNCO + DFIN
DWC = Change in non-cash working capital = DCOA-DCOL; DNCO = Change in net non-current operating assets= DNCOA –DNCOL; DFIN = Change in net financial assets= DFINA – DFINL
DCOA= Change in current operating assets: $DCOA = COA_t - COA_{t-1}$; DCOL= Change in current operating liabilities: $DCOL = COL_t - COL_{t-1}$;
DNCOA= Change in non-current operating assets: $DNCOA = NCOA_t - NCOA_{t-1}$; DNCOL= Change in non-current operating assets: $\Delta NCOL = NCOL_t - NCOL_{t-1}$, DFINA= change in financial assets; $DFINA = FINA_t - FINA_{t-1}$, DFINL= Change in financial liabilities $DFINL = FINL_t - FINL_{t-1}$
COA= Current Assets - Cash and Short-term investments; COL = Current Liabilities- Short-term Debt.
NCOA = Total Assets – Current Assets – Long-term Accounts Receivable – Long-term Financial Investments; NCOL = Total Liabilities – Current Liabilities – Long-term Debt; FINA= Short-term Investments +Long-term Investments + Long-term Accounts receivable; FINL = Long-term Debt + Short-term Debt.
CASH_OP = Cash flows from operating activities; DSALES = Change in Net sales
TACC, its components, ROA, CASH_OP, DSALES are deflated by the beginning total assets.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z"-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.

Table 3.1 reports the means of key variables for the whole sample and for each subsample classified by financial distress risk. The mean values of TACC (0.143), DWC (0.107), DNCO (0.089) and DFIN (-0.053) in the first column indicate that the average firm is growing its net operating assets and increasing debt to finance this growth. The negative mean value of CF (-0.015) implies that the average firm also depends on stock issuance to finance its growth.

Comparing observations with high and low O-score, we find that the average firm with low O-score has larger TACC (0.187) than the average firm with high O-score (0.100). The

difference in TACCs is mainly driven by the differences in DCOA, DCOL, DFINA and DFINL. While the average firm with low O-score has a larger increase in financial assets (DFINA) (0.076 vs. 0.028), the average firm with high O-score has greater increases in current assets (DCOA) (0.183 vs. 0.088), current liabilities (DCOL) (0.041 vs. 0.015) and issues more debt (DFINL) (0.167 vs. 0.043). In addition, the average firm with low O-score has positive operating cash flows (0.152), whereas the average firm with high O-score has negative operating cash flows (-0.036). Besides, the average firm with high O-score has a larger change in sales (0.362 vs. 0.219). These findings suggest that firms with high O-score do not generate enough cash from its operating activities for financing its sales growth and thereby rely mainly on debt increase. On the other hand, firms with low O-core generate plenty of cash from its operating activities and invest a large portion in financial assets. Similar results are also found when comparing firms with high and low leverage or low and high Z''-score. The operating cash flows of the average firm with high leverage/low Z''-score is positive but much smaller than that of the average firm with low leverage/high Z''-score.

We further classify each subsample of firms with low or high financial distress into two sub-groups by the median of TACC and report the means of key variables for each sub-group in Table 3.2. Within the subsample of low O-score, we compare observations with high and low TACC and find that the average firm with high TACC has greater increases in current assets (DCOA) (0.165 vs. 0.011), non-current operating assets (DNCOA) (0.123 vs. 0.040) and financial assets (DFINA) (0.155 vs. -0.002) and yields higher earnings (ROA) (20.7 percent vs. 14.4 percent). However, this firm suffers a sharp earnings decrease (6.1 percent) whereas its counterpart keeps a slight earnings increase in the subsequent year. These findings are in accordance with the earnings reversals following large accruals as indicated in prior literature

(Dechow &Dichev, 2002; Allen et al., 2013). In addition, the average firm with high TACC has lower abnormal stock return than the average firm with low TACC, which suggests the existence of accrual anomaly in this subsample. Similar findings can be observed within in the subsample of low leverage or high Z''-score.

Within the subsample of high O-score, we compare observations with high and low TACC again and find that the average firm with high TACC has larger increases in current assets (DCOA) (0.283 vs. 0.081), non-current operating assets (DNCOA) (0.119 vs. 0.081) and financial assets (DFINA) (0.042 vs. 0.014) and also achieves higher earnings (ROA) (10.8 percent vs. 5.3 percent). In the subsequent year, this firm suffers an earnings decrease (3.8 percent) whereas its counterpart still keeps a slight earnings increase. In addition, the average firm with high TACC has a larger change in sales, nearly twice as great as the change in sales of its counterpart (0.477 vs. 0.246). These suggest that the average firm with high TACC invests in accruals to meet its sales growth. Moreover, it uses high leverage (1.815), which is more than three times the leverage (0.543) of the average firm with high TACC in the low O-score-subsample. This means that the average firm with high TACC in the high O-score-subsample relies on debt to finance its accruals. In addition, the average firm with high TACC has higher abnormal stock return than the firm with low TACC, which suggests that the accrual anomaly is unlikely to appear in this subsample. Similar findings can be observed in the subsample of firms with high leverage or low Z''-score.

Table 3.2: Means of key variables for each subsample divided by financial distress risk and total accruals (TACC)

	Low O-score		High O-score		Low LEV		High LEV		Z''>2.6		Z''<=2.6	
	Low TACC	High TACC	Low TACC	High TACC	Low TACC	High TACC	Low TACC	High TACC	Low TACC	High TACC	Low TACC	High TACC
CF	0.142	-0.166	0.078	-0.115	0.124	-0.201	0.095	-0.079	0.128	-0.176	0.081	-0.076
TACC	0.0016	0.374	-0.026	0.223	0.0035	0.403	-0.026	0.193	0.005	0.368	-0.040	0.150
DWC	-0.005	0.151	0.038	0.244	0.012	0.166	0.031	0.220	0.034	0.210	0.017	0.137
DCOA	0.011	0.165	0.081	0.283	0.021	0.175	0.078	0.268	0.052	0.227	0.074	0.180
DCOL	0.016	0.014	0.043	0.039	0.009	0.009	0.047	0.048	0.018	0.017	0.057	0.043
DNCO	0.038	0.124	0.075	0.118	0.032	0.124	0.077	0.123	0.043	0.108	0.075	0.156
DNCOA	0.040	0.123	0.081	0.119	0.037	0.119	0.080	0.127	0.044	0.108	0.084	0.157
DNCOL	0.001	-0.0005	0.006	0.0006	0.005	-0.005	0.003	0.004	0.001	0.000	0.009	0.001
DFIN	-0.032	0.099	-0.138	-0.140	-0.040	0.113	-0.134	-0.150	-0.072	0.050	-0.132	-0.143
DFINA	-0.002	0.155	0.014	0.042	-0.015	0.161	0.019	0.043	-0.006	0.133	0.017	0.040
DFINL	0.030	0.056	0.153	0.182	0.025	0.048	0.154	0.194	0.066	0.083	0.150	0.183
DSALES	0.160	0.278	0.246	0.477	0.156	0.305	0.250	0.452	0.207	0.348	0.281	0.352
ROA	0.144	0.207	0.053	0.108	0.127	0.202	0.069	0.113	0.133	0.192	0.041	0.074
ROAt+1	0.151	0.146	0.057	0.070	0.145	0.144	0.062	0.074	0.132	0.132	0.047	0.062
AREt+1	0.058	0.016	-0.010	0.029	0.081	0.026	-0.033	0.020	0.039	0.014	0.006	0.029
O-score	-12.39	-12.201	-8.840	-8.985	-12.249	-11.93	-8.984	-9.259	-11.61	-11.447	-8.621	-8.844
LEV	0.581	0.543	2.401	1.815	0.455	0.457	2.456	1.966	0.796	0.704	2.769	2.258
Z''-Score	6.945	7.124	1.952	2.846	6.995	7.397	2.01	2.478	6.164	6.551	1.380	1.439

ARE = annual market index-adjusted buy-hold stock returns measured from around 21 April to 20 April of the following year.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z''-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV. Each group again is clasified into high and low TACC sub-groups by the median of TACC. See Table 3.1 for measurements of other remaining variables

3.5.Empirical Results

3.5.1. Financial distress and lower persistence of accruals

Table 3.3: Differential persistence of cash flows and accruals

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + \gamma_t D_t + \lambda_j IN_j + (\alpha_1 + \beta_1 ID) ROA_t + (\alpha_2 + \beta_2 ID) TACC_t \quad (3.2')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	0.166*** (6.26)	0.173 (5.61)	0.190*** (6.75)	0.149*** (4.94)
ROA	0.581*** (6.86)	0.443*** (3.48)	0.420*** (2.86)	0.474*** (4.16)
ID*ROA		-0.010 (-0.04)	0.343 (1.19)	-0.238 (-0.83)
TACC	-0.288*** (4.11)	-0.213*** (-4.40)	-0.225*** (-3.14)	-0.193*** (-3.21)
ID*TACC		0.162*** (3.11)	0.115* (1.89)	0.199*** (3.45)
Test $\alpha_2 + \beta_2 = 0$		Not rejected	Not rejected	Not rejected
Instrument count	25	40	40	42
Firms	239	239	239	239
Observations	711	711	711	711
Hansen J-tests	0.822	0.797	0.445	0.516
Diff-in Hansen test	0.669	0.699	0.287	0.984
AR(1)	0.000	0.001	0.001	0.002
AR(2)	0.678	0.938	0.605	0.956

ROA = Net operating income deflated by the beginning total assets. TACC= Total accruals deflated by the beginning total assets. See Table 3.1 for the measurement of TACC. D_t= year dummies, IN_j= industry dummies.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z''-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.

All system GMM regressions employ Windmeijer-corrected standard errors, small-sample adjustments, orthogonal deviations; and treat all dummies as exogenous and other variables as endogenous and use lag-limits as instruments. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of year dummies, industry dummies, and ID are not shown for brevity.

Table 3.3 presents the regression results for (3.2') using the two-step system GMM estimator. The instrument counts in all columns are much less than the number of firms, implying that the instrument proliferation is not a risk. The Hansen J-test, Diff-in Hansen test, AR(1) and AR(2) tests in all columns confirm the validity of the instruments and of the system GMM.

The significant negative coefficient of TACC in column (1) indicates that the accruals have lower persistence than cash flows in predicting future earnings for the whole sample. The significant negative coefficients of TACC in columns (2), (3) and (4) assert the less persistence of accruals relative to cash flows in the subsample with low financial distress risk. Nevertheless, the F-tests show that the differential persistence does not happen in the subsample with high financial distress risk. The coefficients of ID*TACC are significantly positive, suggesting that firms with low financial distress risk have larger differential persistence of cash flows and accruals than those with high financial distress risk.

In Table 3.4, we discompose total accruals into three components and rerun regressions of future earnings against these components (equation (3.3')). Again, the instrument counts, Hansen J-tests, Difference in Hansen tests, AR(1), AR(2) tests indicate the validity of the system GMM. In line with our expectation of the low reliability of these accrual components, the significant negative coefficients of DWC, DNCO, DFIN in column (1) assert the less persistence of these components in comparison with cash flows in the whole sample. Consistent with the results in Table 3.3, the coefficients of DWC, DNCO, DFIN in (2), (3) and (4) are significantly negative, implying the less persistence of these components compared with cash flows in the subsample with low financial distress risk. The coefficients of ID*DWC, ID*DNCO and ID*DFIN in columns (2), (3), (4) are significantly positive, indicating that firms with low financial distress risk have larger differential persistence of cash flows and each accrual component than firms with high financial distress risk. However, the F-tests indicate that the differential persistence between the cash flows and each accrual component does not happen in the subsample with high financial distress risk, which is in line with the findings in Table 3.3. In sum, these findings support our first hypothesis that firms with low financial distress risk have

larger differential persistence of cash flows and accruals than those with high financial distress risk. This implies that firms with high financial distress risk are likely to practice more conservative accounting than those with low financial distress risk. Recall the findings in Table 3.1 that firms with high financial distress risk issue a large amount of new debt (16.7 percent of the beginning total assets for the average firm with high O-score) to finance their sales growth. This new debt can cause more scrutiny imposed by the creditors, which induces firm managers to practice more conservative accounting.

Table 3.4: Differential persistence of cash flows and accrual components

$$ROA_{t+1} = \alpha_0 + \beta_0 ID + \gamma_t D_t + \lambda_j IN_j + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)DWC_t + (\alpha_3 + \beta_3 ID)DNCO_t + (\alpha_4 + \beta_4 ID)DFIN_t \quad (3.3')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	0.119**	0.136***	0.168***	0.161***
	(2.50)	(3.46)	(6.04)	(6.01)
ROA	0.558**	0.522**	0.407***	0.473***
	(2.53)	(2.12)	(3.60)	(4.49)
ID*ROA		-0.055	0.174	0.076
		(-0.18)	(0.84)	(0.35)
DWC	-0.099***	-0.201**	-0.165**	-0.224***
	(-3.68)	(-2.47)	(-2.11)	(-4.05)
ID*DWC		0.177**	0.144*	0.218***
		(2.25)	(1.91)	(3.73)
DNCO	-0.173**	-0.198***	-0.155***	-0.166***
	(-2.32)	(-3.58)	(-2.62)	(-4.47)
ID*DNCO		0.161**	0.115*	0.137**
		(2.43)	(1.79)	(2.46)
DFIN	-0.079**	-0.103***	-0.082**	-0.124***
	(-2.34)	(-2.72)	(-2.28)	(3.92)
ID*DFIN		0.100*	0.083**	0.139***
		(1.87)	(2.17)	(3.36)
Test $\alpha_2 + \beta_2 = 0$		Not rejected	Not rejected	Not rejected
Test $\alpha_3 + \beta_3 = 0$		Not rejected	Not rejected	Not rejected
Test $\alpha_4 + \beta_4 = 0$		Not rejected	Not rejected	Not rejected
Instrument count	39	70	72	72
Firms	239	239	239	239
Observations	711	711	711	711
Hansen J-tests	0.574	0.525	0.323	0.431
Diff-in Hansen test	0.673	0.928	0.625	0.571
AR(1)	0.032	0.011	0.004	0.002
AR(2)	0.821	0.893	0.467	0.758

ROA= Net operating income. DWC= Change in non-cash working capital, DNCO= Change in net non-current operating assets, DFIN= Change in net financial assets. ROA and the three components of accruals are deflated by the beginning total assets. See Table 3.1 for measurement of these accrual categories. D_t= year dummies, IN_j= industry dummies.

O-score= as described in footnote 5 of Griffin and Lemmon (2002)

Z''-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity

High and Low O-score/LEV groups are divided by the median of O-score/LEV.

All system GMM regressions employ Windmeijer-corrected standard errors, small-sample adjustments, orthogonal deviations; and treat all dummies as exogenous and other variables as endogenous, and use lag-limits as instruments. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of year dummies, industry dummies, and ID are not shown for brevity.

3.5.2. Financial distress and accrual anomaly

Table 3.5: Market pricing of total accruals

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)TACC_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t \quad (3.6')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	-0.336 (-0.81)	-0.493 (-0.92)	-0.511 (-1.04)	-0.611 (-1.31)
ROA	0.586*** (3.55)	0.360* (1.94)	0.458** (2.32)	0.613*** (3.49)
ID*ROA		0.438 (1.07)	0.060 (0.18)	-0.229 (-1.10)
TACC	-0.282*** (-4.90)	-0.297*** (-4.34)	-0.343*** (-5.46)	-0.327*** (-5.16)
ID*TACC		0.036 (0.29)	0.262* (1.69)	0.379*** (2.75)
BTMV	0.246*** (5.74)	0.218*** (3.55)	0.210*** (3.81)	0.239*** (4.59)
ID*BTMV		0.031 (0.36)	0.051 (0.63)	0.002 (0.02)
MV	0.012 (0.85)	0.017 (1.00)	0.020 (1.13)	0.022 (1.35)
ID*MV		-0.014 (-0.45)	-0.016 (-0.51)	-0.029 (-0.81)
ETP	0.288* (1.79)	0.867* (2.37)	0.801** (2.34)	0.526* (1.99)
ID*ETP		-0.748* (-1.86)	-0.653* (-1.72)	-0.313 (-0.96)
Test $\alpha_2 + \beta_2 = 0$		Rejected**	Not rejected	Not rejected
R-square	0.1992	0.2038	0.2063	0.2059

ROA = Net operating income deflated by the beginning total assets. TACC= total accruals deflated by the beginning total assets. See Table 3.1 for the measurement of TACC. BTMV = Book-to Market ration, MV=ln(Market Capitalization), ETP= Earnings to Price ratio.
D=0 if the firm-year belongs to the period prior to 2009 and 1 otherwise. IN_j= industry dummies.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z''-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.

Robust standard errors clustered by firm are used for all pooled OLS.
(***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of industry dummies, D and ID are not shown for brevity.

Table 3.5 reports the regression results for equation (3.6') using the pooled OLS regressions. The significant negative coefficients of TACC in four columns assert the occurrence of accrual anomaly in our whole sample and in the subsample with low financial distress risk. Nevertheless, the F-tests in columns (3) and (4) show that the accrual anomaly does not happen in the subsample with high leverage or low Z''-score. This is in line with the insignificant differential persistence of cash flows and accruals in this subsample as indicated in Table 3.3. However, the F-test in column (2) indicates the occurrence of accrual anomaly in the subsample with high O-score. The difference in these F-test results can be attributed to the fact that the median of O-score is not a good breakpoint for low and high financial distress risk.

Table 3.6 shows the results from the regressions of future abnormal returns on current earnings and accrual components (equation (3.7')). The significant negative coefficients of DWC, DNCO and DFIN in column (1) confirm the mispricing of these components in the whole sample. The coefficients of DWC, DFIN in columns (2), (3), (4) and that of DNCO in column (4) are significantly negative, implying the mispricing of these components in the subsample with low financial distress risk. The F-tests show that the mispricing of these three accrual components (except for DWC and DNCO in column (2)) does not occur in the subsample with high financial distress risk. These findings are consistent with those in Table 3.5 and support our second hypothesis that firms with low financial distress have larger accrual mispricing than firms with high financial distress.

Table 3.6: Market pricing of accrual components

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)DWC_t + (\alpha_3 + \beta_3 ID)DNCO_t + (\alpha_4 + \beta_4 ID)DFIN_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t \quad (3.7')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	-0.330 (-0.80)	-0.444 (-0.87)	-0.515 (-1.06)	-0.641 (-1.38)
ROA	0.581*** (3.45)	0.317* (1.67)	0.418** (2.05)	0.469*** (2.66)
ID*ROA		0.639 (1.51)	0.177 (0.51)	1.055* (1.97)
DWC	-0.303*** (-4.10)	-0.393*** (-3.27)	-0.380*** (-3.55)	-0.333*** (-3.72)
ID*DWC		0.120 (0.68)	0.295 (1.57)	0.276* (1.72)
DNCO	-0.296*** (-3.42)	-0.128 (-0.99)	-0.202 (-1.50)	-0.238** (-2.09)
ID*DNCO		-0.250 (-1.30)	0.100 (0.48)	0.049 (0.24)
DFIN	-0.248*** (-3.51)	-0.332*** (-3.23)	-0.402*** (-4.24)	-0.330*** (-4.33)
ID*DFIN		0.133 (0.88)	0.447** (2.37)	0.443*** (2.65)
BTMV	0.244*** (5.63)	0.213 (3.49)	0.207*** (3.76)	0.235*** (4.48)
ID*BTMV		0.043 (0.50)	0.058 (0.71)	0.052 (0.59)
MV	0.012 (0.85)	0.017 (0.95)	0.020 (1.16)	0.024 (1.45)
ID*MV		-0.009 (-0.27)	-0.014 (-0.43)	-0.028 (-0.77)
ETP	0.306* (1.88)	0.920** (2.48)	0.827** (2.37)	0.570** (2.15)
ID*ETP		-0.807* (-1.99)	-0.664* (-1.72)	-0.521 (-1.49)
Test $\alpha_2 + \beta_2 = 0$		Rejected**	Not rejected	Not rejected
Test $\alpha_3 + \beta_3 = 0$		Rejected***	Not rejected	Not rejected
Test $\alpha_4 + \beta_4 = 0$		Not rejected	Not rejected	Not rejected
R-square	0.1999	0.2096	0.2110	0.2141

ROA = Net operating income deflated by the beginning total assets. DWC= Change in non-cash working capital, DNCO= Change in net non-current operating assets, DFIN= Change in net financial assets. See Table 3.1 for the measurement of these variables. BTMV = Book-to Market ration, MV=ln(Market Capitalization), ETP= Earnings to Price ratio.
D=0 if the firm-year belongs to the period prior to 2009 and 1 otherwise. IN_j= industry dummies.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z''-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.
Robust standard errors clustered by firm are used for all pooled OLS.
(***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of industry dummies, D and ID are not shown for brevity.

Table 3.7: Results from the regressions of future abnormal returns on current earnings and ACC and DFINL

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)ACC_t + (\alpha_3 + \beta_3 ID)DFINL_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t \quad (3.6'')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	-0.347 (-0.83)	-0.352 (-0.70)	-0.462 (-0.95)	-0.606 (-1.30)
ROA	0.584*** (3.52)	0.342* (1.86)	0.440** (2.22)	0.489*** (2.86)
ID*ROA		0.685 (1.63)	0.146 (0.43)	1.148** (2.14)
ACC	-0.280*** (-4.77)	-0.319*** (-4.25)	-0.366*** (-5.43)	-0.324*** (-4.97)
ID*ACC		0.035 (0.27)	0.292* (1.87)	0.213 (1.49)
DFINL	0.248** (2.46)	0.513*** (2.72)	0.543*** (3.23)	0.438*** (3.28)
ID*DFINL		-0.387* (-1.67)	-0.562** (-2.21)	-0.602*** (-2.99)
BTMV	0.245*** (5.67)	0.218*** (3.59)	0.210*** (3.89)	0.240*** (4.68)
ID*BTMV		0.038 (0.45)	0.052 (0.64)	0.041 (0.47)
MV	0.013 (0.88)	0.013 (0.78)	0.018 (1.05)	0.022 (1.36)
ID*MV		0.000 (0.00)	-0.012 (-0.38)	-0.025 (-0.69)
ETP	0.296* (1.83)	0.882** (2.43)	0.814** (2.38)	0.539** (2.06)
ID*ETP		-0.772* (-1.94)	-0.656* (-1.72)	-0.487 (-1.40)
Test $\alpha_2 + \beta_2 = 0$		Rejected**	Not rejected	Not rejected
Test $\alpha_3 + \beta_3 = 0$		Not rejected	Not rejected	Not rejected
R-square	0.1994	0.21	0.2093	0.2136

ROA = net operating income deflated by the beginning total assets. ACC= total accruals defined by Dechow et al. (2008). ACC=TACC-DFINL. See Table 3.1 for the measurement of TACC. BTMV = Book-to Market ration, MV=ln(Market Capitalization), ETP= Earnings to Price ratio.
D=0 if the firm-year belongs to the period prior to 2009 and 1 otherwise.,IN_j= industry dummies.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z"-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.
Robust standard errors clustered by firm are used for all pooled OLS.
(***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of industry dummies, D and ID are not shown for brevity.

Recall that the difference between our measure of total accruals (TACC) and that (ACC) of Dechow et al. (2008) is DFINL (the change in short-term and long-term debts) (see 3.3.1). We divide TACC into ACC and DFINL and rerun the regressions to test the predictability of ACC for a robustness check. The results are presented in Table 3.7. The results again assert the mispricing of ACC in the whole sample and in the subsample with low financial distress risk. Consistent with the findings in Table 3.5, mispricing does not happen in the subsample with high financial distress risk (except for the subsample with high O-score).

3.5.3. Profitability of accrual anomaly

For each year, we sort our observations into accrual quintiles. We long the stocks in the lowest accrual quintile and short those in the highest accrual quintile. The weekly return on this hedge-portfolio is observed for one year beginning 100 days from the fiscal year-end (around 21 April to 20 April of the subsequent year). Similar hedge-portfolios are constructed within each subsample of firms with low or high financial distress risk. Weekly raw returns, risk-adjusted returns based on the CAPM and the Fama-French three- factor model are presented in Table 3.8.

Being consistent with the above findings, the risk-adjusted weekly return on the hedge portfolio of the whole sample is around 0.25 percent. The portfolios built from firms with low financial distress risk earn risk-adjusted weekly returns of 0.2 to 0.3 percent, while the portfolios constructed from firms with high financial distress risk have insignificant returns.

Table 3.8: Time-series means of weekly returns on the hedge portfolios

	Whole sample	Low O-score	High O-score	Low LEV	High LEV	Z'' >=2.6	Z''<2.6
Raw Returns	0.0028*** (2.72)	0.0031** (2.24)	0.001 (0.72)	0.0024* (1.98)	0.0012 (0.74)	0.0029*** (2.65)	0.0004 (0.21)
CAPM Alpha	0.0025** (2.50)	0.0028** (2.04)	0.0007 (0.46)	0.0022* (1.80)	0.0009 (0.56)	0.0026** (2.43)	0.00005 (0.03)
Fama French Alpha	0.0024** (2.44)	0.0027* (1.98)	0.0007 (0.47)	0.0021* (1.72)	0.0009 (0.59)	0.0025** (2.35)	0.00005 (0.03)

For each year, we sort our observations into accrual quintiles. We long the stocks in the lowest accrual quintile and short those in the highest accrual quintile. The weekly return in this hedge-portfolio is observed for one year beginning 100 days from the fiscal year-end (around 21 April to 20 April of the subsequent year). Similar hedge-portfolios are constructed within each subsample of non-financially distressed and financially distressed firms. Weekly raw returns, risk-adjusted returns based on the CAPM and the Fama-French three-factor model are presented in this table.

In a nutshell, the findings in Table 3.5, 3.6, 3.7 and 3.8 support our second hypothesis that firms with low financial distress have greater accrual anomaly than those with high financial distress risk. The accrual anomaly does not happen in the subsample with high financial distress risk.

3.5.4. Accrual anomaly and stock issuance anomaly

Accruals can be financed by cash from one of three sources: retained earnings, stock issues and debts. Hence, accrual anomaly seems closely linked to the well-known external financing anomaly in which a negative relationship between external financing and future stock returns has been observed. Dechow et al. (2008) assert that accrual anomaly subsumes the external financing anomaly. In this section, we further examine whether the accrual anomaly occurring in the firms with low financial distress risk subsumes the external financing anomaly.

Table 3.9: Regressions of future returns against the sources of capital

$$ARE_{t+1} = \alpha_0 + \beta_0 ID + \gamma\ D + \lambda_j IN_j + (\alpha_1 + \beta_1 ID)ROA_t + (\alpha_2 + \beta_2 ID)DISTE_t + (\alpha_3 + \beta_3 ID)DISTD_t + (\phi_1 + \kappa_1 ID)BTMV_t + (\phi_2 + \kappa_2 ID)MV_t + (\phi_3 + \kappa_3 ID)ETP_t$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	(2)	(3)	(4)
Intercept	-0.349 (-0.85)	-0.368 (-0.76)	-0.502 (-1.07)	-0.629 (-1.37)
ROA	0.423*** (2.71)	0.178 (0.96)	0.248 (1.24)	0.312* (1.85)
ID*ROA		0.795* (2.02)	0.260 (0.78)	1.420*** (2.81)
DISTE	0.319*** (5.82)	0.290*** (4.70)	0.327*** (5.58)	0.315*** (5.53)
ID*DISTE		0.169 (1.35)	-0.018 (-0.12)	0.211 (0.99)
DISTD	0.006 (0.09)	-0.205 (-1.40)	-0.172 (-1.35)	-0.127 (-1.24)
ID*DISTD		0.338* (1.97)	0.231 (1.42)	0.366** (2.51)
BTMV	0.246*** (5.71)	0.220*** (3.62)	0.211*** (3.90)	0.241*** (4.65)
ID*BTMV		0.043 (0.52)	0.057 (0.70)	0.051 (0.58)
MV	0.013 (0.87)	0.013 (0.82)	0.019 (1.14)	0.023 (1.40)
ID*MV		-0.004 (-0.12)	-0.011 (-0.37)	-0.024 (-0.70)
ETP	0.245 (1.56)	0.785** (2.18)	0.696** (2.06)	0.444* (1.73)
ID*ETP		-0.738* (-1.87)	-0.561 (-1.48)	-0.442 (-1.32)
Test $\alpha_2 + \beta_2 = 0$		Rejected***	Rejected**	Rejected**
Test $\alpha_3 + \beta_3 = 0$		Not rejected	Not rejected	Rejected**
R-square	0.2069	0.2177	0.2120	0.2143

ROA = net operating income;DISTE = Net distribution to equity holders; DISTD= Net distribution to debt holders. These variables are deflated by the beginning total assets
BTMV = Book-to Market ration; MV=ln(Market Capitalization); ETP= Earnings to Price ratio.
D=0 if the firm-year belongs to the period prior to 2009 and 1 otherwise, IN_j= industry dummies.
O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z"-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.
Robust standard errors clustered by firm are used for all pooled OLS.
(***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses. The estimates of industry dummies, D and ID are not shown for brevity.

We regress future returns against the three sources of capital for accruals (i.e. ROA, DISTE, DISTD) and report the results in Table 3.9. We find that while the effect of DISTD on the dependent variable is negligible, the coefficient of DISTE is significant positive in all regressions. These results assert the occurrence of external financing anomaly but in term of stock issuance in the whole sample and in the subsample with low financial distress risk. This means that the future stock return is negatively (positively) associated with the magnitude of stock issuance (net distribution to equity holders). Comparing the absolute values of DISTE's coefficients with those of TACC's coefficients in Table 3.5, we find that the magnitude of stock issuance anomaly appears to be similar to the magnitude of accrual anomaly. Moreover, the values of R-squares in the regressions of Table 3.9 are little bit larger than the corresponding values in Table 3.5. These mean that accrual anomaly subsumes stock issuance anomaly for the subsample with low financial distress risk.

On the other hand, the F-statistics for the sum of DISTE and ID*DISTE's coefficients in columns (2), (3) and (4) are significant, while only the F-statistics for the sum of DISTD and ID*DISTD's coefficients in (4) is significant. These results confirm the occurrence of stock issuance anomaly in the subsample with high financial distress risk. Recall the finding in Table 3.5 that accrual anomaly is not present in this subsample. These mean that stock issuance anomaly appears but accrual anomaly does not occur in the subsample with high financial distress risk.

To interpret the relationship between accrual anomaly and stock issuance anomaly, we compare the financial policies of firms with low and high financial distress risk in Table 3.10. With regard to the external financing policies, firms with low financial distress risk heavily rely on stock issuance, while those with high financial distress risk mainly rely on debt issuance.

Especially, stock issuance became dominant for the firms with low financial distress risk during the boom period prior to 2008. In this period, the average firm in the subsample with low O-score issued stocks and debt equivalent to 29.3 percent and 6 percent of the beginning total assets, respectively. During this period, its average stock price was 105,000 VND, nearly twice as high as the average price of the average firm in the subsample with high O-score. These suggest that firms with low financial distress risk timed to issue new stocks when their stocks were overvalued. The proceeds from this stock issuance can be used in three ways: (1) expensing immediately in operating activities, (2) repurchase debt to reduce leverage, (3) investing in cash balance and accruals assets. The low leverage (0.566) and high positive operating cash flows (24.7 percent of the beginning total assets) of the average firm in the subsample with low O-score suggest that the proceeds might be invested in cash and accruals. These findings are consistent with Jensen (2005)'s argument on the over-investment of overvalued firms. He argues that the managers of the firms with overvalued equity face pressure to carry out ambitious investments. These investments provide good expectations about the firm's growth, but might be over-investments, and thus cause lower performance in the subsequent periods. Thus, firms with low financial distress risk timed to issue stocks when their stocks are overvalued, and then invested the proceeds in cash or accruals. This explains the concurrence of accrual anomaly and stock issuance anomaly.

On the other hand, firms with high financial distress risk had lower level of stock issuance (14.2 percent of the beginning total assets) (for the high O-score subsample) during the boom period. However, the high leverage (1.646), negative operating cash flows (-0.068) and

high percentage of new debt (0.170)[17] in this period implies that these firms mainly rely on debt to finance their growth. The similar phenomenon can be observed in the second period. In sum, these findings are consistent with our initial argument that firms with high financial distress risk are more likely to practice conservative accounting choices as a result of the creditors' monitoring.

Table 3.10: Total accruals and financial policies employed by firms with low and high financial distress risk

	Whole sample	Low O-score	High O-score	Low LEV	High LEV	Z''>2.6	Z''<=2.6
-DISTE	0.048	0.056	0.040	0.077	0.018	0.064	0.014
-DISTD	0.105	0.043	0.168	0.037	0.174	0.075	0.167
LEV	1.33	0.562	2.105	0.456	2.211	0.750	2.512
CASH_OP	0.058	0.152	-0.036	0.091	0.026	0.073	0.028
Price	43700	53200	33100	51700	34700	50700	28700
2006-2007 (N=166)							
-DISTE	0.220	0.293	0.142	0.338	0.060	0.284	0.021
-DISTD	0.114	0.060	0.170	0.068	0.176	0.104	0.145
LEV	1.087	0.566	1.646	0.489	1.906	0.778	2.058
CASH_OP	0.095	0.247	-0.068	0.086	0.107	0.088	0.117
Price	84,400	105,000	55,200	97,400	58,800	93,600	45,400
2008-2010 (N=545)							
-DISTE	-0.005	-0.020	0.010	-0.019	0.008	-0.014	0.012
-DISTD	0.102	0.037	0.167	0.025	0.173	0.064	0.171
LEV	1.408	0.561	2.239	0.444	2.287	0.740	2.605
CASH_OP	0.047	0.122	-0.026	0.093	0.006	0.068	0.010
Price	35,200	40,900	29,000	39,000	31,100	39,600	26,800

DISTE = Net distribution to equity holders, DISTD= Net distribution to debt holders
CASH_OP = Cash flows from operating activities
Price: average stock prices at the time when returns are calculated.

O-score= as described in footnote 5 of Griffin and Lemmon (2002)
Z"-score= as described in Altman (2005) without the constant term (3.25), LEV =leverage= Total Liabilities/Total Equity
High and Low O-score/LEV groups are divided by the median of O-score/LEV.

[17] The ability to issue debt and equity suggest that perhaps firms classified as highly financially distressed in our sample are not actually in serious financial distress but in economic distress.

3.5.5. Financial distress and conservatism

As mentioned earlier, financial distress provides firm managers with incentives to exercise conservative accounting, especially when the firm relies on bank loans and needs to borrow repeatedly. Hence, we predict that firms with high financial distress risk employ more conservative accounting practices than those with low financial distress risk. Following Basu (1997), we use the difference between the sensitivity of reported earnings to bad news and to good news as a measure of conservatism. The negative and the positive market-adjusted annual returns are proxies for bad news and good news, respectively.

$$X_t = \alpha_0 + \alpha_1 DR_t + \beta_0 R_t + \beta_1 R_t * DR_t \qquad (3.8)$$

$$X_t = \alpha_0 + \alpha_1 DR_t + \beta_0 R_t + \beta_1 R_t * DR_t + \gamma_0 ID + \gamma_1 ID * DR_t + \kappa_0 ID * R_t + \kappa_1 ID * R_t * DR_t \qquad (3.8')$$

Where X_t = Operating earnings in fiscal year *t*, deflated by beginning-of-period market value of equity. R_t= market-adjusted annual stock return for the period from 9 months before fiscal year-end *t* to three months after fiscal year-end *t*. DR_t is a dummy variable, that takes value of 1 for negative R_t and 0 otherwise. A significant positive value of $\beta_1$in (3.8) is regarded as evidence that bad news is timelier recognized than good news in reported earnings (Basu, 1997). $\kappa_1$in (3.8') reflects the effect of financial distress on the sensitivity differences.

Table 3.11 shows the regression results for equation (3.8'). Consistent with Basu (1997), the coefficient of R*DR in column (1) is significantly positive, indicating that bad news is timelier recognized than good news in reported earnings of the whole sample firms. The coefficients of R*DR in columns (2), (3) and (4) are not significantly different from 0,

suggesting that bad news is not timelier recognized than good news in reported earnings of the firms with low financial distress risk. Nevertheless, the F tests show that the sum of R*DR's coefficient and ID*R*DR's coefficient is significantly positive, implying that bad news is timelier recognized than good news in reported earnings of the firms with high financial distress risk. In addition, the significant positive coefficients of ID*R*DR indicate that firms with high financial distress risk are more likely to practice conservative accounting than those with low financial distress risk.

Table 3.11. Sensitivity difference of reported earnings to bad news and to good news

$$X_t = \alpha_0 + \alpha_1 DR_t + \beta_0 R_t + \beta_1 R_t * DR_t + \gamma_0 ID + \gamma_1 ID * DR_t + \kappa_0 ID * R_t + \kappa_1 ID * R_t * DR_t \qquad (3.8')$$

	Whole sample	Low/High O-score ID=1, high score, otherwise 0	Low/High LEV ID=1, high LEV, otherwise 0	Low/High Z''-score ID=1 if Z''<2.6, otherwise 0
	(1)	*(2)*	*(3)*	*(4)*
Intercept	0.348***	0.319***	0.332***	0.331***
	(3.30)	(3.12)	(3.17)	(3.22)
DR	0.025	0.022	0.010	0.01
	(1.30)	(0.89)	(0.41)	(0.46)
R	0.102	0.166***	0.151***	0.124***
	(6.42)	(8.02)	(6.05)	(7.28)
R*DR	0.179***	0.006	0.028	0.028
	(3.41)	(0.09)	(0.37)	(0.44)
ID		-0.002	-0.015	-0.0034
		(-0.09)	(-0.57)	(-0.12)
ID*DR		0.016	0.046	0.025
		(0.42)	(1.20)	(0.62)
ID*R		-0.124***	-0.067**	-0.109***
		(-4.43)	(-2.23)	(-3.18)
ID*R*DR		0.291***	0.228**	0.354***
		(3.16)	(2.40)	(3.65)
Test $\beta_1 + \kappa_1 = 0$		Rejected***	Rejected***	Rejected***
Adj-R^2	0.344	0.394	0.360	0.383

X_t = Operating earnings in fiscal year *t*, deflated by beginning-of-period market value of equity. R_t= market-adjusted annual stock return for the period from 9 months before fiscal year-end *t* to three months after fiscal year-end *t*. DR_t=1 if R_t< 0, =0 otherwise. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. T-statistics are presented in parentheses.

3.6.Conclusion

We find that the firms with low financial distress risk have greater differential persistence between cash flows and accruals than firms with high financial distress risk. Consequently, accrual anomaly is concentrated in the subsample with low financial distress risk, but is not present in the subsample with high financial distress risk. These findings assert that there are differences in accruals discretionary managerial behaviors of firms with low and high financial distress risk. The findings suggest that the monitoring by the creditors prevents managers of distressed firms from inflating earnings. In line with this argument, we also find that firms with high financial distress risk practice more conservative accounting than those with low financial distress risk. Additionally, we find the concurrence of accrual and stock issuance anomalies, which can be attributed to the combination of over-investment and aggressive accounting choices in the subsample of firms with low financial distress risk.

CHAPTER 4: MOMENTUM EFFECT: EVIDENCE FROM THE VIETNAMESE STOCK MARKET*

* This chapter is a revised and expanded version of a paper entitled "Momentum effect: Evidence from the Vietnamese stock market" published in Asian Journal of Finance & Accounting, Vol. 5 (2013) and another paper namely "Momentum effect in the Vietnamese stock market" presented at the International Conference on Business, Economics and Information Technology (ICBEIT), HCM in March 2012, Vietnam, at the 2nd Annual International Conference on Accounting and Finance (AF2012), Singapore in May 2012 and published in Procedia Economics and Finance 2 (2012).

4.1.Introduction

Efficiency of resource allocation in capital markets is determined by accuracy of information reflected in prices. Based on the type of information incorporated in prices, Fama (1970) provides a description of market efficiency in three categories: form, semi-strong form and strong form. Among those, the weak form tests have shown considerable evidence against market efficiency. In a weak-form efficient market, it is impossible to earn abnormal returns by trading rules that are based on past returns. The two diametrically opposed anomalies often found in such tests are *reversals* and *momentum*. The reversal phenomenon implies that stocks which have outperformed (underperformed) the market over a period will underperform (outperform) over the subsequent period (Bondt & Thaler, 1985). Conversely, the momentum effect indicates that outperforming (underperforming) stocks continue to outperform (underperform) in the subsequent period (Jegadeesh & Titman, 1993). The momentum effect has become central to market efficiency debate. It has been investigated around the world from developed to emerging markets (see Jegadeesh & Titman, 1993; 2001, Rouwenhorst, 1999 and Griffin et al. (2003)).

The Vietnamese stock market has emerged as one of the most attractive investment destinations in Asia. It has shown a dramatic growth in both number of listed stocks and total market capitalization. The number of listed stocks rose from two in 2000 to 700 in 2012, while the total market capitalization jumped from VND 444 billion (USD 28 million) in 2000 to VND 76 trillion (USD 37 billion) in 2012. This rapid expansion has interested researchers to begin looking at the market's efficiency. Dong Loc, Lanjouw, and Lensink (2010)reject the weak-form efficiency of the market. However, as the authors examine a sample of only 5 stocks in the 2000-2004 period when the market has just been established, their results should be used with care.

Nguyen, Tran, and Zeckhauser (2012) reject the semi- strong form efficiency of the market. They discover extremely high abnormal returns prior to stock split announcements. These returns are higher than the abnormal post-announcement returns. Their results raise a concern over illegal insider trading in the market. Despite this evidence, the issue has not sufficiently been discussed. Specifically, the Vietnamese stock market is strongly impacted by the trading of domestic individual investors, who often boast about their "stock playing" (i.e. stock investing). Many of these investors have limited knowledge and experiences in stock investments and make their buying or selling decisions based on past returns[18]and current rumors[19]. Short-term trading like surfing is popular among them, especially during expansion periods. Herding behavior is prevalent in the market (see Truong (2011)). These activities of individual investors might cause behavioral biases, which are considered as the source for momentum profitability. In more detail, Hong and Stein (1999) divide the market agents into two types: news watchers and momentum traders. The news watchers predict future returns based on their private fundamental information and do not pay attention to current or past prices, whereas the momentum traders trace profits based only on past price changes. When new information spreads gradually across news watchers, price under-reaction occurs in the short-run. Later on, following the news watcher, momentum traders realize the trend and earn the profit. Their trading may eventually become excessive and push the prices to above fundamental values, in which case overreaction come about and lead to fundamental reversals in the long-run. As seen from practice, many individual investors in Vietnam resemble the momentum traders in Hong &Stein (1999), and Vietnamese stock price movements seemingly reflective of the momentum effect.

[18] Technical analysis is popular among individual investors in Vietnam.
[19] This practice of individual investors in Vietnam is quite similar to the practice of Chinese individual investors (see Kang et al. 2002).

Employing the methodology initiated by Jegadeesh and Titman (hereafter JT) (1993), we find the occurrence of momentum in the short-run in Vietnam's market. The weekly profit of the winner-minus-loser (WML) portfolio which selects stocks based on their average returns over past one week and holds them for one week earns the highest profit of 0.83 percent. Our empirical analysis also indicates that winner and loser returns are less persistent and highly volatile, but the strong correlation between winner and loser returns creates significant momentum profits. Furthermore, the momentum profitability is not pervasive but confined to small- and large-sized subsamples in the period before the Lehmann shock. Especially, it follows short-term market gains and is consistent with the over-reaction hypothesis. This implies that momentum traders in Vietnam are less risk-averse and their overreactions are stronger in the periods following market gains. However, the magnitude of reversals is weak, which can be explained by the argument of Chui, Titman, and Wei (2010) on individualism. Less individualistic investors, who are less prone to overconfidence biases, are less likely to make investment decisions that produce momentum profits and reversals in long-term horizons. After short-term market declines or the Lehmann shock, momentum does not exist, which is in agreement with Chui et al. (2000), who found the absence of momentum in Asian markets for the period prior to the 1997- crisis.

The remainder of the paper is organized as follows: Section 4.2 gives a brief review on momentum effect and its explanations; Section 4.3 provides an overview of the Vietnamese stock market and data selection; Section 4.4 illustrates methodology description; Section 4.5 shows empirical results and Section 4.6 concludes some findings.

4.2.Literature review

4.2.1. Market efficiency and momentum evidence

A huge number of empirical studies have been devoted to examining whether stock prices always fully incorporate available information, as proposed by the efficient market hypothesis (Fama 1970). Fama (1970) classifies these studies into three kinds: weak form, semi-strong form and strong form tests. Among those, the weak form tests (i.e. tests of return predictability based on past returns) have shown a mass of evidence against the market efficiency. The two diametrically opposing anomalies often found in such tests for different time horizons are reversals and momentum. The reversal phenomenon found by Bondt and Thaler (1985) implies that stocks which have outperformed (underperformed) the market over a period will underperform (outperform) over the subsequent period. Conversely, the momentum effect indicates that outperforming (underperforming) stocks continue to outperform (underperform) in the subsequent period. Jegadeesh and Titman (1993) and Jegadeesh and Titman (2001) find positive profits of momentum strategies in the US market for the period prior to 1989 and in 1990s. Gutierrez and Kelley (2008) find a long-lasting stream of momentum following a brief reversal. The momentum profits are enough to offset the initial reversal, resulting in significant momentum over the full year following portfolio formation.

Rouwenhorst (1998) examines international momentum strategies over twelve European markets from 1978 to 1995 and discovers the momentum effect across markets and within each market except for Sweden. Rouwenhorst (1999) documents momentum presence in an aggregate sample of 20 emerging markets, but it is statistically significant in only six individual markets. Examining eight Asian markets, Chui et al. (2000) report weak evidence of momentum effect within each country: only the profit of Hong Kong market is significantly positive for the whole

sample period, while the profits of Hong Kong, Malaysia, Singapore and Thailand are significantly positive for the pre-crisis period. With a bigger sample of 40 countries, Griffin et al. (2003) confirm that momentum in Asian and emerging markets is relatively weak. These findings indicate that the magnitude of momentum effect in Asian or emerging market is weaker than that in the US and European markets.

4.2.2. Explanations for momentum effect

To judge whether the existence of momentum profits indicates the market inefficiency, it is important to identify either risk or behavioral biases is the primary source of the profits. JT (1993) decompose the profit into three components: the cross-sectional dispersion in expected returns; the serial covariance in factor returns; and the serial covariance of the idiosyncratic components of security returns. If the momentum is caused by either the first or the second component, it can be considered as compensation for bearing systematic risk and is not regarded as an indication for market inefficiency. If it is driven by the third component, it is possible to conclude that the market is inefficient. JT (1993) provide evidence suggesting that momentum effect arise from the last component, implying that the delayed price reactions to firm-specific information generate the profits. This result has two interpretations: one is the *under-reaction* of investors to firm-specific information and the other is the *over-reaction* that is eventually followed by reversals. Based on these interpretations, the following literature proposes two main hypotheses on investor behavior, which are considered to explain the momentum effect.

Firstly, Barberis, Shleifer, and Vishny (1998) propose that conservatism bias causes investor *under-reaction* to news, which generates return momentum. Precisely, investors slowly change their beliefs in the face of news announcement, which creates stock abnormal returns. When the information is fully incorporated in prices, no further abnormal return exists.

Secondly, Daniel, Hirshleifer, and Subrahmanyam (1998) and Hong and Stein (1999) propose alternative models on price behavior in the long run, which illustrate a stream of short-term *overreaction* followed by long-term reversals. They propose different behavioral or cognitive biases to explain momentum profitability. Daniel et al. (1998) argue that investor overconfidence and biased-self attribution create momentum. Investors tend to be overconfident about their private information and overestimate its precision. Additionally, they asymmetrically react to their decision outcomes. They attribute successes to their skill and ascribe failures to external noise. Hence, the investors' confidence increases when the subsequent public information confirms their private news, which boosts the overreaction and produces momentum in stock returns. However, the momentum will eventually be reversed in the long run when the investors realize their errors. Hong and Stein (1999) explain the short-term momentum and long-term reversals in asset markets as results of interaction between news watchers and momentum traders – the two types of agents in the market. The news watchers predict future returns based on their private fundamental information and do not pay attention to current or past prices, whereas the momentum traders trace profits based only on past price changes. Hong & Stein (1999) argue that if information spreads gradually across news watchers, that is, price under-reaction occurs in the short run, and then momentum traders can earn profits. However, their attempts to trace profits might push up the prices above the fundamental values, and then overreaction happens and leads to fundamental reversals in the long run.

In contrast to the behavioral models, Conrad and Kaul (1998) argue that momentum profits are mainly driven by the cross-sectional variation in expected returns, or in other words, the profitability of momentum strategies simply reflects compensation for risk. Under this model, the average returns on the momentum strategies will continue to be positive in post-holding periods.

Although these three competing hypotheses imply positive profits in the holding period, the profitability of momentum strategies under each hypothesis defers sharply in the post-holding period. To identify which of the hypotheses would explain the momentum effect, JT (2001) examine the long horizon performance of momentum strategies. They find evidence on returns reversals in the post-holding periods, which support the behavioral hypothesis on the overreaction of stock prices.

In a nutshell, empirical analysis suggests that momentum effect arises from behavioral biases toward firm specific information, which motivate a number of subsequent studies to investigate the driving factors for information quality and investors' behavior. Chui et al. (2000, 2010) focus on cultural and institutional characteristics such as individualism, legal systems and ownership structure, which are likely to relate to conservatism, overconfidence and information quality. Chui et al. (2000) find that momentum profits are not significant in civil laws countries (Indonesia, Japan, Korea and Taiwan), supposing that price manipulation might occur and offset the momentum effect. Chui et al. (2010) report that individualism is positively correlated with the degree of momentum and that the magnitude of reversals tends to be higher in countries with higher individualism. Chordia and Shivakumar (2002) discover that momentum profits are positive only during expansionary periods and are negative or statistically insignificant during recession periods. Cooper, Gutierrez, and Hameed (2004) suggest that overconfidence will be greater after market gains and show that momentum strategies earn positive profits only after market increases. Du, Huang, and Liao (2009) indicate that the poor performance of momentum in the Taiwan stock market may be attributed to its down state-dependence and there are more down states in Taiwan than in developed markets. Antoniou, Doukas, and Subrahmanyam (2013) augment the Hong and Stein (1999) model by providing a linkage between investor sentiment

and momentum. They argue that due to cognitive dissonance, news watchers will under-react more strongly for bad (good) news when their sentiment is optimistic (pessimistic). Put differently, bad (good) news will spread slowly among losers (winners) when investor sentiment is optimistic (pessimistic). Consequently, momentum will be driven by the losers in optimistic periods and by the winners in pessimistic periods. Their empirical results show that momentum profits within periods of optimism are significantly positive and mainly driven by the continuing underperformance of losers. However, the profits are not significant in the pessimistic periods. Partitioning the sample into large and small trades, they find that small investors are slow to sell losers in the optimistic periods while institutional investors response more promptly to negative information. Antoniou et al. (2013)'s arguments and findings are in line with the results in the prior literature: momentum profits are strong during expansionary periods (Chordia & Shivakumar, 2002) or after market gains (Cooper et al., 2004; Du et al., 2009), while they are poor after market downs (Du et al., 2009).

4.3.Methodology

We employ the methodology initiated by JT (1993) but with weekly returns to examine the profitability of momentum strategies. We rank all stocks in week *t* from the lowest to the highest on the basis of their average returns over past *K* weeks. The stocks in the highest quintile are named "winners" and those in the lowest quintile "losers". Winner and loser portfolios are formed by allocating an equal weight across all component stocks. A portfolio that buys the winner portfolio and sells the loser portfolio is formed at week *t* and then held for *J* weeks (from

week *t* to week *t+J*)[20]. This is regarded as a winner-minus-loser (WML) portfolio. We call profit on the WML portfolio, because this is a zero-cost strategy, return is not determined.

A momentum strategy is formed at week *t* and held for *J* weeks, thus, *J* time series of raw profits on the WML portfolios are created. $R_{k,t}^{WML}$ (*k = 1,..., J*) are the raw profits on the WML portfolios that are formed *k* weeks ago. Following literature, in order to increase the power of our tests, overlapping profits in a given calendar week are examined. At week *t*, there are *J* WML portfolios – one formed in week *t-1*, one formed in week *t-2*, and so on. With an assumption of no transaction cost, the overlapping profit in calendar week *t* can be calculated as an equally weighted average of the *J* overlapping portfolios' profits in that week:

$$OR_{J,t}^{WML} = \frac{1}{J}\sum_{k=1}^{J} R_{k,t}^{WML} \qquad (4.1)$$

The overlapping returns on winner and loser portfolios in a given calendar week *t* can be calculated similarly.

The average of overlapping profit on the WML portfolio is employed as a metric to test the momentum of the market. *If the average profit is significantly positive, the momentum occurs, otherwise, it does not exist*. As the number of observations in our sample is limited, the profits on WML portfolios which are formed based on stock average returns over past one, two, four, eight and thirteen weeks (*K*=1, 2, 4, 8 and13) and held for the periods of one, two, four, eight and thirteen weeks (*J* =1, 2, 4, 8 and 13) are tested.

[20] Although in Vietnam short sales are prohibited, due to the loose management of the Vietnamese securities agency, brokers can short their customers' securities. For example, according to Hoang Loc, "Co hay khong hoi ban khong co phieu? ("Are there stock- short selling groups?") VnEconomy News on 10 September 2012 (retrieved from http://vneconomy.vn/20120909115411O6P0C7/co-hay-khong-hoi-ban-khong-co-phieu.htm); Hai Dang, "Nhieuchieu ban khongchungkhoan" ("Many ways to short stocks"), Tuoi Tre News on 17 October 2012 (retrieved from http://tuoitre.vn/kinh-te/516266/nhieu-chieu-ban-khong-chung-khoan.html) , stock short sales are prevalent in Vietnam. Thus, the prohibition of short sales is not cause for concern.

4.4.An overview of the Vietnamese stock market and data selection

4.4.1. An overview of the Vietnamese stock market

Vietnamese stocks are traded on two exchanges: Hochiminh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX). Established in 2000, HOSE provides the market for large firms and accounts for 87 percent of the total market capitalization as of the end June 2012[21]. Launched in 2005, HNX sets up the market for medium and small firms. The operations of these two exchanges are governed by the State Securities Commission (SSC)-the government's agency responsible for supervising the security markets.

Along with the economic growth, the Vietnamese stock exchanges have experienced remarkable growth since its inception. At the opening trading in 2000, there were only two stocks with a total market capitalization of VND 444 billion (USD 28 million). At the end of June 2012, the number of listed companies increased to 700 with a total market capitalization of VND 776 trillion (USD 37 billion). Although the market has grown rapidly over the period, it is still thin with its total market capitalization currently being of about 20 percent of GDP. Moreover, the market is strictly regulated by SSC with many restrictions such as price limits, no short-selling, settlement period of (T+3) days and an intraday trading ban. The daily price limit is an administrative tool to control price volatility. For instance, in July 2000 the daily price limit of HOSE was initially set at 5 percent above or below the closing price of the previous trading day. It was lowered to 1, 2, and then 3 percent during the recession period from 27/3/2008 to 18/8/2008 to prevent sharp drop in stock prices. In addition, short-selling and intraday trading of the same stock are prohibited to avert speculative trading or price manipulation. The settlement period of (T+3) days is also imposed to limit speculative trading on the market. Previously,

[21]Because our sample ends at June, 2012, the latest information in this paper is considered as at the end of June or at the end of 2012.

leverage has been used to bet on the market, which made the market more vulnerable to the monetary policy or the regulations on loans to the stock market.

Additionally, the market is strongly impacted by the trading of domestic individual investors, who often boast about their "stock playing" (i.e. stock investing). Many of these investors have limited knowledge and experiences in stock investments and make their buying or selling decisions based on past returns[22] and current rumors[23]. Short-term trading like surfing is popular among them, especially during expansion periods. Herding behavior is prevalent in the market (see Truong, 2011). These practices of individual investors cause high volatility of stock prices. Many individual stock prices are often driven to high (or low) level and then are quickly reversed.

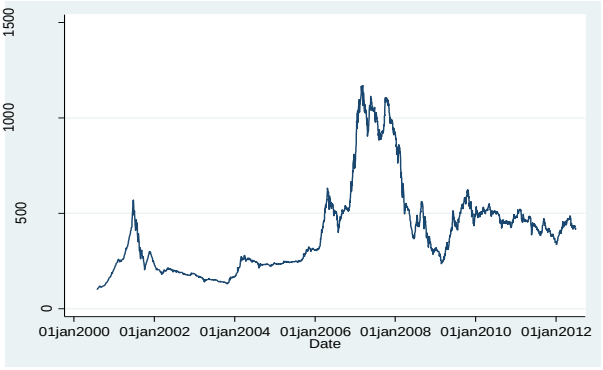

Figure 4.1[24]: Movement of VN Index

Figure 4.1 illustrates the movement of VN Index-the market index-since opening trading. The graph shows high volatility of stock prices, including four main phases. In the early stage from 2000 to 2004, except a peak of 571 points in June 2001 the index was around 200 points.

[22] Technical analysis is popular among individual investors in Vietnam.
[23] This practice of individual investors in Vietnam is quite similar to the practice of Chinese individual investors (see Kang, Liu, and Ni (2002)).
[24] The figure of movement of VN Index is constructed based on the daily data provided by iTrade corporation.

During this period, only 20 firms were listed with the total market capitalization less than 1% of the nation's GDP.

In the second phase from 2005 to the beginning of 2008, VN Index increased dramatically to its peak of 1170 points in March 2007 and then declined to the level of 800 points in the beginning of 2008. Along with the increase of the market index, the number of listed firms in two exchanges increased to 253 whereas the total market capitalization reached 25 percent of GDP, at the end of 2007. One of the reasons for this dramatic rise was Vietnam joining the World Trade Organization in January 2007. Additionally, international newspapers highly appreciated Vietnam's economic growth and its stock market, which created a surge of foreign investments into Vietnam. Confidence in the country's perspective and the inflow of foreign investments fueled excessive optimism that flourished the trading of domestic individual investors. Moreover, the loose monetary policy of the central bank in this period resulted in an aggressive use of leverage, which further spurred the market prices.

However, at the beginning of 2008, the tightened monetary policy to curb inflation restricted loans to the stock market, which caused a sharp decline afterward. VN Index fell from 800 points at the beginning of 2008 to 600 points in March. To restrain the collapse, SSC temporarily narrowed daily price limits varying from 1 percent to 3 percent during the period from 27/3/2008 to 18/8/2008. Thus the index has stopped at about 400 points in June, recovered to around 500 points in the beginning of September. Unfortunately, the Lehmann shock pulled down the index again to its trough of 234 points in February, 2009. During this third phase, the number of listed firms in the two exchanges increased to 320, but the total market capitalization decreased to around 10 percent of GDP at the end of 2008.

The index recovered to around 500 points in September 2009 and kept sluggish to the end of June 2012. Although the number of listed firms increased to 700, the total market capitalization was around 20 percent of GDP at the end of 2012.

In summary, the Vietnamese stock market has experienced a significant growth in both the number of stocks and market capitalization. The movement of VN Index, nevertheless, has shown high volatility. The operation of the market is heavily regulated by supervising authorities. The market is strongly impacted by the trading of domestic individual investors, who are lack professional investment knowledge and investment experience.

4.4.2. Data selection

We use a sample of simple weekly returns of stocks listed on the Ho Chi Minh Stock Exchange (HOSE) for the period between January 2007 and June 2012. The data was supplied by iTrade corporation- a data provider of the Vietnamese stock market. Although the HOSE had its first trading section on July 28th 2000, the sample of the period prior to 2007 is not utilized because it has not enough stocks to build portfolios.

To compute the past 13-week returns on individual stocks and to measure returns on the momentum portfolios which are held up to 13 weeks, we require all selected stocks to have return history of at least 26 weeks. Thus, stocks listed after January 1st 2012 are deleted from our sample. In addition, for some stocks that had been traded in the Hanoi Stock Exchange (HNX) before being moved to the HOSE, only the data for the period of being traded in the HOSE are utilized[25]. The sample also excludes some stocks that had been traded in the HOSE before being

[25]We do not use the data in the HNX because of the differences in trading mechanisms in the two exchanges. While the HOSE employs two trading methods: a call auction to determine opening and closing prices, and a continuous order matching, the HNX applies only a continuous order matching method. Also, the regulated daily price limit in

moved to the HNX as they were small firms and did not meet the HOSE's minimum capital regulation for listing[26]. Furthermore, to avoid the effect of extremely small and/ or illiquid stocks, we treat them as follows. First, for small stocks that have prices below VND10,000[27] in any single week, their returns in that week is treated as missing. Second, in a week that a stock is not traded, its return is also treated as missing. After handling the small and illiquid stocks, we again screen out stocks with the requirement of having at least 26-week returns. Finally, we have a sample with the number of stocks ranging from 67 (in beginning of 2007) to 267 (at the end of June 2012).

As the prices have already been adjusted for dividend payments and stock splits, the simple weekly return on each security is calculated - using Wednesday-Wednesday closing prices to avoid the weekend effects. The choice of a weekly sampling interval is to gain a large number of observations while lessening the biases arising from the daily price limit[28]. Instead of using continuously compounded returns, we choose simple returns as the simple return on a portfolio is equal to the weighted average of its component stocks' simple returns. This characteristic does not work for the continuously compounded returns.

The market index, the VN-Index, calculated as the capitalization-weighted average of all stocks listed on the HOSE is employed as a proxy for the market portfolio. The weekly return of VN-Index calculated based on Wednesday-Wednesday closing indices is applied as a proxy of

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the HOSE is (+/-) 5 percent, while that in the HNX is (+/-) 7 percent. Therefore, the inclusion of data from the HNX may cause bias.

[26] According to Document No.163/UBCK-PTTT issued by the State Security Commission of Vietnam on 10 February 2009, by August 2009 (retrieved from http://www.vinanet.com.vn/uy-ban-chung-khoan-nha-nuoc/300/cqbh.xhtml) those firms who are being listed on the HOSE but cannot meet the minimum capital of 80 billion Vietnamese Dong (VND) have to move to the HSX which applies a minimum capital of 10 billion VND.

[27] In Vietnam all stocks have a face value of ten thousand VND.

[28] The regular daily price limit of the HOSE is (+/-) 5 percent.

the market return. An equivalent weekly rate of the five year-Treasury bond with an assumption that there are 52 weeks in a year is adopted as a proxy for the risk-free rate[29].

4.5.Empirical results

4.5.1. Evidence on the momentum effect

Table 4.1 presents the average raw returns and profits on the winner, loser and WML portfolios which select stocks based on their average returns over past *K* weeks and hold them for *J* weeks (*K*=1, 2, 4, 8 and 13, *J* = 1, 2, 4, 8 and 13).

The results show that the profits on the WML portfolios with *K*=1 are significantly positive over all holding periods (*J*), while those on the WML portfolios with other intervals (*K*) are significantly positive over one, two or three holding periods. In addition, for each interval (*K)* the profit tends to fall for longer holding period (*J*), which is similar to the findings of (Rouwenhorst, 1998) . The portfolio with *K*=1 and *J*=1 earns the highest profit of 0.83 percent per week.

Taking a look at the profits on the WML portfolios with *K*=1, 2, 4, 8 and 13, *J*=1, we find that the profits are still significant for sorting intervals longer than one week, but the portfolio with *K*=1 has a higher and slightly less risky[30] profit than the others. We have similar results with *J*=2, 8 and 13. These findings imply that one-week returns provide more substantial information than longer-horizon returns in predicting future returns. For *J*=4, the portfolio with *K*=4 gains a larger profit (0.37 percent per week) but suffers from larger risk (standard deviation of 3 percent per week) than the portfolio with *K*=1, of which the profit and standard deviation are

[29] Since the data on the secondary market T-bonds' yields are not available, we use the primary market yields by regarding the minimum among accepted yields of bond auctions - conducted within a month as the rate of that month. For any month in which no auction is implemented or succeeded, the rate of the previous month is applied alternatively. We choose the five year-T bond's yield as this bond is the most - frequently issued. The data are collected from the website of HNX (http://bond.hnx.vn).

[30] The standard deviation of profit on the portfolio with *K*=1 is slightly lower than those of the others.

0.30 percent and 2.11 percent per week, respectively. Put differently, the portfolio with K=4 has a 23 percent higher gain but bears 42 percent larger risk than the one with K=1. This means that the latter is better than the former, confirming the ability of one-week returns in predicting future returns.

From a practical point of view, it is important to examine the profitability of the momentum strategies after considering transaction costs. In the Vietnamese stock market, transaction costs range from 0.15 percent to 0.35 percent of trading value and decrease for larger trading value[31]. Since momentum is considered as an arbitrage opportunity which is commonly realized by institutional investors with huge trading value, it is plausible to impose the lowest trading cost of 0.15 percent on the momentum strategies. Considering the strategy with J =1, the transaction cost is imposed twice on each long and short position at the portfolio formation and disposal. Furthermore, the momentum profit is the difference between returns on winner and loser portfolios, thus can be seen as return per dollar invested in the long position. Consequently, for the strategy with J=1, four times of the transaction cost should be cut down from its profit. For the strategy with J=2, since the profit is determined as the overlapping average profit on two WML portfolios at a calendar week, the transaction cost is charged four times to each position during two weeks. This means that the transaction cost is imposed twice per week on each long and short position. Hence, for the strategy with J=2, four times of the transaction cost should be deducted from its weekly profit. Similarly, for the strategies with J= 4, 8 and 13, four times of the transaction cost should be subtracted from their weekly profit. After accounting for a transaction cost of 0.15 percent, only profits on the two strategies with K=1, 2 and J =1 still exist, whereas the profits on the remaining strategies vanish absolutely.

[31]According to the trading fee tables of some big securities companies such as HSC, SSI, VCBS, ACBS as in October 2012. The lowest trading cost (0.15 percent) is provided by HSC and VCBS for the trading value of more than one billion VND (equivalently, USD 50,000).

Table 4.1: Returns and profits on winner, loser and winner-minus-loser portfolios

K	*J*	**0**	**1**	**2**	**4**	**8**	**13**
1	Winners	0.0833***	0.0054	0.0038	0.0026	0.0017	0.0014
		(21.11)	(1.35)	(0.93)	(0.62)	(0.41)	(0.32)
		[0.0658]	[0.0580]	[0.0551]	[0.0532]	[0.0519]	[0.0509]
	Losers	-0.0707***	-0.0029	-0.002	-0.0004	-0.0002	0.0000
		(-24.92)	(-0.83)	(-0.54)	(-0.09)	(-0.06)	(0.00)
		[0.0473]	[0.0532]	[0.0534]	[0.0527]	[0.0518]	[0.0519]
	WML	0.1540***	0.0083***	0.0058***	0.0030*	0.0020*	0.0014*
		(57.11)	(3.22)	(2.69)	(1.76)	(1.70)	(1.70)
		[0.0450]	[0.0367]	[0.0287]	[0.0211]	[0.0148]	[0.0115]
2	Winners	0.0584***	0.0040	0.0033	0.0028	0.0020	0.0016
		(14.73)	(1.03)	(0.83)	(0.67)	(0.47)	(0.38)
		[0.0662]	[0.0571]	[0.0548]	[0.0534]	[0.0523]	[0.0510]
	Losers	-0.0488 ***	-0.0022	-0.0014	-0.0003	-0.0004	-0.000
		(-16.36)	(-0.61)	(-0.35)	(-0.06)	(-0.09)	(-0.00)
		[0.0497]	[0.0559]	[0.0555]	[0.0541]	[0.0528]	[0.0530]
	WML	0.1073 ***	0.0062**	0.0047**	0.0031	0.0024	0.0016
		(40.69)	(2.33)	(2.00)	(1.60)	(1.60)	(1.56)
		[0.0440]	[0.0394]	[0.0333]	[0.0259]	[0.0192]	[0.0159]
4	Winners	0.0408***	0.0039	0.0036	0.0032	0.0020	0.0017
		(10.91)	(1.02)	(0.93)	(0.77)	(0.47)	(0.40)
		[0.0623]	[0.0559]	[0.0545]	[0.0537]	[0.0521]	[0.0509]
	Losers	-0.0341***	-0.0006	-0.0007	-0.0005	-0.0001	0.00005
		(-11.40)	(-0.16)	(-0.16)	(-0.13)	(-0.03)	(0.01)
		[0.0499]	[0.0573]	[0.0563]	[0.0550]	[0.0546]	[0.0547]
	WML	0.0749 ***	0.0044*	0.0043*	0.0037*	0.0021	0.0016
		(32.14)	(1.75)	(1.79)	(1.77)	(1.18)	(1.23)
		[0.0389]	[0.0384]	[0.0347]	[0.0300]	[0.0252]	[0.0222]
8	Winners	0.0289***	0.0037	0.0032	0.0025	0.0020	0.0014
		(8.01)	(0.99)	(0.83)	(0.61)	(0.46)	(0.33)
		[0.0601]	[0.0558]	[0.0546]	[0.0534]	[0.0525]	[0.0512]
	Losers	-0.0249***	-0.0010	-0.0006	-0.0004	-0.0001	0.0005
		(-7.98)	(-0.27)	(-0.14)	(-0.10)	(-0.03)	(0.10)
		[0.0520]	[0.0560]	[0.0568]	[0.0567]	[0.0564]	[0.0565]
	WML	0.0538***	0.0047*	0.0040	0.0030	0.0021	0.0009
		(23.68)	(1.88)	(1.54)	(1.23)	(1.01)	(0.52)
		[0.0379]	[0.0377]	[0.0359]	[0.0335]	[0.0304]	[0.0285]
13	Winners	0.0224***	0.0040	0.0033	0.0025	0.0017	0.0011
		(6.38)	(1.08)	(0.86)	(0.62)	(0.40)	(0.28)
		[0.0586]	[0.0554]	[0.0543]	[0.0535]	[0.0524]	[0.0512]
	Losers	-0.0203***	-0.0013	-0.0011	-0.0006	0.00005	0.0005
		(-6.30)	(-0.35)	(-0.26)	(-0.14)	(0.01)	(0.11)
		[0.0536]	[0.0565]	[0.0565]	[0.0572]	[0.0578]	[0.0574]
	WML	0.0427***	0.0053**	0.0044*	0.0031	0.0016	0.0006
		(19.80)	(2.13)	(1.70)	(1.18)	(0.68)	(0.32)
		[0.0359]	[0.0372]	[0.0359]	[0.0354]	[0.0350]	[0.0330]

For each week (J=0) from January 2007 to June 2012, stocks are ranked from the highest to the lowest on the basis of their average returns of the previous K weeks (K=1, 2, 4, 8 and 13). The stocks in the highest quintile are called "winners" and those in the lowest are called "losers". Winner and loser portfolios are formed by allocating an equal weight across all component stocks. A winner-minus-loser (WML) portfolio is constructed by buying the winners and selling the losers, and is held for J weeks (J=1, 2, 4, 8 and 13). The time series of overlapping returns or profits on the winner, loser and WML portfolios over J weeks are calculated. To test the null hypothesis that the average returns or profits are equal to zero, t-statistics are calculated using Newey-West standard errors and setting the number of lags equal to the number of overlapping weeks in each calendar

week. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. t-statistics are presented in parentheses. Standard deviations are shown in square brackets.

Table 4.1 also reports the average returns on winners and losers separately. The winner and loser returns are insignificant for all couples of *K* and *J*, raising a concern over their significance in the sorting week, that is, whether the momentum strategies are based on significant information. The first column indicates that in the sorting week (*J*=0), the returns on winners are significantly positive and decrease as the ranking interval is longer, while the returns on losers are significantly negative and their absolute values decrease for longer ranking intervals. This means that the momentum strategies are built on significant information.

The extremely high returns of winners in the sorting week (*J*=0) in comparison with their low and insignificant returns in the following weeks raise a concern whether the high returns are driven by some special corporate events such as stock issues. Since the list of winners and losers varies from week to week, it is difficult to examine the relationship between stock returns and stock issues for all stocks within this paper. Thus, we carry out a rough test on some specific stocks of high and low frequency of being winners (losers). We sort stocks by their frequency of being winners (losers), select top ten high- and low-frequency stocks and observe the events of stock issue during our sample period. Table 4.2 shows the frequency of being winners (losers), of stock issues and average return on these stocks. The findings uncover that the high returns are not likely to be driven by the stock issuances. For example, a mining stock, named KSH had 57 times of being a winner in its 163 observations for the period of three and a half year, but did not have any stock issue during the period. However, a real estate stock, namely PPI had two times of stock issues but suffered 22 times of being a loser relative to its 61 observations in more than two years. Thus, the correlation between the high returns in sorting weeks and the stock

issuances is unlikely to exist. This test also reveals that eight of the top ten-high frequency stocks being winners have higher average returns than the market average return, whereas seven of the top ten –low frequency stocks being winners have lower average returns. This means that winners can be divided into two groups: “clear winners”- the stocks with high persistence of their returns and “noisy winners”- the stocks with low persistence of their returns. For the losers, all top ten-high frequency stocks being losers have lower average returns than the average market return, whereas nine of top ten-low frequency stocks being losers have higher average returns. Put differently, two kinds of clear and noisy losers are also found. Moreover, the correlation between these two frequencies is 34.59 percent, indicating that the probability of a winner becoming a loser and vice versa is extremely high.

Table 4.2: Relationship between frequency of being winners (losers) and that of stock issue

Firm code	Observations	Frequency of being winners (losers)	Frequency of being winners (losers) /Total observations	Frequency of stock issues	Average return
Panel A. Top ten high frequency stocks being winners					
LM8	45	16	0.356	0	0.0045
VTF	74	26	0.351	0	0.0177
KSH	163	57	0.350	0	0.0051
STG	92	32	0.348	0	0.0080
JVC	51	17	0.333	0	0.0056
VES	45	15	0.333	0	-0.0021
MSN	134	44	0.328	2	0.0094
VIC	241	76	0.315	3	0.0082
DLG	101	31	0.307	2	-0.0038
VCF	70	21	0.30	1	0.0143
Panel B. Top ten low frequency stocks being winners					
PGD	129	16	0.124	2	-0.0010
PIT	171	21	0.123	4	-0.0032
PXM	33	4	0.121	0	-0.0189
DCT	167	20	0.120	3	0.0004
PTL	26	3	0.115	0	-0.0207
TLH	48	5	0.104	1	-0.0207
VST	97	10	0.103	1	0.0012
PDR	96	8	0.083	0	-0.0101
GTA	137	11	0.080	1	-0.0020
BCE	39	3	0.077	1	-0.0112
Panel C. Top ten high frequency stocks being losers					
VES	45	20	0.444	0	-0.0021
NVT	39	17	0.436	0	-0.0241
TMT	61	25	0.410	2	-0.0160
CCL	38	15	0.395	0	-0.0106
NTB	46	18	0.391	1	-0.0215
CMT	59	23	0.390	0	-0.0234
VLF	52	19	0.365	1	-0.0110
DTA	33	12	0.364	1	-0.0277
PXM	33	12	0.364	0	-0.0189
PPI	61	22	0.361	2	-0.0146
Panel D. Top ten low frequency stocks being losers					
KHP	201	21	0.104	3	0.0027
PGD	129	13	0.101	2	-0.0010
SMC	263	24	0.091	3	0.0029
VSC	225	20	0.089	3	0.0022
GIL	275	24	0.087	2	0.0054
DSN	81	7	0.086	0	0.0090
AAM	139	12	0.086	1	0.0003
CSG	70	6	0.086	0	0.0071
PHR	145	12	0.083	0	-0.0003
EIB	136	9	0.066	2	0.0014
Market					-0.0009

We sort stocks by their frequency of being winners (losers). This table shows the frequency of being winners, frequency of stock issuances, and average returns of top ten high- and low-frequency stocks.

The low persistence of winners and losers is reaffirmed by the results in Table 4.3, which provides information on the conditional probability of a stock belonging to group *i* at week *t,* given the knowledge that it has been already sorted in group *j* at week *t-1*.

Table 4.3: Transition matrix

		S=i, t				
		1	2	3	4	5
S=j, t-1	1	0.2135	0.1851	0.1805	0.1971	0.2238
	2	0.1669	0.2153	0.221	0.2201	0.1768
	3	0.1671	0.2078	0.2275	0.2201	0.1776
	4	0.1838	0.2153	0.2079	0.2037	0.1894
	5	0.2437	0.1817	0.1631	0.1708	0.2408

For each week from January 2007 to June 2012, stocks are ranked from the highest to the lowest based on their previous one week return (K=1) and then divided into five groups. Group 1 includes the lowest-quintile stocks, i.e. the losers; group 5 consists of the highest-quintile ones, i.e. the winners and the same rules for others. The conditional probability of a stock belonging to group i at week t, given the knowledge that it has been already sorted in group j at week t-1 , i.e., Prob (S=i, t|S=j, t-1) is presented in the table.

The results indicate that only 24.08 percent of winners continue being winners and 21.35 percent of losers continue being losers in the following week. The probability of a winner falling in other groups for the subsequent week is 75.02 percent, including a 24.37 percent chance of dropping into losers. The probability of a loser moving to other groups in the subsequent week is 78.65 percent, including a 22.38 percent chance of becoming a winner. The high volatility of stock returns confirms the existence of noisy winners and losers.

An additional question is why the insignificant returns of winners and losers produce significant momentum profits. The average standard deviations of returns or profits on the winner, loser and WML portfolios for all couples of *K* and *J* – which can be calculated from Table 4.1- are 0.0536, 0.0552 and 0.0296, respectively. These uncover that returns on winners or

losers are much more volatile than profits on WML portfolios. Table 4.4 shows the correlations between returns on the winner and loser for each couple of K and J. The average correlation is around 0.8463. As the WML portfolios are built by buying the winners and selling the losers, the highly positive correlation between winner and loser returns reduces the standard deviation of the WML profits, making the momentum profits significant in some periods. Put differently, the findings confirm the portfolio diversification effect: high correlation between long and short positions produce less variance of the WML profits. Nevertheless, the risk of WML profits still exists, which should be accounted for in the next section. Moreover, the high correlation between returns on winners and losers indicate highly synchronous returns of stocks-a pervasive phenomenon in low-income countries (Durnev, Li, Mørck, & Yeung, 2004). Stock prices tend to rise and fall *en masse*, in other words, market failed to distinguish bad and good stock, which is consistent with trading behavior of individual investors as illustrated earlier.

Table 4.4: Correlations between winner and loser portfolios for each couple of K and J

K, J	0	1	2	4	8	13
1	0.7303	0.7856	0.8609	0.9206	0.9591	0.9751
2	0.7475	0.7569	0.8181	0.8841	0.9332	0.9541
4	0.7818	0.7701	0.8048	0.8481	0.8895	0.9143
8	0.7811	0.7722	0.7928	0.8168	0.8462	0.8646
13	0.7982	0.7798	0.7904	0.7980	0.8023	0.8209

JT (1993) argue that in order to avoid some of the bid-ask spread, price pressure and lagged reaction effects, a second set of strategies that skip one week between the portfolio formation and the holding periods should be examined. Since we use closing prices determined by call-auctions, the problem of bid-ask spread is not a concern.

In a nutshell, the evidence asserts that momentum occurs in the Vietnamese stock market for some sorting and holding periods. After being controlled for transaction costs, only two strategies with K=1, 2 and J =1 earn significantly positive profits. The results also indicate that one-week returns provide more substantial information than longer-horizon returns in predicting future returns. Furthermore, the winner and loser returns are less persistent and highly volatile, but their strong correlation creates significant momentum profits.

4.5.2. Momentum profits within size-and pre-or post Lehman shock-subsamples

JT (1993) argue that if the momentum profits are driven by the cross-sectional dispersion in expected returns, the size-subsamples will earn lower profits than the full sample due to the less difference of expected returns within size-subsamples. Additionally, if the profits are factor-related, the small-sized subsample- which consists of less actively traded stocks is likely to yield a higher profit than the large-sized subsample.

In our sample, the average market capitalization of winners and losers shows that the winners contain large firms, while the losers include small firms[32], which is different from JT(1993)'s result that the highest and lowest past return-portfolios consist of small stocks. This implies that the momentum may be limited to any particular subsample of stocks. Thus, at the beginning of each year, we classify stocks into three categories of small, medium and large sizes based on their market capitalization at the previous year-end[33]. The profits on the WML portfolio built from the three categories are examined to clarify whether they are due to either the difference in expected returns or the positive serial correlation in factor returns.

[32] The average market capitalization of winners and losers is 2,620 billion VND and 2,280 billion VND, respectively, while that of the entire sample is 2,540 billion VND.

[33]Market capitalization of each firm at the year-end is calculated as a product of the market price of its common stock and the number of outstanding stocks at that time.

Fama (1970, 1991) asserts that anomalies should be tested in the context of a pricing model as they may be compensation for risk. Additionally, our previous section asserts that although being zero-cost portfolios, the momentum strategies are still risky. Thus, we employ two commonly used models- the CAPM and the Fama-French three factor model[34]to account for risk.

Furthermore, Chordia and Shivakumar (2002) find relationship between momentum profits and business cycle; Jegadeesh and Titman (2011) report negative momentum profits in 2008 and 2009 when the market severely declined; Chui et al. (2000) show insignificant momentum profits in the Asian markets for the post-crisis period. Our sample includes a severe market decline period since the beginning of 2008. From its high level of 800 points at the beginning of 2008, VN Index has fell to about 400 points in June, recovered to around 500 points at the beginning of September, but since the Lehmann shock it has again slumped to the lowest level of 234 points in February, 2009, and then has been sluggish around 400 points to the end of the sample period. Besides, during the period from 27/3/2008 to 18/8/2008, to prevent market declines, the State Securities Commission of Vietnam applied temporary daily price limits varying from (+/-)1 percent to (+/-) 3 percent instead of the regular regulation of (+/-) 5 percent. This sample period should be removed from our sample to prevent bias arising due to the administrative intervention. Hence, we divide our sample into two periods: before the Lehmann shock (from January 2007 to March 2008) and after the Lehmann shock (from September 2008 to June 2012) to examine whether the momentum effect is limited to any particular period.

[34]I followed Fama and French (1996) to build the SMB and HML portfolios. As a part of this work, I tested the fitness of the Fama-French three factor model in the Vietnamese stock market. A paper entitled "Testing Fama-French Model in the Vietnam Securities Market" was published in Banking Technology Review, Vol. 81- a Vietnamese journal.

As reported earlier, the strategy with K=1 and J=1 yields the highest profit, thus for brevity, the profit of this strategy constructed within size- and pre- and post- Lehmann shock subsamples is further examined. The results are presented in Table 4.5.

Observing the momentum profits by periods, we find that the raw and the risk-adjusted profits in the first period are strongly and significantly positive, while those in the second period are insignificant. This means that the momentum is confined to the period prior to the Lehmann shock. Our statistics[35] shows that the standard deviations and the correlation of winner and looser returns in the first period are not very different from the corresponding statistics in the second period, while the difference between winner and loser returns in the first period is rather higher than that in the second period. Indeed, large difference between winner and looser returns makes momentum significant in the first period and small difference drives the momentum insignificant in the second period.

Looking at profits by sizes, we find that for the first period, the small and the large-sized subsamples have a little bit lower raw profits than the full sample. Additionally, the small-sized subsample gains a little bit higher profit than the large-sized one. These results do not strongly support the argument by JT (1993) that momentum may be due to the dispersion in expected returns or the positive serial correlation in factor returns. Furthermore, the risk-adjusted profits from the small and the large-sized subsamples are statistically significant. This means that momentum is limited to the small and large-sized subsamples and cannot be regarded as the compensation for risk. Hence, it can be considered as delayed price reactions to information, as

[35] In the first period, the mean, standard deviation of the winner portfolio are 0.78% and 6.4% while those of loser portfolio are -0.82% and 5.7%. The correlation between winner and loser portfolios is 0.80. In the second period, the mean, standard deviation of the winner portfolio are 0.25% and 5.4% while those of loser portfolio are 0.14% and 5.1%. The correlation between winner and loser portfolio is 0.83.

mentioned in JT (1993). For the second period, the raw and the risk-adjusted profits from all size-subsamples are not significant, which is in accordance with the previous finding on the absence of momentum during this period.

Table 4.5: Momentum within size-, pre- and post-the Lehmann shock subsamples

Periods		All	Small	Medium	Large
Whole period	Raw	0.0083***	0.0026	0.0030	0.0094***
1/2007-6/2012		(3.22)	(0.83)	(1.16)	(3.24)
	CAPM alpha	0.0086***	0.0032	0.0034	0.0097***
		(3.25)	(1.04)	(1.32)	(3.34)
	FF alpha	0.0084***	0.0028	0.0032	0.0098***
		(3.20)	(0.94)	(1.27)	(3.32)
First period	Raw	0.0161***	0.0156**	0.0057	0.0154**
1/2007- 3/2008		(2.77)	(2.24)	(1.12)	(2.40)
	CAPM alpha	0.0171***	0.0171**	0.0061	0.0168**
		(2.82)	(2.54)	(1.16)	(2.55)
	FF alpha	0.0154**	0.0148*	0.0045	0.0163**
		(2.54)	(2.06)	(0.84)	(2.40)
Second period	Raw	0.0007	-0.0054	-0.0031	0.0021
9/2008-6/2012		(0.30)	(-1.59)	(-1.33)	(0.76)
	CAPM alpha	0.0006	-0.0050	-0.0029	0.0022
		(0.28)	(-1.50)	(-1.25)	(0.78)
	FF alpha	0.0005	-0.0052	-0.0029	0.0023
		(0.21)	(-1.58)	(-1.20)	(0.78)

At the beginning of each year, all stocks are sorted into three categories of small, medium and large size based on their market capitalization at the end of the previous year. Winner, loser and WML portfolios are formed within each category by the method described in Table 4.1. The raw profit, CAPM and Fama French three factor model alphas on the WML portfolio that selects stocks on the basis of their previous one-week returns and holds them for one week are reported. t-statistics are calculated using Newey-West standard errors to test the null hypothesis that the profit or alphas are equal to zero. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. t-statistics are presented in parentheses.

4.5.3. Performance of momentum profits in the post-holding period

In this section we analyze the profits in longer horizons following the holding period to examine whether the momentum is driven by either the under-reaction or the over-reaction hypothesis. Due to the limitation of observation number, we focus on the profits up to six months or 26 weeks following the formation week. Additionally, the profit on the strategy with K=1 and J=1 is further examined.

As described earlier, 26 time series of raw profits on the WML portfolios that are formed k weeks ago ($k = 1,\ldots,26$) are created. Following (Cooper et al., 2004), we regress these 26 time series of raw profits against a constant and the appropriate factors.

$$R_{kt} = \alpha + \sum_i \beta_{ik} f_{it} + \varepsilon \tag{4.2}$$

Then, the risk-adjusted profits are calculated as:

$$R_{kt}^{adj} = R_{kt} - \sum_i \hat{\beta}_{ik} f_{it} \tag{4.3}$$

where R_{kt} is the time series of raw profits on the WML portfolio that is formed k weeks ago. f_{it} is the realization of factor i in week t. $\hat{\beta}_{ik}$ is the estimated loadings of the time series of raw profit on the factors. The excess return of the market index over the risk free rate is used as the unique factor for the CAPM-adjusted profit, and the two more factors, SMB and HML, are served for the Fama-French-adjusted profit.

The weekly average raw or risk-adjusted profits between week k_1 and k_2, following the formation week are calculated:

$$AR_{k_1,k_2} = \sum_{k=k_1}^{k_2} R^*_{k,t+k} / (k_2 - k_1 + 1) \tag{4.4}$$

where AR_{k_1,k_2} is the average weekly profit between week k_1 and k_2, R^* is either the raw or the risk-adjusted profit. Table 4.6 demonstrates the weekly average profits over the first month ($k_1=2$, $k_2=5$), second month ($k_1=6$, $k_2=9$), third month ($k_1=10$, $k_2=13$) and the following three months ($k_1=14$, $k_2=26$) after the holding period.

Table 4.6 shows that for the whole and the first periods, after reaching a significantly positive rate in week 1, the raw and the risk-adjusted profits become insignificant in the subsequent months. In the second period, the raw and risk-adjusted profits are insignificant in week 1 and in all following months, confirming the absence of momentum.

Table 4.6: Average weekly profit in the post holding periods

	Week 0	Week 1	Week 2-5	Week 6-9	Week 10-13	Week 14-26
			Whole period (1/2007-6/2012)			
Raw profit	0.1540***	0.0083***	0.0009	0.0004	0.0007	-0.0006
	(57.11)	(3.22)	(0.80)	(0.40)	(0.65)	(-1.00)
CAPM alpha	0.1547 ***	0.0086***	0.0009	0.0004	0.00067	-0.0006
	(59.56)	(3.25)	(0.80)	(0.41)	(0.60)	(-1.11)
Fama-French	0.1542***	0.0084***	0.0009	0.0007	0.00087	-0.00065
alpha	(62.24)	(3.20)	(0.78)	(0.65)	(0.86)	(-1.30)
			First period (1/2007-3/2008)			
Raw profit	0.1562***	0.0161***	0.0023	0.0017	0.0014	-0.0013
	(22.74)	(2.77)	(0.91)	(0.49)	(0.37)	(-1.10)
CAPM alpha	0.1586***	0.0171***	0.0026	0.0021	0.0016	-0.0014
	(24.61)	(2.82)	(1.07)	(0.66)	(0.43)	(-1.19)
Fama-French	0.1556***	0.0154***	0.0025	0.0037	0.0038	-0.0011
alpha	(25.75)	(2.54)	(1.01)	(1.42)	(1.40)	(-0.72)
			Second period (9/2008-6/2012)			
Raw profit	0.1554***	0.0007	-0.0011	0.0003	0.0008	-0.0006
	(58.19)	(0.30)	(-0.94)	(0.37)	(0.81)	(-0.86)
CAPM alpha	0.1558***	0.0006	-0.0011	0.0003	0.0007	-0.0007
	(58.97)	(0.28)	(-0.95)	(0.34)	(0.77)	(-0.90)
Fama-French	0.1559***	0.0005	-0.0012	0.0000	0.0006	-0.0009
alpha	(63.40)	(0.21)	(-1.10)	(0.02)	(0.65)	(-1.35)

Note: For each week (week 0) from January 2007 to June 2012, stocks are ranked from the highest to the lowest based on their previous one-week returns. The stocks in the highest quintile are called "winners" and those in the lowest are called "losers". Winner and loser portfolios are formed by allocating an equal weight across all component stocks. A WML portfolio is constructed by buying the winner portfolio and selling the loser one, and is held for one week. The raw and the risk-adjusted average profits on the WML portfolio in week 1, over the first month (week 2-5), second month (week 6-9), third month (week 10-13) and the following three months (week 14-26) after the holding period are calculated by equations (2), (3) and (4). (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. t-statistics are presented in parentheses.

Table 4.7: Momentum and market states

	Week 0	Week 1	Week 2-5	Week 6-9	Week 10-13	Week 14-26
Panel A: Whole period (1/2007-6/2012)						
Average weekly profits following UP markets						
Raw profit	0.1715 ***	0.0135***	0.0030**	-0.0002	-0.0013	-0.0008
	(45.49)	(4.13)	(2.20)	(-0.15)	(-0.88)	(-1.12)
CAPM alpha	0.1711***	0.0133***	0.0031**	-0.0004	-0.0010	-0.0006
	(47.13)	(4.12)	(2.30)	(-0.33)	(-0.67)	(-0.81)
Fama-French	0.1688***	0.0127***	0.0029**	0.0007	-0.00002	-0.0011
alpha	(48.51)	(3.94)	(2.22)	(0.59)	(-0.02)	(-1.56)
Average weekly profits following DOWN markets						
Raw profit	0.1397***	0.0041	-0.0007	0.0009	0.0024*	-0.0004
	(40.99)	(1.40)	(-0.59)	(0.79)	(1.80)	(-0.62)
CAPM alpha	0.1413***	0.0047	-0.0008	0.0012	0.0020	-0.0007
	(43.05)	(1.59)	(-0.66)	(0.98)	(1.54)	(-1.07)
Fama-French	0.1424***	0.0049*	-0.0007	0.0007	0.0016	-0.0003
alpha	(45.27)	(1.69)	(-0.61)	(0.57)	(1.29)	(-0.47)
Panel B: First period (1/2007-3/2008)						
Average weekly profits following UP markets						
Raw profit	0.1914***	0.0257***	0.0071**	0.0034	-0.0027	0.0000
	(22.66)	(3.55)	(2.19)	(0.87)	(-0.54)	(0.02)
CAPM alpha	0.1899***	0.0247***	0.007**	0.0023	-0.0025	-0.0002
	(23.53)	(3.48)	(2.23)	(0.61)	(-0.52)	(-0.09)
Fama-French	0.1849***	0.0224***	0.0063**	0.0067**	0.0034	-0.0039*
alpha	(24.50)	(3.24)	(2.12)	(2.02)	(0.80)	(-1.88)
Average weekly profits following DOWN markets						
Raw profit	0.1280***	0.0085	-0.0015	0.0002	0.0046	-0.0024
	(16.95)	(1.31)	(-0.51)	(0.07)	(1.05)	(-1.29)
CAPM alpha	0.1341 ***	0.0110*	-0.0009	0.0019	0.0048	-0.0023
	(18.66)	(1.73)	(-0.31)	(0.58)	(1.11)	(-1.27)
Fama-French	0.1322 ***	0.0099	-0.0006	0.0013	0.0042	0.0011
alpha	(19.59)	(1.60)	(-0.21)	(0.44)	(1.11)	(0.57)
Panel C: Second period (9/2008-6/2012)						
Average weekly profits following UP markets						
Raw profit	0.1633***	0.0040	0.0007	-0.0002	0.0001	-0.0014**
	(42.50)	(1.28)	(0.49)	(-0.14)	(0.05)	(-2.01)
CAPM alpha	0.1635***	0.0039	0.0009	-0.0003	0.0001	-0.0012*
	(43.18)	(1.28)	(0.65)	(-0.21)	(0.09)	(-1.69)
Fama-French	0.1612***	0.0029	0.0007	-0.0007	-0.0003	-0.0013*
alpha	(45.85)	(0.94)	(0.50)	(0.59)	(-0.24)	(-1.85)
Average weekly profits following DOWN markets						
Raw profit	0.1485***	-0.0022	-0.0026**	0.0008	0.0014	0.0001
	(41.33)	(-0.77)	(-2.02)	(0.67)	(1.18)	(0.13)
CAPM alpha	0.1490***	-0.0023	-0.0028**	0.0008	0.0013	-0.0002
	(42.08)	(-0.79)	(-2.21)	(0.69)	(1.07)	(-0.27)
Fama-French	0.1511***	-0.0016	-0.0029*	0.0007	0.0014	-0.0006
alpha	(45.95)	(-0.56)	(-2.31)	(0.58)	(1.23)	(-0.87)

Note: For each week (week 0), stocks are ranked from the highest to the lowest based on their previous one-week returns. The stocks in the highest quintile are called "winners" and those in the lowest are labeled "losers". Winner and loser portfolios are formed by allocating an equal weight across all component stocks. A WML portfolio is constructed by buying the winner portfolio and selling the loser portfolio, and held for one week. The raw and the risk-adjusted average profits on the WML

portfolio in week 1, over the first month (week 2-5), second month (week 6-9), third month (week 10-13) and the following three months (week 14-26) after the holding period calculated by equations (2), (3) and (4) are examined..
The lagged eight-week market return is utilized to define market state. The state is regarded as "UP" if the lagged market return is non-negative, and as "DOWN" if it is negative. To compute mean profit following each state, we regress the time-series of raw and risk-adjusted profit on the WML portfolio on an UP dummy variable and a DOWN dummy variable, with no intercept. (***), (**), (*) indicate significance at the 1%, 5% and 10% level, respectively. t-statistics are presented in parentheses.

The results in Table 4.5 indicate that momentum is confined to the period prior to the Lehmann shock, that is, it seems to be related to market states. Hence, we look closer at the relationship between momentum and market states. Due to the limitation of our observation number, we define market state based on lagged eight-week market returns. The state is regarded as "UP" if the lagged market-return is non-negative, and as "DOWN" if the lagged market-return is negative. Following Cooper et al. (2004), we regress the time-series of weekly average raw or risk adjusted profits on an UP dummy variable and a DOWN dummy variable, with no intercept to calculate the profit following each state. The results are presented in Table 4.7.

Panel A reveals that for the whole period, the raw and risk-adjusted profits following UP states are significantly and strongly positive in week 1, preserve their significance in week 2-5, and become insignificant in longer horizons. On the other hand, following DOWN states, the raw and the CAPM-adjusted profits except for the raw one in week 10-13 are not statistically significant in week 1 and in the subsequent months. After being controlled for the three factors, the profit is weakly significant in week 1 and insignificant in the subsequent months.

Panel B illustrates that for the first period, the raw and the CAPM-adjusted profits following UP states are significant in week 1, sustain their significance in week 2-5 and become insignificant in longer horizons. After being accounted for the three factors, the profit prolongs its significance till week 6-9, and then weakly reverses in week 14-26, showing a sign of initial over-reaction and a price correction in stock prices. Especially, the profit following UP states is

2.24 per cent per week, rather higher the average profit of 1.54 per cent per week in Table 4.6. On the other hand, following DOWN states, the raw and the three-factor adjusted profits are insignificant in week 1 and in the subsequent months. The CAPM-adjusted profit is weakly significant in week 1 and become insignificant in all following months. These results show that the stream of insignificant profits following DOWN states offset the stream following UP states in Table 4.7, generating a stream of a significant profit in week 1 and insignificant profits in the subsequent months in Table 4.6.

Panel C shows that momentum does not occur in the second period following either UP or DOWN states. The raw and the risk-adjusted profits in week 14-26 following UP states and those in week 2-5 following DOWN states are significantly negative. Nevertheless, these values are economically small. Cooper et al. (2004) argue that these reversals may be caused by other factors instead of the price correction for the delayed overreaction.

In a nutshell, Table 4.6 and 4.7 indicate that momentum is related to market states: it follows market gains only in the period prior to the Lehmann shock; after the market declines or in the post-Lehmann shock period it does not exist. The profit stream following UP states is consistent with the over-reaction hypothesis.

4.6.Conclusion

Our initial results show that momentum occurs in the short-run. The most successful strategy that selects stocks based on their previous one-week returns and keeps them for one week earns 0.83 percent per week. This profit is still higher than transaction cost when a large value of trading is considered. The results from additional tests indicate that winner and loser returns are lowly persistent and highly volatile, but their strong correlation creates significant momentum profits.

The results from further tests show that momentum is confined to small- and large-sized subsamples in the period before the Lehmann shock. Especially, it follows short-term market gains and is consistent with the over-reaction hypothesis. This implies that after realizing market gains, investors are more confident and overreact to news, which produces initial over-reaction and long-term reversals. However, the magnitude of reversals is very weak, which can be explained by the argument of Chui et al. (2010) on individualism. A survey by Geert Hofstede indicates that Vietnam is a collectivistic society with its individualism score of 20[36]. In addition, Truong (2011) provide evidence on herding behavior, which implies the low individualism of the Vietnamese investors. Hence, the low individualism is likely to explain the weak reversal in the Vietnamese stock market. Put differently, the less individualistic investors-who act less like the overconfident/self-attribution biased ones tend not to make investment decisions that produce momentum profits and reversals in long-term horizons.

Similar to the findings of Chui et al. (2000) in the Asian markets in the pre-1997 crisis period, momentum does not exist after the Lehmann shock. This is due to the small difference between winner and loser returns, which might derive from the less confidence of investors following market declines.

[36] Retrieved from http://geert-hofstede.com/vietnam.html

CHAPTER 5: GENERAL CONCLUSION

In this research work, I have examined two anomalies, the momentum effect and the accrual anomaly. Examining a sample of 25071 observations of AMEX and NYSE firms, my first essay has provided some key findings. *Firstly,* the differential persistence of accruals and cash flows is significantly larger for firms with lower financial distress probability. This result is robust when controlling for earnings volatility, absolute accruals, earnings growth, firm size and loss firms. This implies that the differential persistence arises from the accounting problem-accounting standards or earnings management. *Secondly,* the accrual anomaly occurs in the subsample of firms with low financial distress probability but does not happen in the subsample of firms with high financial distress probability. In other words, accrual anomaly is not pervasive but limited to stocks with low financial distress probability. These findings are robust when examining the profitability of accruals-based hedge portfolios. *Thirdly,* the profitability of the accrual-based hedge portfolios is mainly driven by the negative returns on the highest accrual quintile. The size-adjusted return on the highest accrual quintile is significantly negative while that on the lowest accrual quintile is insignificant. Similar results are found in firms with low financial distress risk. These are in accordance with the Kothari et al. (2006) *agency hypothesis*, arguing that the highest accrual quintile is likely to be over-represented by overvalued firms where their managers attempt to boost the reported earnings to meet market expectation. However, the return on the hedge portfolio built from firms with high financial distress risk is insignificant even though the return on the highest accrual quintile is significantly negative. I supposed that the negative abnormal returns on the highest accrual quintiles with high financial distress risk might reflect the anomaly of bankruptcy risk in Dichev (1998). *Fourthly*, sales growth is not the only

factor driving the accrual anomaly. The descriptive statistics show that the highest accruals quintile has higher sales growth than the lowest accruals quintile. This raises a question of whether the return on the accrual-hedge portfolio is driven by the difference in sales growth. I follow Chan & Chen (1991) and Khan (2005) in constructing a return index that mimics the behaviors of high sales growth firms. I tested the correlations between this index and the returns on the accrual hedge portfolios of the whole sample and of each financial distress tercile. The findings show that the effect of sales growth on profitability of the hedge portfolios is less for firms with high financial distress risk and stronger for firms with low and neutral financial distress risk. However, the accruals-based hedge portfolio has significant positive return while the index has insignificant return. These findings suggest that sales growth is not the only factor driving the anomaly. *Finally,* firms with high financial distress probability have higher accruals quality. The accrual quality is measured based on the empirical method suggested by Dechow &Dichev (2002) and then augmented by Francis et al. (2005). The results indicate that except for speculative-grade firms, firms with high financial distress probability have higher accruals quality than those with low financial distress probability. This finding is consistent with the monitoring role of creditors over the accrual managerial behaviors in borrowing firms.

In sum, my first essay contributes to literature by indicating that accrual anomaly is not pervasive but limited to the stocks with low financial distress probability. The findings emphasize the responsibility of intentional managerial manipulation in differential persistence and accrual anomaly, but also highlight the monitoring role of creditors.

In the second essay, I have found that accrual anomaly is present in the Vietnamese stock market. Furthermore, firms with low financial distress risk have larger differential persistence of accruals and cash flows than firms with high financial distress risk. Accordingly, accrual

anomaly is limited to the stocks with low financial distress risk. Moreover, firms with high financial distress risk tend to practice more conservative accounting than those with low financial distress risk. These findings from an emerging market again highlight the monitoring role of creditors over the accrual managerial behaviors in borrowing firms as indicated in our first essay.

In the last essay, I have found the occurrence of momentum in the short-run in Vietnam's market. The winner-minus-loser (WML) portfolio which selects stocks based on their average returns over past one week and holds them for one week earns the highest weekly profit of 0.83 percent. The empirical analysis also indicates that winner and loser returns are less persistent and highly volatile, but the strong correlation between winner and loser returns creates significant momentum profits. Furthermore, the momentum profitability is not pervasive but confined to small- and large-sized subsamples in the period before the Lehmann shock. Especially, it follows short-term market gains and is consistent with the over-reaction hypothesis. This implies that momentum traders in Vietnam are less risk-averse and their overreactions are stronger in the periods following market gains. However, the magnitude of reversals is rather weak, which can be explained by the argument of Chui et al. (2010) on individualism. Less individualistic investors, who are less prone to overconfidence biases, are less likely to make investment decisions that produce momentum profits and reversals in long-term horizons. After short-term market declines or the Lehmann shock, momentum does not exist.

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L'efficacité du marché financier: essais sur l'effet "momentum" et l'anomalie "accruals"

Résumé: Cette thèse se compose de trois essais sur deux anomalies bien documentées : effet momentum et anomalie des ajustements comptables. Le premier essai examine si l'ampleur de l'anomalie des ajustements comptables est entraînée par la probabilité de détresse financière. Les résultats indiquent que l'anomalie des ajustements comptables est économiquement et statistiquement positive pour les entreprises avec une faible probabilité de détresse financière, mais non significative pour celles avec une forte probabilité de détresse financière. Cela signifie que cette anomalie des ajustements comptables est omniprésente, mais pas limitée aux entreprises avec une faible probabilité de détresse financière. Le deuxième essai étend la question de recherche abordée dans le premier essai au marché boursier émergent du Vietnam. Comme pour les résultats du premier essai, les résultats indiquent que l'anomalie des ajustements comptables est limitée aux stocks avec une faible probabilité de détresse financière. Le dernier essai examine si l'effet momentum se produit sur le marché boursier vietnamien. Les résultats confirment la présence de momentum dans le court terme et révèlent aussi que les rendements gagnants et perdants sont faiblement persistants, mais que la forte corrélation entre ces rendements gagnants et perdants crée des bénéfices momentum significatifs.

Mots clefs: anomalie des ajustements comptables; choix comptables; qualité des ajustements comptables; surveillance par des créanciers; persistance des gains; détresse financière; momentum; marché boursier vietnamien.

Market Efficiency: Price Momentum and Accrual Anomaly

Abstract : This dissertation consists of three essays on two well-documented anomalies: momentum effect and accrual anomaly. The first essay investigates whether the magnitude of accrual anomaly is driven by the financial distress probability. The results indicate that accrual anomaly is economically and statistically positive for firms with low financial distress probability, but insignificant for those with high financial distress probability. This means that that accrual anomaly is not pervasive but limited to firms with low financial distress probability. The second essay extends the research question addressed in the first essay into the emerging stock market of Vietnam. Similar to the findings in the first essay, the results indicate that the accrual anomaly is limited to the stocks with low financial distress probability. The last essay examines whether the momentum effect occurs in the Vietnamese stock market. The results support the occurrence of momentum in the short-run and also reveal that winner and loser returns are low persistent, but the strong correlation between winner and loser returns creates significant momentum profits.

Keywords : accrual anomaly; accounting choice; accruals quality; creditors' monitoring; earnings persistence; financial distress; momentum; Vietnamese stock market.

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